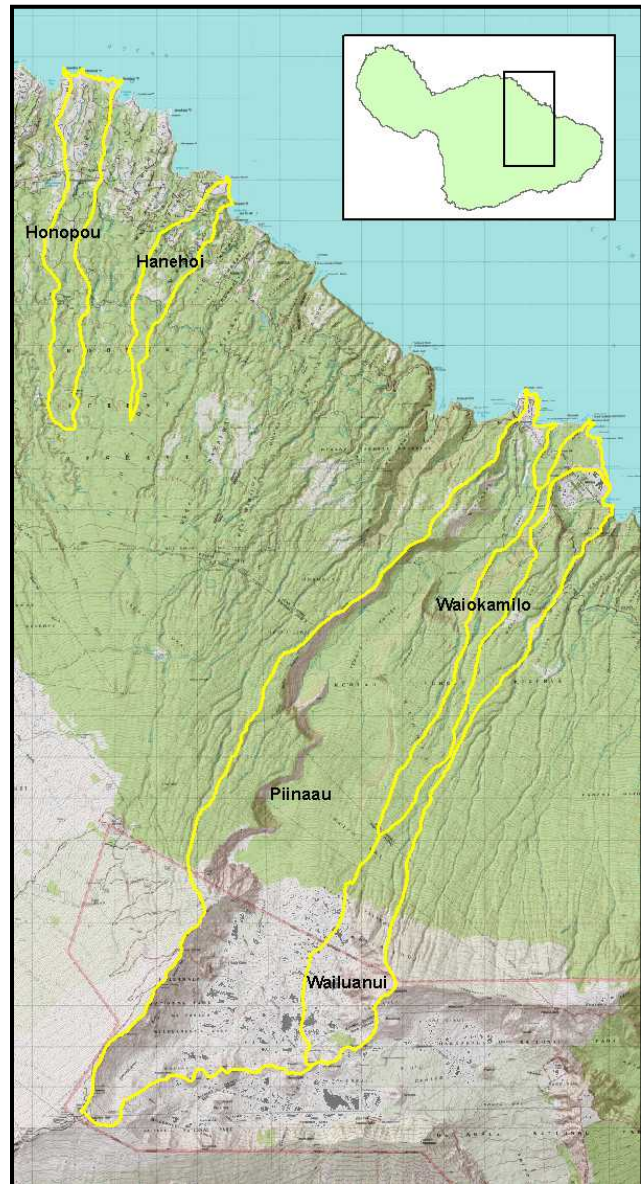

Compilation of Public Review Comments

Hydrologic Units:

Honopou (6034)
Hanehoi (6037)
Piinaau (6053)
Waiokamilo (6055)
Wailuanui (6056)

Island of Maui

September 2008
PR-2008-07



State of Hawaii

Department of Land and Natural Resources
Commission on Water Resource Management



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This document is a compilation of all comments submitted to the Commission on Water Resource Management (Commission) on the Instream Flow Standard Assessment Reports for the Hydrologic Units of Honopou (6034), Hanehoi (6037), Piinaau (6053), Waiokamilo (6055), and Wailuanui (6056), Island of Maui.

The Commission has attempted to redact all personal identifying information such as personal addresses, telephone numbers, and e-mail addresses.

All comments have been separated into individual sections according to the submitting organization or individual. Page numbers have also been applied to each original page. Comments were subsequently reduced to 2-per-page to save space and paper. Please contact the Commission to request full-size copies of any documents. Copying charges may apply.

Comments referred to within the Instream Flow Standard Assessment Reports will identify both the section and page number. For example, a reference to "8.0-3" indicates the 3rd page of comments in Section 8.0 (i.e., Department of Health, Environmental Planning Office). Multiple documents submitted by a single organization may be further separated into sub-sections.

Starting from Section 2.0 (following Section 1.0, Oral Testimony from April 10, 2008 Public Fact Gathering Meeting), comments are listed alphabetically according to an organization's name or an individual's last name.

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- 3.0 Aha Kiole Advisory Committee
- 4.0 Foster Robin Ampong
- 5.0 Mele Carroll State House Representative House District 13
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- 7.0 Loren E. Clive
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 - 13.3 Photograph that depicts the concrete diversion box near Hana Highway (Exhibit A-26)
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- 13.18 Written Testimony of John I. Ford, M.S. from the Na Wai Eha contested case hearing
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 - 29.8 Board of Land and Natural Resources, In the Matter of the Contested Case Hearing Regarding Water Licenses at Honomanu, Keanae, Nahiku, and Huelo, Maui Petitioners' Motion to Enforce March 23, 2007, Findings of Fact, Conclusions of Law, and Decision and Order
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**1.0 Oral Testimony from April 10,
2008 Public Fact Gathering
Meeting**

**Transcript of Oral Testimony
Public Fact Gathering Meeting
Haiku Community Center, Haiku, Maui
April 10, 2008**

This transcript was made from an audio recording. The Commission on Water Resource Management (Commission) does not guarantee the accuracy of this transcript. Please contact the Commission to request copies of the audio recording on CD-ROM.

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NAME: Charles Villalon	TIME: 0:16:45
<p>I'm just here for myself. Uh, kupuna, makua, makaainana, thank you. They, they need to see the faces. Right on. This is what it's all about, because this battle not over yet. Um, again, my name is Charles, I'd like to testify on, um, the instream flows, um, you know, the minimum instream flow and thanks for the opportunity, I know you guys are saying it that we don't have to have this meeting, but you know what, you guys gotta have the meeting man you guys gotta, and thanks for that. But, you know, I was just watching, um, National Geographic, healthy streams, believe it or not it was just on channel, um, cable. You know what the minimum, um, instream flow for a healthy river is? Bank to bank. You can tell the, the, the, the health of a river by its banks. Not the, in the middle of the stream; by the banks. Okay, get that; why we gotta reinvent the wheel? Go to the people who do the research and get those, they put it on national tv, okay, do those minimum instream flows according to national standards already been studied and assessed. Second thing is why are we tapping into the mother land of East Maui? You know, make A&B clean up the aquifers in Central Maui with all the heptachlor, okay, now the Ewa plain they found a way out to take out the heptachlor by aeration and that's what they feeding the second city of Honolulu, Kapolei. Why are you guys now bleeding or land banking the water? I know it's not you guys, but it's you guys Commission. Don't let A&B land bank the water so when they ready to build houses, they get the water available to them right there in Central Maui. I get families, that their job, I get families that their job, they tell me, Uncle, you know what my job is? All my job is to do is turn off the pumps so that the thing no overflow in the, in the fields. There is a lake between West Maui and Haleakala. But the water is polluted. Make the person responsible for that clean 'em up. They the one taking the water from us. It's simple, it's not, you gonna hear a lot of passion tonight. But you guys need to hear it. It's not fair. I mean to keep our composure tonight is going to be very difficult, we gonna have to really try hard. Because you taking blood out of our veins. The, the, the reference made to one river was like an artery. The thing get caked and clogged get caked, you going get one stroke. Okay, the land is stroking already. It's stroking, the land is bleeding; it's asking for more wai. It's sick, I mean I no like start crying over here man, I mean come on. And for a follow up, I'd like for you guys, you guys did the press release? Put the names of the Commissioners and the individuals that will be making the actual decision. We like write to them, we like know the emails, we like their phone numbers, okay? I was a DLNR officer fifteen years, so I'm not talking off the side of my, you know, forethought. I mean, I know what happens here. Come on, let's be open, let's be what the haoles call transparent; so that we support you guys, okay. The second thing is what are the plans over there, I know where Waiokamilo Stream, I'm from that area. The thing coming outta the ground. It's a stream. You saw 'em, you guys go tie that in and where the control is at, how much control Mauka of that get? Where is the EMI guys? They the one up there, they're the kings of the mountain, I bump into 'em for years. They do whatever they like up there. Where are they tonight to answer us? How much diversions and how, how they regulating the diversions? You know, we, we give them respect that's their job, but you know what, tonight was the night for them to come out and answer the makaainana, they live off the water. They should be here to talk to us. Why? Now, I, again, um, there, there so many other things that need to be mentioned, but this, this, the, this, the instream flow standards, you said, your comment was, oh when it was there. What was the time bruddah? What time have you taken when you say instream flows and at the time? What is the date? What is the time? Cause I remember our river running all my life and now it's like make. What date are you using?</p>	

NAME:	Charles Villalon	TIME:	0:16:45
<p>Second is, you know there's been word around about conglomerates, they buying out water rights nationally, 'kay. They buying out water rights nationally all over the Nation. If they come here and they buy the water rights from Wailuku Sugar or A&B, should be non-transferable; start all over again. Because you know what, they going be in here, in Hawaii they going be buying out the water rights, stop banking our water, okay? Anyway, thanks for the time, Aloha.</p>			

NAME:	Mark Sheehan	TIME:	0:22:02
<p>Tough act to follow. I want to just say right on everything he said. I'm completely, you need to take a close look at yourselves working for what I think is a basically, um, I don't want to say bankrupt, but something in that area, in the organization that you work for because I don't think you really and I think that we need to know the names of these Commissioners and they need to come out here and hear what people have to say and explain themselves, why things take seven years. There's a dramatic diversion that you need to know about and, uh, it's a hundred and seventy-five million gallons a day that flows from these fields into the sugar fields where seventeen thousand gallons is used per acre that is all theft from the native environment and the people who live off that environment. And year after year goes by and almost nothing gets done by your Commission. Uh, you can say it's the budget, you can say it's the people who's on the Commission, you can say it's the political process, whatever it is, but basically the plantations have control of this water supply and it's to the detriment of this, of the people who live in East Maui and to the detriment of this entire island. So you need to take a, go back and talk to your Commissioners and say something needs to be done and it needs to be done very quickly to correct the, the social injustice that these, uh, that is going on here by not allowing water to flow in these streams. People live off those streams and the dramatic diversion that never seems to have to be justified by, uh, the primary beneficiary of all this, which is a corporation that is basically, that is, as Mr. Villalon said, "banking that water." All the sugar fields really are just a holding operation so that the water will be available for either commercial purposes and if what he said is true, all over the world, communities are fighting for control, for control of the water against corporations that own it. Uh, there's a book that just came out by Maude Barlow, called Blue Covenant. That's the story; and not only nationally but internationally, uh, large corporations are getting into the water business and taking it in huge plastic barges to other parts of the world. We need to have control of the water here and we need to have water flowing in those streams and we need some action by your agency and your Commission. Uh, now not next year. The signs back there on the wall say it all and all these people who have showed up here I've been at these meetings years ago with, with taking testimony, we don't, you don't need anymore testimony, you have all the testimony, the information is there. What you need to do is to find a way to take action. Thank you.</p>			

NAME:	Carl Wendt	TIME:	0:25:04
<p>Aloha everybody tonight. Thank you for coming. My name is Carl Wendt. I was born and raised here on Maui, graduated from Baldwin High School. I served two combat tours in Vietnam where I experienced the dark sides of life. When I got home I made several plans for myself. One was to raise a family, two, was to plan for the future, and three, was to go back to the land and raise taro. I've accomplished the first two. Number three, well let me say, I also retired from Maui Electric Company after thirty-four years. Now that I've retired, I plan to go</p>			

NAME:	Carl Wendt	TIME:	0:25:04
<p>back to the land. I'm finding it very, very difficult. Right now the amount of water that I have is very, is very, very small. If I was to open another ditch or to share the water with my neighbors, there's not enough to go around. I cannot even open up three taro patches. Just to keep it short, I look at straight at EMI and I ask you guys, where is the water? Thank you.</p>			

NAME:	Mahealani Wendt	TIME:	0:25:48
<p>Aloha, thank you for this opportunity to, um, to testify. I'm Mahealani Perez Wendt. I'm the Executive Director of Native Hawaiian Legal Corporation. I'm also married to Ed Wendt, a taro farmer from Wailuanui, East Maui. Um, today, this, this afternoon because we don't have that much time, I bring to you, um, input from our community. The first, in the form of testimony from the President of the Association of Hawaiian Civic Clubs, and very briefly, a dating back to 2003, the Association of Hawaiian Civic Clubs consists of fifty-three civic organizations throughout Hawaii and on the U.S. continent. And, this issue has been a very, very grave concern to that organization. At their conventions there are approximately one thousand delegates. Each delegate represents ten members, so it's a very large membership dating back to 2003. The Association of Hawaiian Civic Clubs passed a resolution questioning the lack of action on the part of the Commission on Water Resources Management. And last year in 2007, they passed another one that asks that the Commission be investigated for its failure to act. I've attached that testimony, it's official, it comes from the Association President and the, um, the um, resolutions that are the subject of your testimony are attached. I also want to, um, call to your attention the fact that, um, the County of Maui Planning Department in 1995 did what they call a cultural landscape study. Perhaps some of you are familiar with this. This la--- this very, um, well documented study talks about the history of Wailuanui-Keanae. It discusses the families, it enumerates the kuleana, the cultural history, all of it. And at the end of it are lists of recommendations, and the number one recommendation is to support return of the water and taro farming for Maui. So this is been, this is been on the books, you know and it's an official document within the County and still that is not fulfilled. I've also brought with me a binder and in this binder are hundreds of written testimonies supporting, um, the establish- the establishment of instream flow standards from Hawaii. I'm going to turn this over to you, these are not only, um, testimonies, they're declarations, they're also, and this has been going on for the last five years and my asking that you make this part of the record. Now, with that, my own personal, um, manao. Thirty years I've been at the Native Hawaiian Legal Corporation and let me just tell you that personally, I think EMI is evil. I think that the State of Hawaii has allowed a great injustice to be inflicted on our Native Hawaiian people tantamount to genocide. And I used that word not lightly, to me, genocide is when you kill off a people, when you deprive them of their ability to be who they are, a people, a kanaka. They cannot be their, they cannot be who they are because they are deprived of the resources to continue their traditional lifestyle. This is very, very serious, our community is very angry, if you don't need scientific studies just go look and see what's in the water, there's nothing there. There's nothing in the streams. They look like barren dry rock beds. You can see with your own eyes. It's common sense. Put the water back, let our farmers, you know, continue their traditional lifestyle and also their gathering. Thank you for this opportunity to testify.</p>			

NAME:	Ed Wendt	TIME:	0:31:00
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NAME: Ed Wendt	TIME: 0:31:00
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Aloha, my last name is Wendt. I'm also another combat veteran. Me and my brother come from this area. Twenty-three years, I think, Alan, I've been around the case, you guys young yet. I have nothing against you folks. As we journeyed into this court system, East Maui Irrigation, Garret Hew, sitting right there, lied under oath, in Court; gets away with it. I look you palapala over there, where is the monitor to affirm us back Wailuanui. They got the versions up there that they was never been brought out. East Maui Irrigation and Alexander & Baldwin have had the privilege for over hundred something years. They should not even have one inch anymore. These lands, these lands, the twenty-seven streams and rivers that we contested on, sits on Crown land. Do you all know what is Crown land? Take that message back to your people. Next, I want to know each and every one that sits on that Commission that is so sacred. We will hold them accountable for all what you folks have done to us. They have been great hardship, many of our people have passed on but East Maui Irrigation continues on the backs of the Kanaka maoli. Aole. The day is over my friend. Mahalo.

NAME: Charles Maxwell	TIME: 0:33:00
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Would you, EMI could you put your hands up. I don't know who I'm talking about. Right over here? Okay. My name is Kahu Charles Kauluwehi Maxwell. Do I have to spell that? You know how to figure it out right? Okay, you know, let, let me give you some history. And especially directed to EMI Company, whoever got the water for you a hundred years ago, were thieves. You folks are, are, illegal, taking the water, let me tell you, over a hundred years ago, in 1893, our Queen was overthrown; overthrown illegally, we were apologized by the, by the United States Government, but when, an apology is nothing if you don't give anything back. A&B, the Baldwins, the Castles, the Cookes, Wailuku Sugar, Avery Chumbley, I don't see him here. He's a thief. He's perpetuating the thief that, the theft that happened a hundred years ago. This land was Crown lands, like you heard before, who belongs, who the Crown lands belong to? The Kings and the Queens. We just had a ruling, now, that nobody can get rid of the Crown lands until it's settled by the native Hawaiian people. Who are the Kanaka maoli? We are. It hasn't been settled. Has not been settled. And, you know, I'm so discouraged with the State of Hawaii, with the Department of Land and Natural Resources, you know how, how I feel towards them. Because they do nothing, every administration gets in, they do nothing. Nothing happens, so it's not seven years we waiting for the water, it's a hundred years. And, somebody gotta go find out from Kanaka maoli, why the water is there. The fish in the ocean, when the pua, the small fish go up the stream, that's part of their recycling of their body. So when they go back in the ocean, they can replenish the stock. Lolo haoles came along, take the water, dry 'em up, and everything and then they say oh, no more fish now. That's ignorant. So, I really want to say, to EMI Company, to Avery Chumbley, Wailuku Sugar, they're nothing but thieves and you gotta give back the water. Because if not, there's going to be a massive protest and we got enough Hawaiians to do it. Mahalo.

NAME: Isaac Hall	TIME: 0:36:03
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I'd just like to restate, where are the Commissioners why is everybody wasting their breath without the Commissioners being here? Water is life, we all agree. Unfortunately, the State and your Commission have believed that the life of A&B, EMI, Maui Land and Pine, the water diverters, the water stealers, the stream dewaterers, is more valuable than all the people that live

NAME: Isaac Hall

TIME: 0:36:03

downstream on dewatered streams. Their lives don't mean as much to you as the lives of A&B, and EMI, and Maui Land and Pine. We've been getting slammed with a double whammy by you. The first part of the double whammy is the State has been giving away State water arising on State lands above Keanae for nothing, almost nothing, been giving it to A&B, and not requiring A&B to leave the water in the streams. It's been letting EMI and this is the second part of the double whammy, it's been watching and allowing and letting EMI divert all of that water all the way out to Central Maui and leave nothing in all of those streams for over a hundred years. The taro growers down the stream don't get any water, there's not enough water in the streams to support stream life and those with, with appurtenant rights or riparian rights don't get enough water. It's not as if there weren't laws in effect throughout this whole period of time that said this was illegal. There have been appurtenant water rights in effect at all times, riparian water rights in effect at all times, and instream water rights have been protected at all times. But the Commission has looked the other way, the State has looked the other way, it's as if there was another set of rules in effect that the State, EMI, the Commission, Maui Land and Pine set the rules, there really only two rules that you guys go by. One is, water diversion is good. And, any use of water, uh, that's diverted is good, if you are a farmer that receives water that's diverted, that is good. If you're an A&B farmer, and you get water, that is good. If you are below the ditch, that's a waste of water, any water, if you think of leaving water, uh, below a ditch, that is a waste. If you have a farm below the ditch, that is a waste of water. If you leave water in the stream below the ditch, that is a waste, that's the second rule. We just went through a contested case with, uh, Alexander & Baldwin, and they came and said we just want water and, uh, we deserve it. That was enough for the State, that was fine, that's all you have to do, say, we need it, good, fine, you get it. But somebody that came forward that was below the ditch, and said I'm a farmer below the ditch I have, oh, you would be scrutinized to the tenth, nth degree about whether your use was any good, whether you were wasting it, whether you were really growing anything, whether you made any money, whether you, yourself, wasted water on and on and on and on and on. Um, this is a hundred years of laws-, lawlessness by the State's CWRM, EMI, A&B, Maui Land and Pine must end. Fortunately, we have today, here with us, John Ford, will you stand up, John, stand up, some of the Keanae people remember, he was our witness in the proceeding when, uh, way back when Hanawi Stream to try to protect stream flow but now I guess you're working for EMI and A&B? No? Who? Maui Land and Pine? Who? Cades Schutte which is A&B, they were in for A&B? Ah, and Gordon Tribble, Gordon Tribble stand up, Gordon is a good guy, he's already done reports, Gordon, stand up please, will you? Gordon did a report years ago, stand up Gordon, please, you did a report years ago that he gave to the Commission saying restore water to those streams. You need to do that. He gave them three options, said if you restore x amount the streams will have this amount more of life in them, x more amount will have that, and you know what this Commission did? They just sat on it. And when they sit on it, what do they do? They give more free water to A&B and EMI and let it go and that's what goes on. It goes on and on and on and on. You know the other funny thing about this is? Every permit, I'm almost done. Every permit that's had licensed, leased, that has ever been issued to A&B and EMI has a condition in it. The State has put a condition in it and it is said, we're going to give you this water but we reserve the right to tell you at any time we want to, that you must release water for the taro growers, for the people with appurtenant rights, and for the people and for instream values down below. And that condition has been in those permits and leases and licenses from the 1900s to the present. Do you think these guys have ever

NAME: Isaac Hall	TIME: 0:36:03
<p>done that? Never. Never, never, never, never; they put it in every single permit they give 'em A&B comes forth and says, oh, no, no, no, no, no, no, no don't do that, please, please don't do that, we want our free water, don't do that. You think they can do it tomorrow? They could do it tomorrow. Tomorrow this Commission and DLNR and the Board could say, okay, the jig's up, release water. All they have to do is exercise that little condition. But guess what? I'm almost done. This amounts to environmental and social injustice. Stop this lawlessness, restore these streams now, exercise that condition that's been in there since the 1900s and restore substantial stream flows to each one of these streams.</p>	

NAME: Foster Ampong	TIME: 0:43:20
<p>Aloha, um, normally I like to testify from manao, so I don't normally bring notes, okay, because for me it's real. But as Isaac Hall had first articulated, and I gotta say this, where is the Commission members for the Water Resource Management? That is b---, okay, for the Commission members to come here to Maui, hold the meeting for the public and then not show up and send you guys? You know, I feel bad because you guys going have to take the brunt of the blow. But, you here, so obviously you knew what you guys were coming into, okay? Um, this, I gave a written testimony and it was addressed to every committee member, Laura Thielen, Chiyome Fukino, Meredith Ching, James Frazier, Neal Fujiwara, Donna Fay Kiyosaki, and Lawrence Miike. But they not here. Why? Are they scared to face the people? I think so, because, you know, East, the East Maui, um, okay, let me start again, I'm emotional. First of all, okay, with sincere respect to each member, I submit the following written testimony to the Commission of Water Resource Management. Being born and raised on the Island of Maui, I am deeply concerned for the people and limited resources presently available. I demand remedial immediate action, right now, put the water back in the streams. No ifs, ands or buts. Okay, the East Maui Stream restoration petition, filed seven years ago, and the apparent dysfunction evident in the inaction taken by the Commission leaves the petitioners, who are, by the way, native Hawaiian beneficiaries, of the so called ceded land trust, without water to sustain their crops and stream life which have fed them, their ancestors, and native Hawaiian people for thousands of years, it's a fact, okay, take that back to the Commission. As I understand it, A&B uses seventeen thousand gallons per day per acre in the wet season; and thirty-four thousand gallons per acre per day in the dry seasons; yet A&B diverts an average of a hundred and sixty million gallons per day. That is not only mental and lolo, but that is such an insult to the people. Okay, I also understand that the State of Hawaii allows A&B to divert seventy-five percent of the water from the State, so called ceded land, from the so called ceded lands, and it pays only one-fifth of one cent per thousand gallons, while the farmers in East Maui have to pay thirty-five cents per thousand gallons. You know, something wrong with that picture, okay. And, before I go any further to the people in the audience, o poe , haole blood, and to you people on the, right here sitting in front of me, I'm going to be very honest and very blunt, okay and very real. What I'm about to express and share with you may offend you, but please understand that many people that I talked with, myself included, on many occasions, actually feel and think this way, because of the actions and circumstances of the State of Hawaii, you know, the Board, the Commission that we're talking about. Why is it, the East Maui Stream restoration petition filed seven years ago left to linger? Are the petitioners of East Maui to believe the inaction and blatant disregard by the Commission, a message to native Hawaiians that we are worth less than the millions of gallons of water per day that are diverted to an operation that requires only thirty-four thousand</p>	

NAME:	Foster Ampong	TIME:	0:43:20
<p>gallons a day at best? You know, are we worth less than that? Are we, to not think, that perhaps part of the reasoning for this gross injustice is due to racism by State government because the petitioners are native Hawaiian beneficiaries of the sole called ceded land trust? I believe sincerely, it is due in part if not in whole to the fact that the Commission has failed to act on the East Maui Stream restoration petition because one, the petitioners are native Hawaiian and their decision will affect and translate a course of action to all native Hawaiian beneficiaries throughout the Islands. And two, because corporate business such as, Alexander & Baldwin that now divert and hoard all the waters throughout the Islands and government will take, will have lost their century old veil that has blocked transparency and accountability. For over a hundred years, government, be it the Territory or the State of Hawaii, has enabled corporations such as Alexander & Baldwin to continue hoarding the water and avoiding any type of transparency or accountability. It is a perversion, a perversion of justice. Alexander & Baldwin and as well as the State who are culpable, are perverts. Okay, with all due respect to each member, how is it not racism for the Commission to allow A&B to hoard all the waters from East Maui Streams while the petitioners who are taro farmers and native Hawaiian beneficiaries, okay, of the public ceded land given nothing? Nobody can answer that, I know nobody here to answer that because the Commission members never come. The reluctance and failure thus far for the returning of waters to the streams be it East Maui or elsewhere, appears to be a decision made deliberately because of the legal rights native Hawaiian beneficiaries of the so-called ceded land trust have, and the fact that A&B will establish a precedent to other corporations now hoarding water to have to share their unlawful control that diverting water for over a hundred years has given them. It's really plain and simple. We see what's really taking place, we not blind, we not stupid. To further deprive native Hawaiians, the petitioners, their water for the sake of corporate control is racist. And by definition on the international law, genocide. Make no mistake, I do my homework, I will not write and submit something if I didn't have anything to back it up. And because of this, the Commission is guilty and culpable of not only racism but genocide of an entire race of people. I can go on and on and on and cite you legal facts, facts that's taking place for a hundred years, but I know you guys are just sitting there listening, you know, you gotta go through this motion. But if there is anything I want to say to the people out there, okay, Hawaiians, non-Hawaiians whoever, we need to find remedy. If it means suing the hell out of them, because what's taking place with the, with the waters not being put back into the streams are not only criminal, but they're vicarious liability. Sue them, sue the State, sue the Commission, sue every Tom, Dick and Harry that taking the water from the stream. Thank you.</p>			

NAME:	Moses Haia	TIME:	0:51:42
<p>I want to thank staff members of the Commission for this opportunity to comment on the stream assessment reports. Um, first of all I want to, I want to make it clear that the petitions that Alan and I filed on behalf of our, um, clients were petitions to amend the interim instream flow standards. They're not petitions to set instream flow standards. We know that there's a huge difference between the two. Um, and I'm not going get into what that difference is, as staff members of the Commission, you guys know. Based on that, it's my position that the staff and the Commission has sufficient information, has had sufficient information to act on the twenty-seven petitions that we filed on behalf of our clients. They've had that since at least the point in time when they received the last report from USGS in 2005. Um, what I'd like to do is, I'd like to tell a true story, so if, if you guys haven't heard this story, um, it's uh, it's uh, very interesting</p>			

NAME: Moses Haia

TIME: 0:51:42

and powerful story. In the early 1900s, a sugar company, named Hawaiian Commercial and Sugar, filed the lawsuit against Wailuku Sugar Company for what it claimed were illegal diversions from Wailuku River. This is in approximately 1902, 1904. Hawaiian Commercial and Sugar based their claims that they had superior rights to the water and those rights were being abridged by the diversions by Wailuku Sugar based upon kuleana lands, appurtenant rights. The Supreme Court at that time held in favor of Hawaiian Commercial and Sugar's rights and required that Wailuku Sugar Company cease and desist from these illegal diversions. At the same time this is happening in Court, A&B, HC&S and its water company, EMI, is doing the same thing they were pointing the finger at Wailuku Sugar Company for and for which they got a legal remedy. Why is that? And it's still the law. It's still good law. Why isn't that happening right now? Why aren't the same laws that applied to Wailuku Sugar Company and HC&S in the early 1900s applying right now to HC&S? They, they benefited from it in 1902, 1904, they benefited from it 'til today. And at the same time, um, so, yah, you know, the question is, what's the difference here, what's going on here? Why, why are these entities being treated differently? Why aren't my clients not benefiting from this same law? Um, so, that's, you know, that's, uh that's a significant question here. Um, what I'd like to do in, in the time that I have remaining is to, to point to specific, um, statements made in these, uh, stream assessment studies that I see as providing a bias in favor of A&B, EMI. First of all, when you look through the assessment studies, you see, you'll see a graph of what needs t happen to prove an appurtenant right and ultimately what it comes down to is the person who claims to have an appurtenant right to water, has the burden of coming forward with the, with sufficient evidence to prove the amount of water and in, in fact the appurtenant right attaches to property that it, it has a right or a legal interest in. At the same time, I, I would point the, uh, Commission staff to page 81, that talks about Hawaiian Commercial and Sugar's water needs. Never, ever, have HC&S, A&B, EMI had to establish how much water they need. There's a difference between need and use. The fact that somebody uses on average a hundred and thirty-four million gallons per day in the winter and two hundred thirty something gallons per day, two hundred thirty-four million gallons of water per day in the summer, does not mean that that's how much water they need. There's another, uh, the Commission also sees that there's, there's a, a, an agreement between Maui Land and Pine and EMI and it allows Maui Land and Pine to purchase water from EMI if at a certain point along the diversion there is more than one hundred million gallons of water. What does, what does that, what does that say? I know what it says to me. It says that either A&B doesn't need water over a hundred million gallons of water per day or they have some other source they can tap. Why else would you sell, be willing to sell the water off? Um, and ultimately, what needs to happen here, is the Commission needs to make EMI do their homework. They have a burden. Establish that the water that they're diverting is actually how much water they need. And, unless and until they can do that, I mean the water should be placed back in the stream. Whatever water they can establish a specific need for, you know, I mean this is, it's significant, need versus use. EMI has never established how much water its sugar plantation needs from the diversions. That needs to happen before we go any farther. The first thing that should happen is that should be the, the, the beginning point and if, and if they can establish how much water they need, um, or they establish it, then whatever water they're taking over that, should be immediately be placed in the stream. And so, and I will provide further written, uh, comments about, I see my time is up, so I'll provide my written comments about how I see other, other uh, statements made in here being a bias in favor of A&B and EMI.

NAME:	Moses Haia	TIME:	0:51:42
Thank you.			

NAME:	Alan Murakami	TIME:	0:59:09
<p>Uh, I too am, uh, disappointed at, the Commissioners themselves are not here. And, um, I say that not only because they should hear this personally, they should hear the passion, they should hear the commitment, and they should hear the law on what really should be guiding them in setting interim instream flow standards, uh, immediately. Which I think is, uh, long overdue, not only because it's been seven years, but because the statute says it should have happened in a hundred and eighty days. Um, but I do want to emphasize in my role today as, as an attorney for the petitioners, why this notion of the legal burden of proof is so critical. Um, and I want to emphasize that despite what everybody, in spite of what everybody else has said, is because I don't think people really understand what it truly means, um, to listen to what is the burden of proof. The truth is that it makes all the difference in the world. In the last four decisions involving the appeals of the Water Commission, two Waiahole cases, the Waiola O Molokai case and the Kukui Molokai case, both on Molokai, the Commission attempted to justify diversions on the basis that they're, that the people being hurt did not show that any harm was occurring to them. And, based their decision on the fact that they could then agree to a diversion because no, there was no evidence of harm. What the Supreme Court said, in contrast to that, and in specifically in the case of the Waiola and Kukui, Molokai cases is that with regard to, uh, specifically native Hawaiian traditional and customary gathering rights, there was no such duty upon the gatherers to prove anything. The two decisions I mentioned, Waiola and Kukui, are almost, almost mirror each other in terms of the Findings of Fact and Conclusions of Law dealing with this issue that the Water Commission issued. And in essence they say, that in fact, no evidence was presented that showed that there was any harm or any risk of harm that would threaten the exercise, or traditional and customary native Hawaiian rights. Um, and that none of this evidence showed that there would be harm to the gathering that occurred along the shoreline on Molokai, the Kamiloloa shoreline that might be impacted by the use of the, of the two wells, one new, one, one existing, that were proposed to be, uh, given permits so that it could justify those, the uses of those wells. And the Supreme Court in both of those cases acknowledging, that native Hawaiian rights, and in essence the, the, growing of taro as well, their appurtenant rights of the, of the taro growers are part of the public trust purposes that are recognized by the Code and respected as the highest, uh, form of protection that you could give a resource. And they basically said, this is the wrong, completely the wrong analysis, it says in essence, and I'm going to read this because I think this is really critical. It says, basically that the applicant for a water use permit bears the burden of establishing that the proposed use will not interfere with any public trust purposes and likewise, the Commission is duty bound to hold an applicant to its burden during a contested case hearing of the sort that we had before the, the Board of Land and Natural Resources, for example. And this is the key passage, it says, this obligates the applicant to demonstrate affirmatively that the proposed well in this case, a diversion, would not affect native Hawaiians' rights, in other words, the absence of evidence that the proposed use would affect native Hawaiian rights was insufficient to meet the burden imposed upon the applicant by the Public Trust Doctrine, the Hawaii Constitution and the Code. And so I bring this up because I'm somewhat troubled by the very nature of this fact gathering meeting which is not required. Um, in your reports there are common statements in there about how people holding appurtenant rights and exercising native Hawaiian traditional and customary practices need to come forward</p>			

NAME: Alan Murakami	TIME: 0:59:09
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and show what they're doing. And that is exactly what the Court is attacking as inappropriate. The Court is saying basically, you need to put that burden on the applicant, in this case, that burden squarely belongs on A&B and EMI and HC&S. They have to show that they are not harming our clients or any of the people along these Maui shoreline exercising these protected rights. So the focus is on the wrong, uh, target and you need to bring this back to the Commission and I say this specifically because this is not only clear law, but it is the basis for saying that if the Commission proceeds, with this knowledge, that they are knowingly not acting and therefore, violating the law with knowledge of the law that they have and that subjects them to personal liability, in other words they can be personally sued and, and damages collected against them for any actual harm that occurs to Hawaiians.

NAME: Hannah Kaauamo	TIME: 1:05:40
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Aloha, I'm Hannah Kaauamo, I'm married to Solomon Kaauamo and, um, we've been living in Keanae for, I have, he's born and raised there, but, excuse me, I'm very nervous, so kalamai, Um, my thing is I don't see all the Commissioners here, for me, it's a slap in the face. It puts us down because we were prepared to come here and face the Commissioners and you know, all Hawaiians here, we have been waiting for so long, and nothing has been done. Our lawyers has done everything, everything, and nothing we have heard, we have heard nothing. It's a tired struggle we've been going through and you know, on your tv, our tv stations today, they talk about our environment, saving life, our oceans, our seas, our water, life, without life there is nothing. What do we have to give to our children, to our generations coming up? Nothing. Everything has been stolen from them, from the time of beginning 'til now. This too, is being taken away from them, we are now from grandparents, mothers, daughters, to great-grandparents, I am a great-grandmother now, I wanna see something left for them. I wanna see our sea restored. Our life in the rivers restored, give us back our streams, our culture need to be preserved, what are we gonna teach our generation to come? Everything has been taken away, so Hawaiians out there, you know, I telling, I've heard kids say, Aunty, you fought for so long, step aside, let us young ones take over, you know what, I tell them, Imua, Imua young ones, go.

NAME: Cecilia Santos Bras	TIME: 1:08:39
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Kalamai. My name is Cecilia Santos Bras. And, Aloha, and thank you. It is evident simply by taking a drive to East Maui that there isn't enough water in the streams. It is evident that there is more empty lands in Keanae and Wailuanui Valley. Simply stop at the lookouts and take a look for yourselves. It is evident that taro farmers are merely getting by with the amount of water they are receiving. Take a drive into those valleys and talk stories with the farmers. They will tell you how this water situation greatly affects them. Their loi, the stream life habitat, and ultimately, their cultural traditions. They will tell you that there isn't enough cold flowing water to the streams to provide the nutrients needed for their kalo. They will tell you that it's hard to find hiwiwai and opae nowadays. How do I know? Because I have. The facts, they're there. Stream studies have been completed by the U.S. Geological Survey and published in 2005. Water restorations to these streams of East Maui is essential for taro farmers and for the rejuvenation of stream life habitat. Without appropriate water the decline of taro farmers will continue. Stream life will reach extinction and ultimately the genocide of the Hawaiian people and culture will result. Ua mau ke ea o ka aina i ka pono. The life of the land is perpetuated in

NAME: Cecilia Santos Bras	TIME: 1:08:39
<p>righteousness, it's time to live up to the State motto. Preserve the rights of the people, the rights of the land, and the streams of East Maui. Set these instream flow standards and release the water back into the streams. Do not follow the agendas of the big money corporations; the time is now. Mahalo.</p>	

NAME: Solomon Kaauamo	TIME: 1:11:26
<p>Um, Aloha, my name is Solomon Kaauamo. Um, thank you for allowing me to testify today. Years of testimony, by my parents, my grandparents, my great-grandparents. Testimony fighting this water issue and nothing has been done. We have presently, I am retired from the County and I moved back to Maui, like about forty years ago from Oahu. I was born and raised in Keanae, went away, got an education, work in the construction business, when my father retired from the County, he asked me to come home so I can take over the land and work the land. I did, with much hesitation, cause I knew the life was hard. I didn't wanna come home. I wanted, I wanted the lights in Oahu, it was good, good time. But I came back, and I'm not sorry that I did. I also retired from the, from the farm, but, as I was working the farm, I worked with my children, I worked with my parents, I worked with my grandchildren, two of them over there and this is one of them. Today, they're taking over the land, they're working the land. When I first came back, each year, each year I could see the depletion in the water. Depletion to a point where our taro was having disease. Bad disease, pythium pocket rots. These were all signs of depletion in our water. Today the talking about GMO, we don't need GMO, we need water. We need water so the water can, we don't need GMO, we need haloa, we need to preserve haloa. We've been farming from time in memorial and we still doing it today. You gotta think back, from Kaniho, our Konohiki. Was way back in the 1800s 'til today we still farming. And you see the water start depleting and depleting and depleting until the lois got all covered up. People came to us and said what you guys doing you guys not even working the lois. What you mean we not working the lois? How can we work the lois if there's no water? There's no water for our loi we can't open it up. You go to Wailuanui Valley you look you see all grass, why? No more water. We need the water to be restored. So, thank you for having me. I would like to yield my time over to my granddaughter.</p>	

NAME: Tiana Kaauamo	TIME: 1:15:15
<p>My name is Tiana and the same last name. Um, I'm going to orally speak my testimony in Hawaiian language and I'm going to submit my English version in written statement.</p> <p>No Wai Paha Kuleana. Aloha, O Tiana Pololena Kahalelaukoa Kaauamo kou inoa a he haumana au e ukali ana ma Ke Kula Kaiapuni of Kekaulike ma Ke Kula Kiekie King Kekaulike ma Kula. He wahine au ma ka Papa umikumulua i piha i na makahiki he umikumahiku, a noho au me kou makuahine ma Kahului. Oiai noho au ma Kauna, ua hanai ia ua ma Keanae ma ke komohana o Maui e kou mau kupuna i noho ma laila. No he mau makahiki ku nana au i kou mau Kupuna, Anake, a me kou mau Anakala e kue i keia kue e hoihoi i ka wai i na kahawai. Me he mea la aole nana ia ka Moaukala Hawaii, nana wale ia ka hoonui ana i ka oihana mahi ko a me kala i ohiohi e ke Aupuni. Aka, no na kanaka maoli manao makou i ka malama o ko kakou aupuni, Aina a me ko kakou Wai e ola. He kanaka hookahi au pili i keia hana o ka heluna o ka wai i lawe ia mai na kahawai, a manao a piliwi au pono e hoemi ka heluna o ka wai i lawe ai no ka</p>	

NAME: Tiana Kaauamo	TIME: 1:15:15
<p>pono o ko kakou Moaukala. Pono kakou e malama i ke ola i loko o ke kahawai, pono ke kahawai e kahe mai mauka a i makai no ke ola a pau loa. He mau mea i ola ai ma loko o ke kahawai ma mauka ala ka Opae, Oopu, Hihiwai, a pela aku. Ma makai aia na ia ma Kahakai e like me ka Aholehole i noho ma ka muliwai i kona wa keiki. O ke kalo kekahi mea kanu i pono ka wai ma makai. O Haloa ko kakou kupuna, aia na ohana he nui i malama kalo ma na wahi a pau ma Maui, he Kuleana ko kakou e Malama i na kupuna. Pono ka wai e na mea ola. Piliwi au me ka ikaika i ka malama o ka wai. Pono kakou e malama i na mea loa ai ole e nalo wale ana ia, a aole hiki ke loa hou ia. No laila e hana i kou kuleana a e malama i ko kakou aina. E haawi i wai i kona makua a e hoola i ke ola ma ke kahawai mai mauka a i makai.</p> <p>This whole statement pretty much means that all life needs water even humans. So if you think about it you guys are very, are murderers and you guys don't understand that cause you're not, you're not killing yourself, you're not killing you guys, you're killing the life in the stream, in the ocean and so, you know what, when I finish college, I'm going to work for the Department of Land and Natural Resources and I'm going to make sure that I give it back.</p>	

NAME: Kainoa Kaauamo	TIME: 1:19:10
<p>My name is Kainoa, same last name as my grandpa. Uh, I don't know where to start; let's see, there's so much passion in this. Okay, I grew up in Keanae, born and raised, and my family, I worked taro patch all my life, I moved away to Oahu I was fortunate enough to get educated at Kamehameha Schools, Oahu. I went on to the University of Nevada, Las Vegas, went to school up there for three years, lived up there the second most fastest growing city in the world. I've seen that I've seen the bright lights, I've seen everything. As much as you can imagine. But I decided that my culture, my home, was more important than my self indulgences, so I came home and now I'm back in my roots. I'm working taro patch. I'm taking over in my family's footsteps. I go to MCC and I'm going to be a father soon, you know, and I'd just like to give thanks to all my kupunas before me, kupunas that I never even knew. Kupunas like Uncle Harry Mitchell, kupunas that I never met, who never even met me. I give thanks to them because if it wasn't for them fighting from time and time, years before, then I wouldn't be here today. I wouldn't be able to work taro patch. Thanks to these guys, all the Aunties behind us look at their faces, you see them? It's all them, you guys gotta recognize that, they've been fighting forever and we gotta give thanks to them so that we can move on and I can practice my culture, the kids can practice our culture, raise the way that we know how, the only way we know how. That's all I gotta say.</p>	

NAME: Cindy Kuuipo Kaauamo Naone	TIME: 1:22:12
<p>Ano ai. I'm Cindy Kuuipo Kaauamo Naone. And before I start I wanna, you know, thank Tiana and Kimo and Iwalani for coming here today. Tiana, years back, wrote a testimony and at that time she was only seven years old. And, so to see her today, speaking in our language, is a witness to what we would all be doing one day. When I was asked to come to this meeting I didn't want to because I knew, again, you'll show up, we give testimony and nothing. Time and time again we've been seeing this. So I object to this meeting. The Board, or you, you guys have all the facts, you have all the written testimony. To me this public fact meeting is just another stall tactic, just another way to let's just wait a while, let's just let Keanae kinda dwindle</p>	

NAME: Cindy Kuuipo Kaauamo Naone

TIME: 1:22:12

away. You know, oddly enough, this meeting scheduled on the same day as the Aha Moku Council meeting in Hana. Coincidence? I don't think so, you know, if this, for, for majority of our people that live in Keanae, that is here today, we not be going to that meeting, by the time they leave here, get to Keanae, and then go to Hana, that's crazy, pau already, pau the meeting. So, for all kanakas, and others in respect of nature, know that there is an imbalance, for myself and others, I like scientific proof, is verified, by what we already know and have known for many years. Water is a source of all life and without it, there will be trouble. One example comes from a petition from our kupuna dated September 12, 1881. To Carter and Walker who were the Commissioners of Crown lands. In this petition, our kupuna request consideration to not dispose any ponowai or water rights of aina le alii the Crown land of Honomanu, Keanae and Wailua, to Claus Spreckels, because they knew that the people living on said lands would be in trouble. And so, they asked to put an end to the taking of these waters on the lands. And these kupuna we are all descendents, all them, all the descendents of these kupuna. Kamanele, Malailua, Napihaa, Lono, Kuluhiwa, Hueu, Kalilimoku, Kamakahiki, Ekeekamaukole, Kalepa, Kehuhu, Ekeekahuhu, Kakuamoku, otherwise known as Kaamoku, Kealii, Okealiiaukai. This is only one of the many petitions that is on records and anybody can go to Bureau of Conveyance and find it. It's there; whether all the documents was true, unless you know your history, and understand documentation, then you can determine what is true and what is not. There is also a petition Nahiku, February 24, 1902 from Mr. Hardy to S.B. Dole basically talking about preventing the auctions of our lands, the diversions of water to other districts so that water can be preserved for our people. See the point in fact here is that one hundred and seventeen years later, here I am, here are my ohana stand firm in our belief of our ancestors' voices that without water going be trouble. In February 26, 1902 lands leased to H.P. Baldwin from Koolau which is the Honomanu area to Wailuaiki onto the the Nahiku track and included in this lease agreement it states that the lease will not in any way interfere with land owners vested rights of the people. Now that's a lie. That's a blatant lie. They've been taking water much too long. Now these vested rights that they talk about, even in 1902, is not just vested rights of water or gathering rights or fishing rights, the rights that we all know these vested rights in its entirety is within our pala pala seta nui the pala seta nui is our royal patent. Now I know there's people that say ah, royal patents that's long time ago. I no believe in that. Our Circuit Court no believe in that. But guess what? Our royal patents, our pala pala seta nui is true. Do your homework. Look at the Hale Mua case, look what happened, no lawyers, business people gone, bankrupt, stop, no more development in Hale Mua. Turn on Channel 53, you'll see it, you listen to our Council Members Riki Hokama, Michelle Anderson, Uncle Bill Medeiros, you hear them talking about the royal patent. And in Riki Hokama's statement he acknowledges that the royal patent is true. In Napeahi vs. Wilson in 1996, court case, Judge Ezra says "The boundaries of the royal patent must be respected by the U.S. and the State." Now what happened? Clearly, we all know that there is damage to our streams, we know that there is hardship for our kanaka people, we know what our farmer growers loi kalo growers are going through, we know that it is getting harder to gather opae or hihiwai and some streams you go into it's too dry, sometimes you have to go further way up into the mountain to gather and even now today when you go to gather you have tourists swimming way up there. Why? Because the streams down below is dry. I'm just about ready to conclude. With no doubt there is great suffrage upon all life when water is taken away and managed irresponsibly. When multiple injuries multiple injuries after injuries placed upon us we Kanaka maoli supposed to be dead by now. But look, this is modernized genocide. We all

NAME:	Cindy Kuuipo Kaauamo Naone	TIME:	1:22:12
<p>exist today, we still here, and the remedy, and the remedy for your sin, EMI is to give us back the water. Mahalo.</p>			

NAME:	Jocelyn Costa	TIME:	1:31:49
<p>Um, I'd rather stand because it is exactly what I'm doing, I'm making a stand here, so I'm not going to be sitting. This is the, the, um, title of the book who owns the Crown lands. I advise everybody to go out and, run out and go get one. I haven't read it right through yet, but, um, I think it would be an, an interesting topic for everybody. Um, it was interesting today in the, the Maui News, where they talk about bottom fishing. They going stop bottom fishing. And my question to stopping bottom fishing is, are you addressing the problem? The problem doesn't lie in the bottom of the ocean, it lies on the top of the mountain. Until you can heal this aina, everything else going be kakio. So you have not addressed the problem. You've only fluffed it. If the fish no more food on the bottom of the ocean because there is no nutritional value going into the streams, they still going starve and you not going have anymore fish. It's like somebody who went out work in the, in the fields and stay all lepo, but they gotta go out eat dinner and they never take a bath, they just spray themselves with perfume; enough perfume, we have to address the problem. We have to, we have to clean this up. That's just my analogy. What is a farmer? Because we address certain things as far as, um, farming. What is a farmer? I watched on the television and they talked about, um, what is the needs of a farmer? And in America, the needs of a farmer is pesticides, fertilizer, farm equipment, oil, shelter, all that economical needs. When you ask the farmers here, they're gonna tell you water, soil, huli, family community, cause it's a kakou thing, has nothing to do with economics. But it has everything to do with the ecosystem. When we talk about the beneficiaries, since what you folks understand is HRS, 172-11 states, every land patent issued upon an award, of the Board of Commissioners to quiet land title shall be in the name of the person to whom the original award was made, even though the person is deceased or the title to the real estate thereby granted has been alienated, meaning, transferred conveyed sold whatever, it's still with our kupuna. And all land patents so issued shall inure to the benefit us. To the benefit of the heirs and the assigns of the holder of the original award. So I'm not sure how many of the so called, um, provisional government have koko in their blood that can track themselves to this royal patent, Land Commissioner Award, Awardee. Cause that's the only one that should be benefiting any of these resources. Maui News printed up I think it was last week, could be two weeks ago, and I'm not sure if any one of you folks, um, know this, you folks familiar with the New York Stock Exchange? Yah? Maui Land and Pine has been invited into the New York Stock Exchange on the backs of the kanaka. They were asked when did they want to ring the bell? Guess what day they want to ring the bell? Kamehameha Day. Is that a slap in the face or what? On the backs of my kupuna, they want to take their economic equity and ring the, the New York Stock Exchange bell. Where's our benefits? We are the beneficiaries to this land holdings. I want to also ask these Commissioners that are absent tonight, does that mean that they default in this? I'm not sure; by not showing. I want to know where their authority to make any decisions on our rights come from. Where is the authority that you have. February 2006 I asked Mr. Miike and he said, Kingdom Law. It's on a kaku, it's on the record go look through the testimony and the transcripts. He said it more than once. I had him reiterate, where do you get your authority? Kingdom Law. That's because the only other things that, that you play with is overlaid over the Kingdom Law, but the Kingdom Law still exists. Now, on January 31, I'm, I'm gonna be, on January 31, and the reason why I</p>			

NAME: Jocelyn Costa	TIME: 1:31:49
<p>ask the authority is because I'm, I'm gonna read something that the State, um, said. January 31, 2008, Judge Moon made a decision and it was mentioned here about our rights on these lands. The defendant, who is the State, says however, contended that the trial court correctly relied on Couer d'Alene because it, because as in this case, what they're saying is the lower courts was correct in, in granting the, the um, decision towards the State in the Leialii project, okay. So they're saying they did, they went, they went judge correctly and the Supreme Court should not permit this injunction. For if the request of the injunction relief happens, it would bar the State's principal officers from exercising their governmental powers and authority over the disputed lands and waters, and would diminish, even extinguish, the State's control over, over a vast reach of lands long deemed by the State to be an integral part of its territory. Do I need to repeat that? The State said, it would extinguish their control over the disputed lands and water if the Judge in this contested case, in this, in this case here, Supreme Court, would rule in favor of the Plaintiff and give that permanent injunction. January 31, 2008 Judge Moon has now ordered that injunction. So, again I ask, on what authority do you come here if your authority has now been extinguished per that permanent injunction. When we go on to page 28, the Plaintiff brought in David, I don't know how to say, Getches, he's a professor from Colorado Law School and they asked him can a political, can a political entity have governance without any territory? Now remember, earlier they said it would extinguish their territory. It is very difficult to have sovereignty without land. There are some exceptional examples, Israelites before there was an Israel, had a notion of government. It is very difficult for a government to operate without territorial boundaries. So again, I gave you my address, I would like to know from the Commissioners, where their authority comes from if the permanent injunction has been so ordered by Judge Moon and according to the State their, their statement in this, in this court proceeding says, it would extinguish their authority over the land and the water.</p>	

NAME: James Sagawinit	TIME: 1:41:04
<p>I am James Sagawinit. Ecosystem. I come from an ecosystem. Why I come from an ecosystem because when I was a young boy, I learned from my tutus how to survive. How to survive without electricity, we had lantern, kukui hele po, and with that I learned how to make nets, fishing nets, but yet the law, the laws, the laws, the laws, the laws. Ecosystem meaning from the mountain to the ocean let the water run. That where I can go down to the ocean and know the fish is there. Try it sometime. Try to open up some kind of, some kind of river. And stay at the end of the river where the water touches the ocean and you'd be amazed how the fish come back. It's not by the month, by the year, the same day, I can grant you that. The laws, the laws, the laws, now they tell me, DLNR tell me you only can get a quantum of fish, you only can take so many fish. But yet for me, if I come with hundred fish, would you put me in jail? Or you would watch me until I reach home, when I open my door and there's two fish in my, my bag, why? The people that taught me how to fish, they get the share of what I catch. Anybody can share that with the old people, I don't know. I never see that. But I don't sell mine. But if you guys down the beach and catch me with one loaded bag of fish, I got a reason, I got a reason. But if you guys like put me in jail, so be it. But yet the people that I was gonna give the fish to is not gonna eat dinner tonight. I thank you.</p>	

NAME: Michael Gagne	TIME: 1:44:01
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NAME: Michael Gagne	TIME: 1:44:01
<p>Hi my name is Mike Gagne. Uh, I came here tonight to learn more about this, uh, issue, uh, and I'm a technical reader, I read your documents and, I'm afraid I'm not learning very much. But by listening to the people testifying here tonight I am learning more and more. Um, I'd like to say that I'm aware of the fact that there is a watershed plan for East Maui, as long as you don't live below the ditch. I live below the ditch on Hanehoi Stream, I've lived there for thirty years. The stream used to run freely, uh, at times it ran greatly and now the streambed has grass growing in it which means almost no water flows in it at any time. The instream flow standards I do not understand, uh, but I do understand the education that I'm getting here tonight from people. Um, I don't need five minutes, I'm pretty much finished I wanted to say what I had to say here, I thank you for allowing me to testify and more importantly, I thank the people that are testifying and educating me. Thank you very much.</p>	

NAME: Awapuhi Carmichael	TIME: 1:45:33
<p>My name is Awapuhi Carmichael. I have a Scottish last name but my husband is also a descendant of the Keanae Wailuanui ahupuaa. Um, my family and I see a lot of 'em are behind, you know, are in the back. We're not only taro farmers, some of us, but we're traditional gatherers. And, uh, the traditional gatherers are the first to see how the water is. A couple of weeks, I took one of my grandsons to Moana and that's where Waiokamilo which was previously Kamilo. When we were little and in documents, grants, you see Kamilo and Palauhulu I never saw Piinaau, until, you know, I read the, um, public notice. Uh, when we had gone up there, the water and the streambeds were yellow, you know, they're dead. We don't have any native species in the streams anymore, when we were little kids we could catch opaes in the auwai, in the taro patches, we had opae oehaa but now our modern taro farmers see nothing, no oopus, you know, nothing. My family is originally from the Keanae Wailuanui ahupuaa and we practice between the boundaries, between Oopuula and Keaaike that's the Koolau moku and we had the privilege of practicing, you know, between the boundaries and from mountain to, um, ocean. We, um, that's our livelihood, that is our culture, but now everything's dead, you know, Haipuena is dead, you know between Nahiku and, um, Wahinepee you hardly see any water. When the tourists come in they always ask us, oh where's the water? Where's the waterfall that the State of Hawaii, um, advertises. We don't see anything, everything's dead, you know, we worry about leptosperosis, you know because it's so black. A lot of the ponds are black, you know, where we cannot, our children cannot go swimming, you know, um, our culture is so unique and we have been practicing our culture since time in memorial. I can trace my ancestry prior to 1795. My great great grandparents were Alexander Keohakolole and Kaina Keohakolole died in 1903 and she was a hundred and fifteen years old, you know, our ancestors protected this, this most precious ahupuaa and we hope to protect it for the future generations, you know Kanaka maoli and non Kanaka maoli in, in the days before statehood, we didn't know the difference between a Haole, Japanese, Filipino, we were all one. But since Hawaii became a State, you know, then we knew oh you Haole, you Hawaiian, you know, you Pake, you Japanese, in our ahupuaa we did not know the difference we lived together in harmony and right now we, we want to continue to live our lifestyle, what we are accustomed to and not what the State tells us that we must do, you know, it is our aina, our ancestors took good care of it for us and now we want to, you know, pass it over to the future generations, the way it was, we need to restore the waters in our streams so that we can survive. Mahalo.</p>	

NAME:	Lurlyn Scott	TIME:	1:51:09
<p>My name is Lurlyn Scott. Everybody calls me Lynn though, um, I'm not here just speaking for myself, there's two people I really wanted the, uh, the Commission that's not here to really meet and one of them is my mother., Marjorie Wallet, can you stand up Mom. And the other person is Beatrice Kekahuna these should be, uh, names that you all should be familiar with because we are Plaintiffs along with Na Moku Aupuni O Koolau Hui, trying to restore water to East Maui Streams. And there's my Aunty, just walked in the door. Aunty, say hi. And I'm also speaking, um, for my neighbors and residents, um, on Honopou Stream, and a lot of them are back there in the corner, okay, guys, could you stand forward and raise your hand. And I'm also speaking for all the stream users and the pond users that come to Honopou every Summer and use our streams, and I'd also like to warn them that because of the low streamflow this Summer and in any other Summers, you gotta go home and take a bath when you're done swimming because, um, like Aunty said about the black water, um, it's really prevalent in our streams and our lois are two miles below the highways before the last diversion. Honopou Stream is tapped four times, we have water taken out of our one stream four times and all of us below the stream who make use of it, who have the legal right to take the water we're not getting sufficient water we're not getting good water, we all pay our taxes and we get nothing. Um, I tried to write down some notes, we get no notice if there is going to be a flood, I have a picture of a, if you might want that, our only bridge that area, in and out of the valley that gets flooded out and we have no notice, people can't go to work in the morning, it's a big surprise. Um, being that our location is two miles below the highway, are below the diversion, by the time we get our water, it's sad, it's seventy-six degrees getting into the loi, it's about eight-two degrees leaving the loi. We have so much rot and pythium and pit-rot, um, and it's just, it's horrible, we keep trying and trying for the past seven years, we've petitioned, we've gone to hearings, we've done everything that we can, we're doing this because we want the future for our children, we want them to know what was there before and perpetuate that and I don't see why the Commission has to wait seven long years to get something done here, seven years, is a long time. Look at my Mom and my Aunty, how long they've been waiting, since 1988, when we first filed papers and we're still waiting to get clean water just as everybody else deserves that kind of water. Um, I'd like to open the floor if anybody from Honopou would like to come out and say something, you know we've got a few minutes left I know they didn't sign up but, those were the main things that I wanted to get across and, um, I want to thank everybody before us who's spoken because, you know, we all have that problem with our water, and, um, just wanted to let you know that Honopou Stream, this is what we get, three pipe fulls of water and if we don't go and check our pipes everyday, this is what happens and how can a community survive on this kind of water? Mahalo everybody, thanks to everybody for coming.</p>			

NAME:	Pete Sayer	TIME:	1:54:53
<p>Aloha kakou. Um, tonight I came, I'm Peter Sayer. Tonight I came, I, uh, I live in the ahupuaa of Wailuanui. I've always lived on East Maui, and, um, since 1980, and, uh, I also used to subsist through the streams. I'd go gather hihiwai, I go opae, I'd also go fish, um, now I can't do any of that. There's nothing there, and what's happened in twenty years, what's happened? Is the State so stupid? I'm English, I have nothing to do with America, I'm English, and my kanaka friends, hey, we gave it back, we gave it back, now, all I'm asking you, that's the State Water Commission, where is Ken Kawahara? Please, yes, Mr. Kawahara restore the water, it needs to be restored, the livelihood of many people, I grow taro, you know, luckily, um, it's in,</p>			

NAME: Pete Sayer	TIME: 1:54:53
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in my years in Hawaii, I've learned a lot of different things from all my friends. And, uh, kalo growing is only new to me, I've only lived in Wailuanui for four years, but in that four years I've learned so much that we need the water. Why you holding it back? I know why you're holding it back. A&B and EMI, that's why. Because they're stealing, they've been stealing it since 1904. As I said England gave it back to Hawaii, let the State give back the water. Thank you.

NAME: Nameaaea Hoshino	TIME: 1:57:47
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Um, I live in Lahaina, and for us we dealing with the same issues today with our water and our lands. But the problems that we see in Keanae and Wailuanui it's much, uh, much difficult to see those things. The water's not flowing how it used to be and that's the problem. Because they're diverting these waters to Central Maui and I cannot understand why these things are happening to us. I went to Wailuanui, to see my cousin's place, and see the loi patches all cracking because of the water is not getting diverted over there. These things are supposed to be for the people of this place not no where else and I see these problems every single time cause our kalos too is important to us; that's our ancestor. If the water not flowing to those patches for us, it's killing us today. And I tired for see that kind things. Lahaina is the most, like even Wailuanui, Keanae, Hana, even Hana's suffering the same water loss as that. For me, I gotta step up, cause the next generation I gotta educate them because of these things that's going on. And how dare these guys EMI, not coming, that's an insult to all of us, it's a slap in our face. Because I already suffering already and my, in my Island, in my town. There's a saying Kauwa kahiko ea kea o ka aina o ka aina ke alii he kauwa ke kanaka. The land is our alii and we are its servants. If you don't protect these things, our aina and our water, we die as a people. That is what we, gotta, everyone gotta understand. Especially EMI. Mahalo.

NAME: Steven Hookano	TIME: 2:01:21
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Aloha, my name is Stephen Hookano. I live in the ahupuaa of Wailuanui I, uh, my family and I have been farming taro for many generations that you know we in our valley, we all, we all related, we all ohana so when I consider my family, I consider the whole valley of, of Wailuanui and the East side. I going talk about aloha aina. What you see right here, this sign is aloha aina. It is something that we never make up yesterday, today, it was always here. As a people, we used, uh, practice aloha aina. Apparently, EMI and A&B, they think that they the caretakers of this land and they practice aloha aina. I tell that b--- . B---. B--- EMI. Practice aloha aina. And I going tell you why I here today as one kanaka I fighting for haloa it is our culture, it is our religion and I bring him here, stand here, before you guys to know the seriousness of this, of what, uh, the Commission, as far as doing their duties to actually put some enforcement on this cause we have nobody to turn to. We've been waiting too long, seven years too long we've been waiting. And our job as kanakas is to make sure that haloa not GMO, haloa survive forever. And I see that the depletion of water in our streams in Wailuanui I cannot do that, and I always say nothing wrong with the taro, everybody get all, you know clean auwai, this, that, that's, that's b---, we did all that, we know how for grow taro, Wailuanui is a place known to grow taro. Since forever, since haloa itself, we've been growing this, we know how to grow taro. But without adequate amount of water we can no longer do that; practice our culture, our religion, our cultural and actually this is our right to grow, I am Kanaka maoli, I am not Hawaiian, I am not native Hawaiian, I am Kanaka maoli and I find myself in this de facto government, that does

NAME: Steven Hookano	TIME: 2:01:21
<p>not work for us kanakas as far as, uh, perpetuating our rights everyday we gotta fight for rights and it, it seems to me that, um, nobody's enforcing this rights or they have the authority to. So I find myself in a sticky situation where we was going back and forth in the system so I, I just saying, standing here today, wondering why I here. Why am I here talking to you guys? You guys already know the facts and the findings, you guys know that, uh, the water's been depleted on the inside, you know, everybody know that, that's why we here, EMI know that, they the guys who taking the water, you know, they the, they the thieves, brah. So why should we sit down and come to consensus with thieves? They, they don't own the water, it's not their water, nobody own the water that water belong to the aina, that water belong flowing, you know, so I cannot see myself over here today, in front you guys, I've been through this in the Legislature, you know, fighting for our taro, and people, they just, uh, go to deaf ears, you know, they think that this one joke what we talking about, our, our ancestors, our Kupuna Haloa over here, it's, it's, not, it's not one joke cause our job is for make sure that we take of haloa and haloa take care of me and my family, apparently I cannot do that today in Wailuanui. I cannot farm in my traditional loi where my kupuna farm. I had to move all my, all my, um, farming to some place else where had more water. So, today, in Wailuanui I can no longer farm in my kupuna's loi and that's a shame because I not that old and I happy for see young people here today testifying for their rights. Cause in this de facto government we have rights but nobody enforce 'em, you know, it's like holding your breath under water, how long I can hold my breath under water? How long? I cannot hold my breath that long, we dying out here, we dying as kanaka, we dying as people. So, what I, my job's been on this as far as you guys doing anything, I cannot control what you guys do, you guys going do what you guys gotta do. So, just bear in mind that we dying out there, our rights as kanakas, human rights has been violated, been violated today and I cannot stand it no more, I will not cry, I pau cry, long time ago, I cry, so now I stay up and I kue and I stand up and my ku come out sometime but that's good, my ku come out, but that's why we here today to show you people, you guys, you guys don't know nothing about aloha aina and take it at a native Hawaiian, from a Kanaka maoli point of view, we know how for grow taro, give us back our water and that's all I have to say.</p>	

NAME: Lucienne de Naie	TIME: 2:05:54
<p>Mahalo Mr. Blackburn, and, um, members of the Commission staff. Uh, I'd like to ask a little indulgence of my neighbor Steven, here, who's done a lot of research, actually read all the reports and everything. He needs to get back to his land, could I let him speak now and I could just speak later?</p>	

NAME: Steve Slater	TIME: 2:06:19
<p>I would like to just talk about the, you know, there's a lot of people that have been hurt obviously, and who are the beneficiaries of the water that's been taken? I mean what's happening with the water? I really appreciate some feedback, I sure don't know if my research "is seamless" but I did a little bit of time today just looking around there's a very big resource now called scholar.google.com cause google and a lot of other computers search engines get critiqued that they've got mom/pa websites with no substantiation, will, if some of you would like to go to scholar.google.com that's google's way of just putting published documents up and I did a tiny bit of time, I really didn't have enough time. Um, I see something like five thousand,</p>	

NAME:	Steve Slater	TIME:	2:06:19
<p>this is Louisiana figures, but I don't think HC&S is a whole lot different, uh, five thousand pounds per acre, anybody feel free to speak up if I'm wrong, especially you people from HC&S, um, fifteen cents a pound for the sugar without any, you know, that's the finished sugar price without cost of labor and everything else, uh, some subsidies been given federal subsidies, I don't know if A&B is taking advantage of em, but uh, wheat is getting something like a hundred and twenty dollars an acre, corn a hundred and fifteen, sugar, over six hundred an acre, federal subsidies. Um, the, paperwork I saw come through from some other people on this side of the issue today, said that HC&S is paying one-fifth of one cent for per thousand gallons of water, while Maui farmers pay thirty-five cents for the same amount of water. That, I think should be talked about in what it is it's a seventeen thousand five hundred percent discount for what, what do we owe this company that they can get such a discount, a hundred and seventy five times more, a small farmer, now maybe I'm not talking about exactly the issue of, uh, you know, only taro farmers, but we've got other people on the Island there's the you know, people that grow food for their families, have gardens, it's like where does this, where do we stop kowtowing to a corporation and run this like it's a public interest? I mean this is just ridiculous, not only do people pay a hundred and seventy times, seventy five times more for the water, they're the ones that are asked to put up with, uh, you know, reduced flows or when they're asked to, uh, conserve, and all of a sudden, if the, if the, if the corporation wanted to be at all a good citizen, they would voluntarily conserve, just a fraction of what the rest of the public is asked to conserve and that would allow enough water to streamflow. Um, I feel too like a lot of the issues about streams not getting enough flow, we had dengue out in East Maui not that long ago, you tapped the streams, I know the stream I live near Waipio Stream is not under your, it's not being looked at at all it's also a pathetic stream I didn't know we had anything going on there, but, I mean more mosquitos, you dry out the stream, we're looking at more dengue. You're looking at a minus profit, when you take it's four hundred twenty five dollars subsidy on the water by giving HC&S such a break. They're, they're between the federal subsidy, the state's subsidy, the lack of them having to pay any excise tax, um, what are we buying, we're getting more asthma from field burnings, we're getting pollution into the ocean, we're getting, where's the win-win? Who, you know, if somebody was stealing the water and having a great time, I'd say, well, okay, it's a lose-lose situation its been a lose-lose situation for so many years, we have nothing but bureaucrats that sit and shuffle the same kind of paper around and frustrate people to the point of they, you can almost hear there's just total degradation or pending violence. It's ridiculous, couldn't we just grow up a little bit in this State? Thank you.</p>			

NAME:	Lucienne de Naie	TIME:	2:10:50
<p>Thank you, uh, my name is Lucienne de Naie. Uh, I'm here representing, uh, Maui Tomorrow, uh, we are one of the petitioners back seven years ago, everybody talking about and even before that, uh, various members of Maui Tomorrow have been involved in water issues petitioning for more water for various streams for shoots the last twenty years or so, I know a lot of folks in this room, let's just put it that way. Cause we all seen each other at meetings for a long time. I'm also speaking as a resident of Huelo; now, I don't live in the Hanehoi, uh, you know, hydrological unit, whatever you call, I, I live in, uh, Waipionui, but, uh, shoots, you know, I read those reports on Honopou and Hanehoi and I have to say it's really disappointing, you just again and again, you sort of see that, um, our resources and our life is minimized by this kind of reporting, this is just kind of cut and paste, from every other kind of resource and no one goes</p>			

NAME:	Lucienne de Naie	TIME:	2:10:50
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out and puts in the information that has been gathered, you know, at the end it says, oh yah, this is pending the information that will be from the, um, updated Water Commission, well, I'd rather wait and get that information in if we're going to be talking about whether these reports are accurate or not because they're just missing our whole life out where we live. I mean, you know, we all know kind of what's going on, you know, we, we know that, um, we know that USGS has already done the studies, we know that A&B doesn't like the results of those studies that say most of the water is taken most of the time and that if you even put back, you know twenty-five percent it would make a difference but certainly forty percent would be really nice. I went out with USGS and helped, you know, hold instruments and stuff when they were doing their studies back in 2004, 2005 and they worked really hard and they, they really tried to be fair and you know, man you couldn't just say, oh we one inch over there's more hihiwai, no, no, no, we're only looking here, they, they really, you know did a scientific thing, so enough already, let's accept these studies, that this is what we need to do. It's not fair to have one law for a large corporation, and another law for all the rest of us. It just isn't fair and I feel so bad for my neighbors that have lived there generations, I've only lived Huelo, I don't know twenty-three, twenty-four years, but, you know, these kind of assessments, they don't tell the stories, they don't tell about a young man whose family's lived in our valley for four, five generations, he shares his story that, you know, he used to go to his, uh, his tutu loi and this was like in the seventies, sixties, when he'd be planting kalo, and learning, you know, small kid time about the whole family history and everything tears in his eyes, he has young children he can't take them anywhere to do that because there's no water in the, his grandparents still own the land, but there's no water to fill those kalo loi. And when you go up in the mountains, above Hanehoi Stream, this is not mentioned in your assessment, there's acres and acres and acres of terraces of loi that somebody built, that stream had to have some water in it, I, I noticed they referred, uh, um, Mr. Handy and saying, oh, yah, a little bit taro was grown in Hoolawa and Hanehoi and whatever, well no one went to all that work to build all those loi up there to grow a little bit of kalo, so, there's a lot missing, we have beautiful recreation, opportunities in our streams, Hanehoi and Honopou, except now they getting kind of sick with the lack of flow, we had a Girl Scout Camp in Honopou Valley, I mean they didn't camp there because it was nothing there; because it was beautiful swimming places and places to learn about nature, we have an educational and organic, uh, uh, educational center for organic farming in Hana off of Hanehoi Stream. We've got all kinds of things going on that aren't in this cultural, that aren't in this survey and then cultural resources aren't even mentioned, you know, we're rich in cultural resources but it's just like well, no one's ever assessed it so we don't know anything about it. It, it's just a shame to see, you know, after a hundred years of exploitation of the resources that the use by community members is continually minimalized, it's not even mentioned that our whole community depends on water from Hanehoi Stream, we have no public water system. That's the water we get and, and many, many families depend on that water, not even in the report, so please, um, I too would like to see the Commissioners here, uh, I think that, you know, it is worthwhile to hear from these folks, we've really suffered a long time, the watershed partnership as mentioned, they don't include any of us, so don't go on talking about them in the report, they do great jobs but they're not talking to anybody that lives like in the watershed where we live, we really need to realize that this isn't really about water anymore, it's about cheap water and, you know, we deserve to have one law that serves all of us and it should be the law that says our waters are protected for the interest of the people. Thank you.

NAME:	Joe Cairos	TIME:	2:16:48
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Good evening, my name is Joe Cairos. I live up in Kaupakalua that's in the Haiku area. I'm here to testify regarding the, um, the lack of water in our stream, uh that's been going on for at least two to three years now. We have, uh, on our property our cattle ranches, uh, that we owned that, uh, land about sixty years now and the last two to three years the water has been cut off. So what we did is that we notified EMI personnel not to mention the names but, uh, they gave us some excuses that it's beyond explaining what's going on but, uh, the water has come back again but it again was cut off and my neighbor, well where I'm talking about is the fourth stream, the last ford stream toward Makena. I'm talking about the West side of the Island. And this Kaupakalua Stream and this other West Kuiaha Stream are the ones that has been gone dry. When we do have a lot of rain, and it's been going on, we did have, um, at times maybe the seven years, drought, where the water has gone dry for maybe three weeks or a month. But this is very unusual what's been going on and I feel that maybe what happens is that what the Island needs is a balance. We are, I see right now where the green part of the Island is becoming dry and the dry area becoming wet. And that's because it taking the water from our area here. So we need to get, figure out some solution on this, uh, because if we don't complain, everybody thinks everything is okay. So, I just feel that for the residents of Keanae and Hana who has all come out here tonight, we feel the same as they're with their taro and we as ranchers too that we cannot afford, uh, having water from the meters to, uh, raise our land here because we used to use the water there now. So again, we need some kind of balance here. Thank you very much.

NAME:	Hannah Bernard	TIME:	2:19:10
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Aloha kakou. Um, my name is Hannah Bernard. Um, and I am here to testify both as a resident of this ahupuaa and as the President of Hawaii Wildlife Fund. Um, Mr. Kawahara, I really appreciate meeting you just the other night, um at the Keoneoio Advisory Group meeting and um, Mahalo for being here again tonight and um, I think you're getting a, if you hadn't already known this about Maui, the, the feel and the flavor for how strong Maui is, how determined Maui is to hold onto its way of life, its cultural roots, and quality of life. And, and I think that, that's key here. Um, not only is this issue a violation of the Public Trust Doctrine, but my understanding of the original, um, lease with A&B and the Kingdom in 1876 was that it was subject to the condition that there be no injury to the water rights of downstream landowners and Keanae, Wailuanui or other parts of East Maui. And what we heard and what we've heard for a long time is that there clearly are injuries. Is that right? Um, then also in our State Constitution, I believe it's Article XII, Section VII, our own State Constitution establishes that the State, um, is, has a duty to protect those rights, traditionally and customarily, exercise for cultural subsistence and religious purposes including those who rely on free flowing streams to gather food. Not only what Jocelyn and Uncle Charley, um, Kahu Charley Maxwell said earlier about the way that this, the loss of our stream water is has cut off the fish. It's killing the fish, it's killing the ability for the communities to gather the fish, the oopu, um, the opae and the hihiwai, but it's killing our nearshore waters. Billions of tons of biomass between the nearsh--- the animals the oopu and the opae the animals that are migrating up and down the stream and have part of their life cycle in the nearshore waters to the hihiwai whose eggs, billions of tons of biomass has been disconnected from our nearshore waters so there is absolutely truth in this statement that the loss of the streams is killing our fisheries. It's killinig our nearshore fish and this is completely unsustainable. And with the loss of, of cheap oil with the loss of our airlines,

NAME:	Hannah Bernard	TIME:	2:19:10
<p>um, never has it been more apparent that we need to live sustainably and we on Maui, I think, um, very clearly you've heard tonight want to live sustainably, so I encourage and support and, um, and implore you to do the right thing to give back the water to the streams, please. Mahalo.</p>			

NAME:	Richard Fairclo	TIME:	2:22:30
<p>Richard Fairclo, um, I was involved in water law for about thirty years in another State and I think it's, I'm used to talking water rights, and I know that you are too. And I'm really talking to staff tonight. The, it seems to me that once all the adjudications are complete, all the quantifications are complete, there's absolutely no question that taro growers on these streams are going to have a superior water right. There's no question that a hundred and a gatherer is going to have a superior water right. There's no question that some fishing is going to have a superior water right. And what I understand is that you have an opportunity to give the superior water right a, what is due, it may be an interim thing, but it really is an opportunity for you to do it. In other States, when they get an, and this State, when you get the quantification done, any one of these people with a superior water right makes a call to the, to somebody in the County and say, hey, we're not getting our water, shut off the inferior water rights. And they get it done and that's the right thing to have happen and you have an opportunity to do it. The reason that I am talking to you, the staff members, is because I know that in other water resource departments and Commission, who does the work, I know it's you the staff and I, you know, implore you, the next time you're, you and talk to your people back at the offices, next time you're taking a coffee, next time you're not working late, it needs to get done.</p>			

NAME:	Terry Akuna	TIME:	2:24:24
<p>My name Terry Akuna from Wailuanui. Uh, fourth generation, kalo farmer, my son is fifth generation kalo farmer. Akuna, to look above and beyond, that's what it means, bruddah. My grandson going be sixth generation, yah, you know I hear all you guys talking, eh, everybody talking, these guys stealing this, you guys doing that, yah, you know why they doing this eh, where the cops? If I pound this table right now and start acting up, cops going come. You know what I'm saying? Me, I warrior, go ask all my friends, warrior, I warrior of Honomanu, no more the police that's why. The police is an entity of the State. The State back these guys up, you guys listen to me now, without the cops, eh, I arm them, promise. The only reason they get power, eh, because they bring the pistolo That's why you guys get power, cause they bring the cops, you guys gotta listen to me, now, they break choke rules already, one hundred four years, hundred twenty years, hundred fifty years, they give DLNR, eh, where DLNR? Where Randy Awo? Uh, where Dexter Wong? That's the chief of police, the enforcer, of all the laws that has been broken. Where he stay? He no stay. Where the man? And when I first came here, eh, bruddah, you tell me you one entity, you Water Commission eh, you guys when hear what he said when he first when talk? We Water Commission but we no need go see DLNR. How the, how the f--- the cops supposed to know what, who breaking the law? If you guys no tell them they breaking the law, how the cop going know? That's the truth right here, bruddahs because the police not doing their job, the police not policing them. But when bruddah make ?? down Honomanu eh, I block the road, one day, they say, fifteen cops, fifteen DLNR and four police for arm Terry Akuna, I make warrior by myself, brah, block the road. Fifteen, twenty cops show up brah, for me, me, I just sitting on my truck cruising, eh, brah. Oh, brah I stay here. Throw all</p>			

NAME: Terry Akuna	TIME: 2:24:24
<p>your guys guns down, brah, I scrap you one on one, one at a time. How tough you guys? You know what I saying, that's what I'm saying. All these laws that these people breaking, eh, is not being enforced by the law. You as one Commission, need to get the cops out here, and make them go up in the mountain, tell them come see me, I hunter, I hahai I fisherman, kalawai, I kalo farmer, I am generation, I am roots, bruddah, I take those cops up there and I show you all the diversions. When you see pvc pipe up in the mountain, that's not 1800, bruddah, that's not early 1900s, this is 1960, 1970, pvc pipes. Where the police? Police should be up there broking all these pipes, if I go up there tomorrow and start busting all these pipes, eh, you know who bruddah man going call, eh, Terry stay up there on the mountain acting up. Terry on the mountain acting up. That's what they going do, I guarantee you, me I act up in Honomanu, I arm everybody. Dexter, you ask them, Randy, Bush, he know, they call the police on Terry. Cause you know why, they scared, eh, they scared brah, the scared the Hawaiian, that's what this guy, they scared the Hawaiians, brah, the Hawaiian is the power, here, not the, not the EMI, Alexander & Baldwin, like my cousin them say, yah, they when steal everything that they have today and they still flourishing all the water that they stealing. Why? Back to the cops again you guys, cops not doing their job. Where the cop? I start pounding this, I start broking the window, I guarantee somebody going call the cop, Terry acting up. Same thing if I go in the mountain, and I can do that, I can broke all their pipes and they, they not even going know that's me, but I no do that. I can broke all their pipes and hemo all the water, eh, get terrorists up in the mountains, they going look at me as one terrorist, funny, eh, but that's how they going look at you, brah, cause they look at me when I arm everybody down Honomanu, same reason, eh, no more water, I like the fish come back, all these guys testify no more water, eh, no more fish, me forty-two years, I forty-nine, forty-two years I live Keanae, Wailuanui, I see fish like this, get fisherman moi, anae, schools, akule, oio, kala, choke fish, brah, today, you lucky if you see this kind. Unregulated laws not being regulated by the cops, these guys aren't being regulated by the cops, because, cops is part of the State, the State back them up. The State tell them, look the other way, no go over there, if Terry going broke the pipes, though, you go over there and you go arrest him. You guys all know that. Me, I was waiting for talk, brah, I like give you guys the gas, brah, you know what I mean? Randy Awo was here, and Dexter Wong, Chief of Police, Second-in-charge, I give 'em the gas right now. I make them kukai in their pants, guarantee, they no can think, brah, I already saying conjunction with these guys about Honomanu, they no can think how we act, they tell we renegade, we vigilantes, no we not, we Hawaiian, brah, standing up for what we believe in, you know what I'm saying? I go, I go meeting with the County, the Mayor's Office, like that, Randy he tell this and that, blah, blah, blah, we not going deal with this kind guys because they radical. Today, they going make meeting, English, Mele Carroll, all the head of the Departments, I arming them, for make them do their job you guys. I arm them that's why they no dig me. Cause I forcing them to do their job. You guys, Commissioners or whatever you guys is, the Commission on top the Commission on top the Commission, that's not one joke bruddah, you guys gotta arm the cops. You guys gotta tell the cops go in that mountain and go look, cause if you no look, you don't know. If you guys no tell them, they don't know. That's what when piss me off first thing you when tell, brah, we in the entity of DLNR, twelve departments, whatever, but we know need tell them what we doing, we no need report to them, you need to report to the law, that's why they the f--- law. Tell them what's going on.</p>	

NAME: Keoni Hookano

TIME: 2:31:43

I come from Wailuanui, Keanae taro farmer. I just like know if you thirsty? You like one glass water? Cause I know the land is thirsty. And it needs water. If you no like wait 'til the thing come dry, like a desert, you know, it's, uh, pretty serious, serious enough for us to be here all this time. We gotta make poi, we get party this weekend, this is what we do for a living, this is what we've been doing for a living, and when they came we never have gold, we never had diamonds, we never had gems, but we had water, and we had land and to them that amounted as much as the gold that they stored in Africa and everywhere else. They just went around the world, scoop everything that they could and hope that, uh, we would just, uh, bow down. Over hundred years, our kupunas and, and from the beginning when they first came, and really nothing has changed. Uncle Ed, Auntie Awapuhi, Auntie Helen Nakanelua and many more before that, and how many generations going take? Um, you guys more better I feel sorry for you guys that the Commissioners making all you guys sit in here and they not even here. Shame. Shame. That's the kind boss you guys like? Huh? Make you listen to everything people got to say? And what, they passing the buck to you guys. You know, what I mean, you guys not to blame on top of it. You know what I mean, you guys not to blame. But who started 'em from before, and it's carrying on and carrying on. All of you who sitting in those seats, from EMI to A&B and everybody else in between, they passing the buck, that's all they doing. And I hope you guys, um, next time, come out and see, take a drive out there, you going see how many dry river beds. Come from Wahinepee, get one bruddah in there in Wahinepee, he live there by himself, pretty much, trying to hold it down over there. Ancestral roots connection and all that so not much to tell you guys, you guys heard enough, but for me, shame, for you guys, I feel sorry, I feel sorry for EMI, and, uh, water guys and all you guys, that your bosses, the people who really going make the decisions, not here, and you guys, if you are taking notes, going go back and, uh, what is the solution? Simple, just give back what you guys took. Wasn't you guys, but you guys, you understand? Cause you guys in the seats that was in the seats it's just carrying on and carrying on and carrying on. How many generations? Get about five, six generations in here, right now. That's how much already it's been going on. You know, what I mean? And if you lived where we lived, then if you did what we did, you'd be sitting here, I wouldn't be sitting there. I'd be sitting here, too. I come from a long line of taro farmers. And I need my son, I need my children to understand that this is what we do, it's our main staple, you know what I mean? It's our main root, and on top of kalo being our main staple, the water, is the main thing of all. So, like my cousin Steven told you, we dying, you know all the huli, na keiki o ke kalo. I am a children of that, and my children is children of that and every Hawaiian is a child of that. We dying. You guys no see it? If I could I would tell you in Hawaiian. But that's how much we dying. It wasn't put in our family, it was taken out, I mean I can go on and on about everything, but this is about water, yah, that's why I asked if you thirsty, cause I am, I've been waiting for my turn to talk, as soon as I'm pau I'm going to go drink a glass of water, yah, so I hope you understand what that means, yah, cause the land is thirsty. Real thirsty, come drive, you going see the dry river beds. That should tell you enough. One dry river bed, then what is that then? It's nothing without that wai. We need that wai. EMI, we need that wai. I grow taro for my family, that's what I do for a living. I need the water, if not, I'm a dry taro farmer. You understand? When you come see, you going see cause right now my patch is dry. So I'm a dry taro farmer, I'm not farming loi. I supposed to have loi, I supposed to have the water. It has been in our family and in our generations from Hawaiians from Haloa to kalo and everyone after that, that's why we are children of kalo. You gotta respect that, you gotta honor that, that is what kept us here. The

NAME:	Keoni Hookano	TIME:	2:31:43
water, the taro, the two go together as one. You cannot split ‘em, you guys went split ‘em, you split us. Mahalo.			

NAME:	Lanakila Librando	TIME:	2:37:18
<p>Uh, Lanakila Librando, uh, resident Wailuanui Valley. Um, here, for talk about the water, everybody else, ah, we need ‘em. I not saying anything they not, you know. Right here in the book, you know, four thousand years already, right here in the book. In the years of drought, it says, you know, that’s today. That’s us, you know, we taking the, we taking the gas. You know, we the ones suffering. You guys might, you guys might think its funny, whatever, diverting water taking the water, f--- helping you guys people out here, but what about us, you know. Us, as Hawaiians, you know, living, you guys cannot take our culture away. This is, this is for the people, you know. Um, I don’t know, you guys gotta help us out, you know, you guys ask for help, what about us? You know, we need the help, where the guys that actually supposed to be here, actually listening anyways? You know, they not helping us, you guys not helping. Like Hawaiians say, look all the faces behind me, look at their faces, you guys see ‘em? No look at me, look at them, see ‘em? They sad, brah, kay? We need the water back. You guys know where you guys taking ‘em from. We need ‘em back, kay? You guys get plenty, what eighty percent? Hundred percent? What about the farmers, what about the, what about the people, you know? What about the generations coming up? Now four thousand years, right there in the book, you guys know how read? Take a look at all the signs back there, exactly what I trying for say. You know, we need more action, you know. We need more help. We need you guys, what? I not saying we no need you guys. But you guys gotta do your guys part, too, you know. You guys gotta do your guys part for help us. Get ‘em? I no like say in one ear out the other, but I know somewhere in there you guys gotta f---- you guys, you guys understand, eh? You guys understand? Okay. Main thing. That’s all I gotta say. Give the water back, eh?</p>			

NAME:	Kaniloa Kamaunu	TIME:	2:40:37
<p>Uh, my name is Kaniloa Kamaunu. Um, I’m actullay from Waihee side, I’ve testified when we were doing this with Wailuku Ag and Wailuku Sugar or whatever their name is today. Um, but, uh, you know, it’s the same thing, you know the water belongs where it belongs. We talking about, you know, the Counties were talking about sustainability, as a State, we look at Aloha Airlines, devastating what happened with them, to the people, sustainability, gone. Molokai, Molokai Ranch closes down, sustainability is challenged again. So what happens to these people? Now, we look at what we have in here, we having a snowball effect, of other things happening. Now we also look at, we look at Alexander & Baldwin, and we look at Wailuku Agribusiness, they’re changing, they’re diversifying, they changing from being crop growers out to now becoming developers so they taking that land and changing it and why? Because they have to process themselves out. Because they know sooner or later, the sustainability that they’re going after, which is this, is no longer, is going to shrink. It’s shrinking. We look at it, it’s shrinking. Businesses are collapsing around us, eating us. We look at the tourism, we say tourism, that’s shrinking, I know, I work for the hotel, hotel capacity is about down to forty percent, when they actually should be up by now. So what is sustainability water? We need the water, if the water continues to flow, we can have other things. We can go back to our culture rights to be able to do the cultural things, such as live off the land. Those that provide us with</p>			

NAME:	Kaniloa Kamaunu	TIME:	2:40:37
<p>the taro, the fishing, all these things can all be sustainable. They don't need this to continue. All they need is the water. If I'm the one that owns all the water, and you're a thirsty man, your money ain't nothing to me. When it comes down to, I mean, we looking at bigger and bigger harbors, for who? For what? Cause if all those people leave, and all those things disappear, we're stuck, we like the kalo, we get roots over here. This and those that bring this here, are foreigners. And what do foreigners do, they come for awhile, they stay, they invest and they leave. You guys going leave, and they going be just like the other guys, eh, sorry, we gotta go. And we stuck with the damages. Right now, according to all the studies they've done already, USGS and whatever, it's to the point where we are losing, we're, we're at the point where we're, we cant' turn around pretty soon. We need to turn around. We need to look to the past for future. Because the future is there right now. I mean, if we are to look at ourselves containing ourselves here on this Island, if the harbors close up, because the fuel is too expensive, now and we don't get stuff from other places, we rely on, we rely on other people to sustain us. When in actuality that's a bad idea. Because if they move out, we die. But if we take control of what is ours, take it back, and let everybody have, I don't think you guys understand, Hawaiian culture is everybody have. I not going have more than you, I not going be envious of you, bruddah, you like water, you get water, feed your family do what you gotta do. But when I need you, you come help me. Right, keiki o ka aina ika pono. Make everything right. We cannot, I mean, I know they bring jobs, but are those things sustainable? As we look at our society today, are these things sustainable? Not really, it's sustainable for a few, that live on the top, but for those on the bottom, cause we can see Molokai, Aloha Airlines, businesses pulling out. Who took gas? The guys on the bottom who kept that business going. And this is what we looking at. With the water going back to where it belongs, it gives us sustainability to live on our own to take care of what is ours to always have. I don't have County water, my water comes directly from the stream. It fuels my house, I have taro, and we live up where the water that's there. And you know what, everybody should do that. Those that have the opportunity, like my brothers and sisters over here, should be allowed to have that opportunity. Then the County doesn't have to worry, right? As long as you guys take care of what is yours, make sure you no abuse, take care of what you have, should be alright. But if we continue to let them monitor for us as we can see, you can just look at the Island itself, sooner or later the tourists ain't going come, that's going be gone. And what else business do we look forward to? Thank you.</p>			

NAME:	Benjamin Taua Pahukoa	TIME:	2:47:05
<p>Aloha ahiahi kakou. My name is Benjamin Tau a Pahukoa. I came here this evening to show you this, kay? It's been too long. Very long, okay? For our people of the Hamakualoa, the Koolaupoko, and the Koolauloa, this is where, this is, the heart of the water, kay? What is suffering? Too long. Please, let the water flow, 'kay? I know the State, I know Alexander & Baldwin, I know EMI, I know my ancestors, my kupuna, who we are, but what we supposed to do? The things that we need to do is ask you, the State. The County, Alexander & Baldwin, East Maui Irrigation, 'kay? What have you done for us? Besides, taking water from the stream, no let the stream flow, 'kay? The Hamakualoa, is from here, all the way to Papaea, 'kay? You take the u-turn, you end up the Koolaupoko, Koolaupoko to Keanae, Koolaupoko, Keanae, Koolauloa, did you know this? Besides your maps, that you show me today, 'kay? Honopou, the other name that get over there I neva see 'em. Wailuanui, Waiakamilo, Piinaau, we know these names, you guys only know, you guys need our water, we need our water. We needed you</p>			

NAME:	Benjamin Taua Pahukoa	TIME:	2:47:05
<p>folks to fulfill all of the reasons or things that we are here for today. From my understanding, and the things that we have done, it's all there. With the help of Native Hawaiian Legal Corp. and our kupuna, many hours, have been put into this. I am a member of Na Moku Aupuni O Koolau Hui; do you know who we are? Do you? From this case, I ask you, I give you ten seconds, okay, now I know who I talking to. You see that sign up there? Where is our monitor? We take a lot of time, you guys give us one night. Time and effort, to build a case to for let go water. People die already, case still going, they tell talk seven year, brah I know from a kupuna from long time ago was still yet fighting. Time, effort, money, dollars, everything, all in-kind service, in, um, from all of us here, why you guys give us one night? I know that you guys when give us one person, the, um, couple months ago, maybe a year, he came to Keanae, DLNR, or Water Commission, we gave him one job, he became our monitor, tonight he not here. So this all breaks down to trust. Like you guys tell oh, everything in trust. No more trust. Aole on the trust. From my understanding, you fired. On behalf of us kanaka, State of Hawaii fired. So what you going do, stay over here, look us, plenty of us when talk, we all still gotta go home eat everything like that. Not only tonight, every night, and that's how come, come down instream flow, for the ocean, for our aina, for haloa, haloa naka. This is a lot of time put involved, many of you among us know, yah, plenty time, and what we get five minutes. I the last person for talk, when you going put up your one minute? That no mean nothing. But I hope, oh, and I pray, that you guys understand this simple word, took me one minute for write this. With the help of my mother, you know what she went do? She check off the two, you see this? She cannot be here tonight because she has another meeting, I'm here on behalf of my mother, my father is watching, over us now. And also many more others that have went before us, our kupuna, if I was to tell you who I am, you be shocked. And maybe in the times of old you be dead. Mahalo.</p>			

NAME:	Glenn Coryell	TIME:	2:54:07
<p>Wow, this seat is all warm, hot. Um, I came here today, to, uh, to speak just for a little bit. I was born and raised over here, I only have a little bit of Hawaiian blood left, but I still got some in me. And my heart is, uh, uh, in pain, eh, you know, because, uh, I was born in Hilo and I was raised on Oahu and I saw the destruction that, that took away Oahu and everyday when I watched the morning news, I see how it just gets worse and worse. And now these same entities that were over there, are over here and they are going to do the same thing to us that they did over on Oahu and everybody knows that's true. And the only way we can get away from this, is if we all get together and stop it. Personally, I believe in the Hawaiian nation, I believe in the Hawaiian people, and I believe in Hawaiian tradition. And I believe that we can do two things that will stop this destruction of our aina. The first thing, is, is that, and it's kind of hard to do because most people find it not so fun because there's not very many good, uh, uh, good people in, uh, politics, stinks, you know. But we gotta learn to vote. We gotta learn to vote, because if you guys band together, you guys can kick out the people that you don't like, and put in good people that will make the rules change for us. But at the same time, you gotta make the Hawaiian nation happen. You cannot make it one way, you gotta make it both ways. We gotta attack 'em now, and we have to go for the future and the future for Hawaiian people is a Hawaiian nation run by Hawaiians and we take our land back and we never sell the land. The land is not for sale. That was the big mistake that we made. And I know, I don't know how many of you walked EMI, I know many of the brothers back here walked all over EMI, the trail and all the stuff and everything, and, uh, you know, today, that would never happen, it's old, it's</p>			

NAME:	Glenn Coryell	TIME:	2:54:07
<p>all beat up, it's run down, it's, and it should be destroyed, and it, we know we've lost all of our fishing because the streams don't go to the ocean anymore. And so there's no way that the, the mother fish can make babies and so what are we down to now in our fisheries, fifteen percent. Something like that, we're almost finished. So, you know, I just wanted to, uh, say a few things here, uh, we need to, uh, we need to stop this, the, the developers now, right now, we don't need to wait until tomorrow, you guys gotta start working on this thing right away, you know, uh, when we go, when I go over to Lahaina, when I go into, uh, Makena, and especially Makena makes me sick, I mean, I see the water running down the streets in the morning and, uh, you know, I know what the other brothers were talking about when the pvc pipes, it's all over the place there, it's terrible, you know, and, uh, the greed that has come into our, our Island, you know, it's not like how it used to be when people didn't, uh, lock their houses, when people didn't lock their cars, when everybody trusted everybody, I, I know that way of life and it, and it's very hard now to see it here, you know, and we need to get people into government somehow to do to stop this thing before it gets way way out of hand because it's already here and we have to stop the EMI from and we have to restore the streams and we have to make it so that people won't be so angry because there's so many people here that are still angry, you know, and, uh, anger kills. And so, uh, you know, that's just about all I can say here today, I know you guys have heard everything, but I'm fifty-eight years old and I feel like I, uh, I really let down my watch, you know, I, uh, I feel like, uh, you know, I didn't do the right things when I was young, so I really, uh, hope and pray that the young people out there and us old guys while we still got a chance can make it happen here. But we need to fight for Hawaii, we need to fight for the rights of Hawaiian people, we need to start a Hawaiian nation and we need most of all to respect our host culture, the culture that was here a long time ago and was uh, the ones that opened, uh, the doors and let us haoles in here, you know, and, uh, and then, uh, you know, loved us and showed us what real Aloha was and now, you know, they just got stomped on and that little bit of Hawaiian in me is just in pain so I know what the brothers that have a lot of blood and a lot of energy in their lives and their people and the kalo farmers are like because they feel terrible now. And so, you know, I don't know who guys are really but I hope that you can look into your hearts and, uh, and change this thing around because, uh, it's evil and it's bad and it's not right. Thank you.</p>			

NAME:	Summer Starr	TIME:	3:00:34
<p>Thank you. So, I want to thank you guys for sitting here in front of us and, uh, everybody else who came. Um, I know it's not an easy place to be and I know somebody already touched on it and I apologize, I'm so sorry you have to be the ones taking the brunt of this, that's unfortunate, I wish that the people that were truly responsible were here to hear these people and I know that they wish that those people were here as well. With that said, I did not originally come here to testify, um, I'm not a mahiai myself, so I kind of just wanted to come and listen to everybody else's manao, cause I know that they have a lot to say and, and I wanted to hear what everybody feels in their different ways. But I was moved and uh, here I am. I have a degree from University of Hawaii in protecting Hawaii's environment so I feel as though I'm authorized to say that our ecosystem is threatened, you know, it's beautiful that people have come out to speak about the culture and, and the cultural implications of water and kalo and haloa, um, I'm here to speak a little bit about the ecological implications and the global implications of water. Um, for someone who is extremely interested in international politics, water is such a contentious issue</p>			

NAME:	Summer Starr	TIME:	3:00:34
<p>and it is no surprise that people are out here in full force absolutely outraged, absolutely outraged, at what's happening. It's a blessing that water hasn't been privatized, it's a blessing that rainwater hasn't been privatized like it was in Honduras and people died saving their water. It, it frightens me that that would be a next step, um, you know, I, too am from Maui I have nowhere else to go if my water dries up, I have nowhere else to go, my family has nowhere else to go, this is where we're from. Um, I've done research on Rappa Nui, no running water at all they import their water from Chile, I've stayed in the Canary Islands, no running water, they import their water from Spain. Their, their Canary Islands is a territory of Spain, Rappa Nui's a territory of Chile. I don't want to see us importing water from the Colorado River that's getting drained, you know, this is absolutely absurd. We live in a paradise, we live in a utopia, there's no reason we have to be squabbling over water. If I may say, water will polarize us. Let's not be polarized. Look at all these people coming here together, look at you guys coming to hear everybody's story. Even everybody sitting in the back, you know, I mean, here we are tonight together but out on the streets everybody's talking story, gossiping water is the key element to life, we can live without oil, we can easily live without oil, we cannot live without water, it's absolutely impossible. This issue is going to polarize us, it's going to rip our communities apart. It's not about labor versus mahiai. This issue isn't Kanaka maoli versus haole. This issue is about giving us the water that sustains life on this planet. Earth wouldn't be what it is without H₂O, it's impossible. Of course people are going to be enraged because of this. Please, whether it's the Commission, whether it's the companies who have the water currently, please don't tear our communities apart. This is not what we need right now. This is so not what we need right now. We don't want to be polarized. Thank you.</p>			

NAME:	Johanna Kamaunu	TIME:	3:04:58
<p>Aloha. I'm Johanna Kamaunu. I'm from Waihee Valley. And I'm here tonight to add my testimony or add my names, my name to the testimony of those who have been in favor of putting the water back into the streams. I pretty much support everything that's been said today, tonight. There's only two things I'd like to leave with you. First one is, the phrase, not in my lifetime. Some people said Kahoolawe would never return and they said not in my lifetime. And the way the water's been diverted out of the streams, people came to believe that that water wouldn't come back in our lifetime. But I think they're wrong. I think it will come back in our lifetime and I think we're part of that movement for it to come back in our lifetime. And we do that by testifying. Like my great-grandmother who signed the petition when she was fourteen years old, the Kue petition she started that return. I cannot leave tonight without adding my name to those who are in support of the water back into our streams. There's so many good reasons to and I'd like to encourage you to work with us. I don't mean this as a threat, but you know, right now everybody's been very cordial and this is cordial because we're saying we want to do this. We're talking with you now. In reality, some even said we don't need to do that. They could just take the law into their own hands, but why? We want to try and work at it. In our lifetime I believe that will happen and I hope you will work with us towards that end. And the last thing I'd like to leave with you is, the phrase, not for money. I don't do this for money. I see no money involved in water being put back in the stream. I see it for life. I see it as a necessity for living. I see it as an enjoyment of our privileges and rights as we live on this land. I'm glad to have been able to live here to have this time to be here. So those are the two things I'd like you to think about. Not in my lifetime is not a phrase I would like to use anymore. In</p>			

NAME:	Johanna Kamaunu	TIME:	3:04:58
<p>my lifetime is what I'd like to see. And the second one is, I don't do it for money. Not for money. I don't think any of the Hawaiians here today, anyone who is asking for water in the stream, is really doing it for money, just for money. Thank you.</p>			

NAME:	Kunihi Boeche	TIME:	3:09:08
<p>Aloha. My name is Kunihi Boeche, I'm the grandson of Uncle Harry Kunihi Mitchell and, uh, I live right where Hana Highway and Waiokamilo intersect right there. And, uh, my family has lived there for three generations. My mom is here, over there by the door, and uh, my grandfather, so we live right there at the Uncle Harry's fruit stand and, uh, I was late today cause, uh, I was closing up our house we're remodeling cause, um, the mosquitos was just unreal right now and there's just so much because of the, there's no flow of Waiokamilo and it just so happens where we live the, the Waiakomilo branches off, and on the Hana Highway you'll see two bridges there and both is Waiakomilo and one goes down Wailua and one continues makai side and our side of the river is, is just the water is black, there's no flow whatsoever and the mosquitos is just unreal, like tonight my baby was crying and I asked my wife, you know, how come she's crying, you know, I thought she just woke up or something, but she was just scratching and scratching cause the mosquitos, yah, and so I'm working to, uh, you know, seal up the house cause the mosquitos are so bad. But, um, also I had to take my, uh, my dog to the vet, this was a couple months ago and I still have the vet bill, but, um my dog had a skin disease from drinking the water from Waiokamilo. And, he said that this used to happen, you know, a few years ago with the kids that would drink from water fountains that were dirty and he said it's gotta be from the black water in the river and, uh, my dog had a skin disease and I had to, you know shampoo 'em every night to get the skin disease off and just today, just so happens today my girl asked if they could go swim in the river, you know, I was like, oh, no, baby you cannot swim in the river cause the water is dirty, you know, it's black and I don't want them to get a skin disease, you know, from swimming in the river right there. But if you guys ever like, like come Maui, we right there at Uncle Harry's fruit stand, you know, you're welcome to come and, you know, look at the river, you now, had some rain, so I kinda cleaned it up a little but it's still all foggy and now all the mosquitos are coming up, you know, but, um, I just, you know, wanted to say that, you know, we need, you know, the water to be released, you know, we need the river to be flowing because right now there's just no life in that river, you know, whatsoever. And, you know, for my children they like to, you know do cultural things, they like to go, um, poke prawns, and, you know, go in the river and gather and stuff, but I mean it's just sad because there's nothing in the river to gather anymore, you know, there's no more oopu, the opae, you know, it's hard to find. All the opae, if you want to find the opae, it's all in the EMI ditches, you know, and it's all washed down to the reservoirs and there's just no opae. And, you know, even the hihiwai and all of the, the life in the river is just, just gonna be extinct, you know, lucky we still get trickles coming down, you know, but that's where I live right there, so you guys are, you know, welcome to come by, my name is Kunihi Boeche and my mom and I and our family we live there on the hui right there at Uncle Harry's fruit stand and uh, that's all I wanted to say and I thank you for your time.</p>			

NAME:	Amanda Martin	TIME:	3:13:38
<p>Aloha, my name is Amanda Martin this is my brother, Bush Martin, first of all, Mahalo staff for</p>			

NAME: Amanda Martin	TIME: 3:13:38
<p>being here, Tom, Mahalo for doing this for us. You know, I'm, first of all, I'm an Executive Assistant at the Maui County Council, so I know what it is to, for you guys to be like on the other side, you know, a staff person, but what shocks me is although I know our governments are different, here in Maui County we would not have a meeting if the Commission members are not here. Our committee members don't sit at home while they send staff. Our members and our staff come, and that's why I'm here, so as you as staff persons, if you take your jobs seriously, like I do, I hope you're gonna take back our thoughts, our feelings, our emotions, everything back to your Commission members. Some of your members going see my name on there and they going be shocked that I, here testifying, you know, on behalf of our farmers. In my job, you know, we try to find balance. Just like Mr. Joe Cairos said, balance. However, it has not been balanced. You know, I did some major soul searching, deep, deep heart, into my heart and soul and, you know what? I love my job and Tom knows I do one good job and I help our community but I'm Hawaiian first, so I'm asking you to please go back to your Commissioners and take our message back. My family comes from Keanae specifically Wailuanui, my brother is a East Maui taro farmer and he is continuing the tradition that my grandfather, our great-grandfathers and all our family before that have started. As a child we spend plenty time with grandpa at the taro patch. Choke water, plenty water flowing, nice, beautiful, we had plenty taro, now, see my grandpa and my grandma actually pound taro and make poi. Now we have a little easier way, but we had all of that tradition and culture instilled in us. My grandmother would take the, the coconut and make haupia, she's very famous for that, so we were there while all of this was happening. Each year, less and less water; each time I visit Keanae when I have the chance, less and less water. You know, I watched my brother and all he's doing, and all what he's, and what our grandparents have left for us, shame. It's terrible. We the people of East Maui, our taro farmers, our organic farmers, our ranchers that have come out, we deserve and we demand that our water be returned to our streams. You know, the taro farmers, the taro farmers they do a lot more than what we've heard tonight. I hear all the time the kids that come and visit me at the Council, oh, Uncle Bush, that's your brother? It's because he opened his heart, he opened his patch, he opened everything to them. He teach them, they're providing education, so they do a lot more than what they get credit for. So, again, we deserve and we demand that this water be returned to us. Mahalo.</p>	

NAME: Bush Martin	TIME: 3:17:07
<p>My name is Bush, I'm a taro farmer at Wailuanui. I need water and I like know how do the EMI workers sleep at night. Thank you.</p>	

NAME: Daniel Grantham	TIME: 3:18:22
<p>Thanks, Tom, my name is Dan Grantham. Uh, every time I think it's getting late and I go to leave and I hear somebody else giving great, great testimony it's really wonderful to hear, um, it, it reminds me though of stuff, meetings I videotaped ten years ago and Keanae and Haiku on water issues, uh, that time it was David Craddick, you know, the Water Department, and same stories, same people, only now, they're a whole lot smarter, you know, they know so much more, uh, you know, they, they, they're a wonderful resource if you can make use of what they're saying. Uh, it, uh, it's saddens me that we're starting to see, uh, this as a conflict between people because I don't think that's what this is about. I think that when you have a system that's gone</p>	

NAME:	Daniel Grantham	TIME:	3:18:22
<p>on for so long and you have a corporation or more than one corporation, they forget that it wasn't always this way and it just seems right to just keep doing what you're doing because, hey, you're making money, you're employing people, you're it's the system, you've got a job, but we forget that there was a system before that, that employed people, gave people a life, uh, more people than are employed by the corporations now who lived a good life, a healthy life, supported themselves, they had a, you know, environment that, that worked, there was, there was the life in the land that they were part of, and we need to move I think back to that if we're gonna survive as a world because you can't just keep putting fertilizer into the land and then watch it blow away. You can't just keep taking and taking and taking and the land, expect the land and the life and the ocean to keep giving and giving and giving. And the, the farmers the people who come up here and speak, they understand that it's a back and forth process. That you, um, creation gives, but you gotta give back too, you gotta take care of it. A corporation we treat it as a person by law but a corporation has no heart, it has no soul, and it has no understanding beyond how can we make the most money? They're, if we're, if we're lucky, the people in corporation will remember that there is something higher than making money, there is something higher than having a good stock price. There is having a good life, there's having something to pass onto your children. And, I hope that we can move away from conflict between people and understand that this is really a conflict between the eternal idea of living as part of nature and the really recent idea that you can just keep taking and taking and nature is dumb, it's blind, it's just gonna keep giving because we now know, we're now seeing, you know, the world is, is changing right in our lifetime, changing, going through changes that, uh would've taken millennia before. Time is running out, you know, this is, this is our time and I'd like to thank the people who brought their wisdom to point out where the hurt is because that's where the time that's always the indicator, you know, that's where the pain is, that's where something needs to change. So, let, the, thanks again for speaking and sharing your wisdom and to the people who sometimes caught a lot of, uh, flak tonight, I'd like to, you know, say, it's also possible to see this as an opportunity to do so something creative cause I know , I know you guys, I mean you're not bad guys, you, you, you, it's just the system and the system is killing, the system is killing us, the system is killing the earth and we only have a little bit of time to change, so please, join us and help us change. Thank you.</p>			

NAME:	Jesse Nakooka	TIME:	3:24:53
<p>Uh, aloha, my name is Jesse, um Nakooka, I come from, um Hana, my family come from Keanae. Um, I live, uh, Waihinepee, um, no more water over there, um, but I love to farm and I learn how the farming from my family, uh, from the ancestors and, um, I going give you guys one just one brief, just one brief story, what, how the government work. Um, you know, if, if, if the dog catcher was to come, come to my house and, um, when I not home, okay, the dog catcher come to my house when I not home, and, um, they, they, somebody when tell them, somebody just when tell them, now, somebody told them to, um, to go over there because the dog was, the dog was, uh, uh, the dog was sick or whatever, cruelty to animals they call 'em, so, they leave one note whatever, but anyway, they would arrest me on the spot, you know, and they when, when the person come you tell 'em, you tell 'em, why, why, why this happening, what they tell you? They tell you, oh, um, we, the dog can- cannot talk so we going talk for the dog, okay, try think about that, 'kay, so it's just like the kalo cuz, it's just like the kalo, the kalo cannot talk, so, we talk for the kalo. So, so, when the dog catcher come arrest me, 'kay, that's and, and, and the</p>			

NAME: Jesse Nakooka	TIME: 3:24:53
<p>dog catcher is higher than the policeman so they can walk on your land anytime. I thought that was trespassing, you know what I mean? Until you notify me to come on my land then you can walk on my land, when you go to the courts, you get the paperwork for saying you get one right to come into my property, but that no happen, because what the higher authorities is more higher than us. But you know what? So, the, they arrest me, so this is what I going do, 'kay, this is what I going do cuz, I going citizens arrest you guys because I no more authority. How can, how can that be happening, you know what I mean? How can the higher authority get more right than us? That's just like the dog, the dog, how you know if the dog was, how you know if the dog was sick and the thing was, never have, uh, we was, we was nourishing 'em, you know, no but the higher authorities said for come down and arrest the guy cause the cruelty to animal, you know, so just like the kalo cuz I speaking for the kalo, 'kay, I talking for the kalo, where the water? The water that's not unnourishment? So what, for me, I would get arrested, I would get arrested right there, right there on the spot and what they give me five years for what, you know me that's one felony charge, give me five years, so what how much years the water been taken, hundred years, so you know what, that's lifetime for these guys, peace.</p>	

NAME: Jeremiah Naone	TIME: 3:28:20
<p>Well first of all, I'd like to say, uh, thank God for, uh, kua and I want to say, that, uh, are you guys getting paid for this? If you guys are getting paid I cannot, I cannot say that you guys really getting punished. Yah, you guys are getting paid and I want to say that these people are not getting paid but they're here. So, I gotta say, good for you. I want you guys to understand one thing, especially you, right there, keep on staring and have no conscience, my family and the spirit of my family be entering you because you the one that getting paid by those guys and they are stealing from us and you can stand there and just look at us and not have a conscience. You guys don't even have shame. Let me tell you something, especially you two, the oil is going to run out. And when that oil runs out, no machinery is going to be running. And you going have to turn to us for help. Remember that. We kanakas are not running. I noticed that when I was in the Navy, when the ship used to sink the first thing to run off the ship was rats. Let me look at the rats. The first one to run when there's no energy are the rats. And you know who you are. You rats are the first one going leave our Islands. And we going still stay here. No matter what's here, this is our place. Our culture. You guys are master of dust. You know what that means? It means that you will turn to dust. And when you turn to dust, I promise you, the truth will live on. My words you will hear when you go to the next place. That next level I will be witness to all of your crimes. I will pass on, this is not my Kingdom. But the next Kingdom that you go to will be mine. Who am I? I am the one that's preaching to you right now. You guys either don't accept gold and silver like Judas, thirty pieces of silver from them, but you guys will always hang for eternity. Which God do you serve? Money or God? It's in the revelations, I don't know if you guys ever had the spirit but if you do and especially you, who think you have the spirit, master of the dust, I have something for you later on. What goes around, will come around. What goes around, will come around. What you do, evil will come back to you. Hydrology, that's a nice color of words, nice color of words, but that's all it is, words. It has no substance, it has no weight, our bank is coming. The Kanaka maoli's bank, and our treasury is coming the one that you guys are taking from us. And you guys know where our treasury stay, DAGS, you know where our banks stay, Circuit Court. Ah, didn't think I knew, it's coming, going to take that away. The Great Mahele was not in three parts like the Harvard University</p>	

NAME: Jeremiah Naone	TIME: 3:28:20
<p>said, it's in eight, and guess what? Our knowledge of our King Kamehameha, told us the number one rule is to always think of the future. The koe nae, you know what the koe nae means? Those future generations are not even here yet. They are the ones that we are supposed to support. Guess what? The higher you are the moi, or if you an alii, the higher you go up, the more you gotta serve the people. It's not the other way around like they would want you to believe, that they say that when you on the top, you serve yourself. That's all they doing is serving themselves. When you guys going wake up? You guys have the blood, you guys know what you guys have to do and you guys are just buffers getting paid. Is that what you want to be? Just another buffer? Or do you want to make a difference in this world? Stand up. Be counted. They are. We are. We have the blood in us. So, I know that many people over here doesn't realize that a lot of people in the United Nations hate the United States. Why? Because they only love money. They don't love people. They only like agreements. But they have no idea what a relationship is. People are number one, remember that. Serve the people well and the people will love you. Serve the people not and you will be nothing in the dust. Not counted even if you one warrior, you not counted. Remember that, that's a warrior's code, too. And you know who you are. You deserve to be punished. Because you guys stay right here as buffers, serve as shields, as pin cushions. You guys, those guys should be whipped and you should you be thrown darts at. One more thing I have to say, water is not a commodity, water is a necessity and people will fight. You would do the same thing if put in our position. I want to do this, I had a dream but it said to do this, you see this? Right here. I like, I just want you guys to look at it, just you guys, you see that dot? Right here. That is a speck in my grandfather's ghost that's looking at you from his eye. And everytime you see one speck, remember, he's watching you. He's watching everything you do, when you walk on the earth, he is watching you, when you breathe in the dust, he's watching you, everything you do, he's watching you so this I pass on to you, remember that, whether it's a spot, or a dust, or a speck, he's watching you. Thank you.</p>	

NAME: Jennifer Kekiwi	TIME: 3:35:52
<p>Aloha, my name is Jennifer Kekiwi. I represent my ohana who comes from Wailuanui, um, we come from a long line of taro farmers, uh, if you add up all the years it's over two hundred years of farming experience. Um, at first I wasn't going to testify because I was shame, but shame is when you no more clothes on as they say and, um, if I don't testify then I won't be able to sleep at night. Um, first of all, I wanted to reiterate what Cousin T said about our law enforcement, several years ago my brother was, uh, wrongly accused of something that he did not do and he was arrested by, um, a Hana officer and on his ride to Hana, the officer called him, uh, that he is nothing but an unemployed farmer. So, that pissed me off, first of all, and I wanted to write in the Maui News to let the law enforcement know that they should educate their people. He is not an unemployed farmer, he is a farmer and that is his employment and so I mean I'm sure the officer doesn't know this but, um, that, you know, to me was very degrading and it makes people, um become offensive when you're degraded like that and so anyway, um, I want this noted that they should be educated, they should be educated about not only the place where they go to for employment just for a little while of their life but you know, know, know the place, know the people, the culture, um, also, I had a question of why isn't there a person from the East side of Maui on the Commission. Now if we had somebody on the Commission from the East side, I believe they, you know, they know, they know about our mountains, our oceans, our waters the struggles that we've been doing going on for not only seven years like everybody was</p>	

NAME: Jennifer Kekiwi	TIME: 3:35:52
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saying but hundreds of years, over hundred years this thing has been going on and at first I wasn't going to come here tonight because, you know, I just felt, you know, there's going to be a lot of testifying and stuff but I'm glad I did and I feel like I served by kupuna my Dad who had passed on ten years ago. I'm serving him justice and I hope that you take everybody's testified, you know their testification back to the Commission and not only go in one ear and out the other because, I mean, you know, all of us been here for many hours sitting waiting for our turn or just listening to other, you know, the talk that's been going on and like Taua said, you give us one night, we can go on for months, years like we've been but to me it, it angers me that we have to sit here and justify ourself for what comes from akua, why should we have to justify ourself for the water, the water comes from akua to the aina, it should stay in the aina in its natural path and not diverted here and there and Wailea or wherever it is, but, um, take this back to the Commission and I thank you for the, the time that you've given all of us. And I don't envy all of you for sitting up here and listening to everybody's testimony. Aloha.

NAME: Steven Hookano	TIME: 3:40:13
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Aloha my name is Steven Hookano I testifying on behalf of my wife, Pauahi Hookano who cannot be here today due to a family matter. Um, my wife and I have applied, she has applied to the Commission of Water Resource Management because we care and we know what is going on on the East side. To today the Commission has not put us through the application process as far as being interviewed for that position, so just in, just a note that I know that other people that already went through that process as far as going through with, uh, the Commission on Water Resource and we still waiting for that call to where we can actually be a part of that to my knowledge we have people on the Board like Meredith Ching and other few people that work for HC&S where the conflict of interest, conflict of interest so they the people that actually, even though she don't even come on the to the meetings but I feel that they influence the Board and this people need to be removed from their positions and um, like I said my wife is not here today, so I just speaking on behalf of her and we still waiting on that note as far as being interviewed and I like to stress this, uh, committee third stringers I call you guys, third stringers, the first string and the second string no stay, so they went send you guys, so just on that note, uh, as far as our water, we still suffering in Wailua and I thought we had rights as kanakas growing taro but just the enforcement of that right has not been, um, enforced, so you people on Maui County you guys know the truth, I just glad that everybody came here today with their manao and Aloha everyone in coming here tonight voicing their opinion because you guys count, yah, it's not only the taro farmers, this is all kanaka people with interests in the Public Trust, so Mahalo, Mahalo everybody for coming here tonight. Aloha.

2.0 Aha Kiole, Maui
Aha Moku Advisory Committee
Aha Moku of Pae Aina



May 28, 2008

RECEIVED

Laura Thielen, Chair
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

08 MAY 30 09:29

COMMISSION ON WATER
RESOURCE MANAGEMENT

Dear Ms. Thielen and Members of the Commission of Water Resource Management;

On behalf of the Aha Moku Advisory Committee, and the Aha Moku of Pae 'Aha, including Na Moku O Ko'olau, we offer the following comments in support of the petitions filed by Na Moku Aupuni O Ko'olau, Beatrice Kekahuna, and Marjorie Walleit. Our comments are in relation to the IFS Assessment Reports for the East Maui streams.

Act 212, to which the Aha Kiole Advisory Committee is attached, calls for the creation of a system of best practices that is based upon the indigenous resource management practices of moku (regional) boundaries acknowledging the specific resources located within those areas, and the methodology necessary to sustain these resources and the community.

It is very clear that the resources in question in this case are the life-giving streams and water critical to the traditional practices of the Native Hawaiians in Na Moku Ko'olau who are generational Hawaiian lawaia and mahiai, fishermen and farmers. Hawaiians understood the importance of the fresh water to the coastal areas. Diverting the important streams away from the moku does irreparable harm to the traditional lifestyle enjoyed by the community for generations.

The Commission on Water Resource Management, as the trustee of water resources, has the constitutionally-mandated responsibility to protect resources while assuring rights and uses. We urge you to protect the rights of the Native Hawaiians who have used the water from the streams in question for generations. They continue to do so. To divert water away from them would adversely affect the entire community, extinguish the very rights the Commission is mandated to protect, and help to extinguish a traditional lifestyle that has persisted for generations.

We support the petition filed by Na Moku Aupuni O Ko'olau Hui, Beatrice Kekahuna and Marjorie Walleit.

Sincerely,

Timothy Pauloakeleloku Bailey
Aha Kiole, Maui

Aha Kiole Advisory Committee Members:

Hai Beniamina
Nihoa
Phone: 808 245-8259
hainlei@yahoo.com

Sharon Pomroy
Kauai
Phone: 808 346 6725
pomroy8001@hawaii.rr.com

Charles Kapua
Oahu
Lesa030@hawaii.rr.com
Phone: 808 479-2265

Yanda Hanakahi (Chair)
Molokai
Phone: 808 560-6203
hanakahi@sandwiches.net

Winifred "Winnie" Basques
Lanai
Phone: 808 565-6871
winnie@aloha.net

Leslie Kulololo
Kahoolawe
Phone: 808 871-4001
kulo@clearwire.net

Timothy Bailey
Maui
Phone: 808 357-2934
pauloakeleloku@hawaiiintd.net

Hugh Lovell
Hawaii
Phone: 808 885 5569
Phi52@yahoo.com

For more information:
www.ahakiole.com
ahakiole@gmail.com

The Aha Kiole is an Advisory Committee established by Act 212 of the 2007 Hawaii State Legislature
Leimana DaMate, Community Coordinator — Ph: 808-497-0800, Email: Leimana@fastnetni.com

3.0 Aha Kiole Advisory Committee



Aha Kiolo Advisory Committee

TO: Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

FROM: Aha Kiolo Advisory Committee Maui Representative
Timmy Paulokaleioku Bailey

[REDACTED]

Subject: Aupuni o Koolau Hui (Stream flow)

Aloha,

My name is Timothy Paulokaleioku Bailey. I am born and raised here on the Island of Maui, or Mokupuni o Kahakili. I am Native Hawaiian, and live in the traditional district of Kula (Moku o Kula).

This is a written testimony to inform the Commission on Water Resource Management, and the BLNR about the Act 212, also known as the Aha Moku Council. This Act was signed into law by Governor Linda Lingie in July 2007. \$220,000.00 was the amount of funding that was mandated through Act 212, and to date has not been released.

I write this testimony in viewpoint of following the mandate of Act 212. Despite not receiving the mandated funding, the Aha Kiolo representatives have kept up their duties, responsibilities, and the purposes of this new law.

Please consider this as a informative process, to provide the CWRM with information of the established Aha Moku councils, and that the following listed names, need to be contacted to begin the advisory training, educating, and fostering process in accordance to Act 212, with the people from the affected ahupuaa's and moku's. These names listed below are the points of contact. They will work with the Aha Moku Councils, that are currently being established within its regional boundaries.

Failure to contact these people will be documented as an act of non-compliance with a State of Hawaii law, Act 212.

Timothy Paulokaleioku Bailey
Edward Wendt
Solomon Kaauamo

[REDACTED]

Mahaalo,
/s/Timmy Paulokaleioku Bailey

4.0 Foster Robin Ampong

April 10, 2008

To: Department of Land and Natural Resources-State of Hawaii,
The Commission on Water Resource Management

Laura H. Thielen, Chairperson,

Chiyoame L. Fukino, M.D.,

Meredith J. Ching,

James A. Frazier,

Neal S. Fujiwara,

Donna Fay K. Kiyosaki, P.E.,

Lawrence H. Miike, M.D., J.D.

From: Living Being in the HuMan Function with the attached name

Foster Robin Ampong, kanaka maoli, "native Hawaiian" ahupua'a o

kahoma, moku o Lahaina, moku-puni o piiani.

Subject: East Maui Stream Restoration Petition.

Aloha Commissioners,

With sincere respect to each member, I submit the following written testimony to the Commission on Water Resource Management (CWRM).

Being born and raised on the island of Maui I am deeply concerned for the people and limited resources presently available. I demand immediate remedial action be taken.

The East Maui Stream Restoration Petition filed seven years ago and the apparent dysfunction evident in the in-action taken by the CWRM leaves the Petitioners, i.e. "native Hawaiian" beneficiaries of the so-called "Ceded Land" Trust without water to sustain their crops and stream life which have fed them, their ancestors and "native Hawaiian" people for thousands of years

As I understand it,

1. Alexander & Baldwin uses **17,000 gallons per day (gpd) per acre** in the wet season and **34,000 gpd per acre** in the dry season.
2. Alexander & Baldwin diverts an average of **160 million gallons per day (MGD)**, about as much as all of O'ahu consumes.
3. The State of Hawaii allows Alexander & Baldwin to divert over 75% of this water from the state's so-called "Ceded Lands."
4. Alexander & Baldwin pays only 1/5 of 1 cent per 1,000 gallons for East Maui water, while most farmers pay over 35 cents per 1000 gallons for irrigation water.

4.0-1

5. By law, CWRM is required to act within 180 days of receiving a petition. It's been 7 years since taro farmers filed their petitions.
6. CWRM should act on the petitions NOW.

Why is The East Maui Stream Restoration Petition filed seven years ago left to linger? Are the petitioners of East Maui to believe the in-action and blatant disregard by the commission a message to "native Hawaiians" that we are worth less than the millions of gallons of water per day that are diverted to an operation that requires only 34,000 gallons of water per day?

Are we to not think that perhaps part of the reasoning for this gross injustice is due to racism by State government because the petitioners are "native Hawaiian" beneficiaries of the so-called "Ceded Lands" Trust.

I believe sincerely it is due in part, not in whole to the fact that the commission has failed to act on the East Maui Stream Restoration Petition because **1) the petitioners are "native Hawaiian"; and their decision will affect and translate a course of action to all "native Hawaiian" beneficiaries throughout the islands;** and **2) Corporate Businesses such as Alexander and Baldwin that now divert and hoard all the waters throughout the islands and government will have lost their century-old veil that has blocked transparency and accountability.**

With all due respect to each member, how is it not racism for the commission to allow Alexander and Baldwin to hoard all the water from the East Maui Streams, while the petitioners who are taro farmers and "native Hawaiian" beneficiaries of a public trust given nothing?

The reluctance and failure thus far for the returning of waters to the streams, be it East Maui or elsewhere, appears to be a decision made deliberately because of the legal rights "native Hawaiian" beneficiaries of the so-called "Ceded Lands" Trust have; and the fact that Alexander and Baldwin will establish a precedent for other corporations now hoarding water to have to "share" their unlawful control that diverting water for over a hundred years have given them.

To further deprive "native Hawaiians", the petitioners, their water for the sake of Corporate Control is racist and by definition (international law) genocide; and it is this "Corporate Control" I believe that staves the CWRM into in-action.

Why is it the "native Hawaiian" beneficiaries of the so-called "Ceded Land" Trust, the Petitioners, suffer while big corporations, i.e. Alexander and Baldwin profit from public trust resources?

Not only is it *criminal and a vicarious liability*, it is offensive and an insult to the decency of the petitioners and all fundamental tenets of the United States and State of Hawaii

4.0-2

Constitutions respectively. Furthermore, it undermines all efforts of a "sustainable" society and future.

Lets us never forget, it was the petitioners and their ancestors that achieved a truly "sustainable lifestyle" here in these islands that survived thousands of years; in the middle of the Pacific Ocean without outside contact; that is until the colonizing (1778 AD), the mismanagement and present destruction of our resources that followed and brought us here to tonight's meeting.

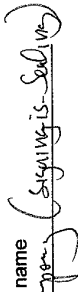
I truly believe with 100% of my being that Alexander and Baldwin will not have any adverse affect on their business or employees by complying with the CWRM ruling to return the amount of water petitioned by the taro farmers. In fact, it will promote a long-term, "sustainable" environment beneficial to all living beings far beyond East Maui.

However, let it be noted here that should the commission (CWRM) fail to implement remedial action on behalf of the petitioners at the end of tonight's meeting, the petitioners and their families will be adversely affected, further eroding their environment and any "sustainable" future that once existed.

Thank you

Living being in the HuMan function with the attached name
Foster Robin Ampong

Date: April 10, 2008



**5.0 Mele Carroll
State House Representative
House District 13**



HOUSE OF REPRESENTATIVES JUN 10 AM 4:43

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

COMMISSION ON WATER
RESOURCE MANAGEMENT

RECEIVED

Page 2
Testimony to Commission on
Water Resource Management
June 10, 2008

June 10, 2008

Commission on Water Resource Management
State Department of Land & Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Members of the Commission on Water Resource Management:

I am writing to you on behalf of my constituents of East Maui and as the Chair of the Legislative Hawaiian Caucus. I offer my comments on the issue of developing measurable interim instreams flow standards for the hydrologic units of Honopou, Hanehoi, Pinaau, Waioakamilo, and Wailuanui in east Maui.

Let me begin to say that before the annexation of Hawaii by the United States in 1898, all of the land and natural resources were held in trust for the benefit of the people by the high chiefs, known as ali'i, ai ahupua'a or ali'i 'ai moku, who oversaw the native tenants' use of the land and natural resources. Since the annexation, state agencies have assumed oversight and management of the 1,800,000 acres of land "ceded" to the United States under a trust in 1898.

Hawaii Revised Statutes, chapter 171, authorizes the Board of Land and Natural Resources to serve as the primary trustee to prudently manage and dispose of these resources. Chapter 174C, Hawaii Revised Statutes, designates the Commission on Water Resource Management as the agency responsible for protecting and managing all water resources, including all water streams on ceded lands.

Since the time of our ancestors and currently today, taro farming, which utilizes natural water resources available from valley floors and slopes on which taro is cultivated, was the primary form of agriculture supporting Hawaiians in pre-Western contact Hawaii. The adjacent ahupua'a of Ke anae and Wailuanui located on the northeast flank of Haleakala on the island of Maui, supported intensive and extensive wetland taro cultivation that was irrigated by water streams in these respective ahupua'a since ancient times, and the streams have continued unabated until the present day. Western contact brought about significant changes in both the traditional Hawaiian land tenure system and Hawaii's social structure. Hawaii's traditional land tenure system seemed ill suited for the western mercantile economy emerging as a result of these changes.

On December 10, 1845, Kamehameha III established and outlined the responsibilities of the Board of Commissioners to Quiet Land Titles, otherwise known as the Land Commission, to oversee the conversion of the ancient land tenure system to a property system of private ownership.

5.0-1

On August 6, 1850, the Kingdom enacted the Kuleana Act authorizing the Land Commission to grant fee simple title to native tenants, or hoo'aina, together with rights to access land and water necessary for the cultivation of taro and other traditional and customary pursuits.

Although approximately forty-two hundred of the 13,514 applications for kuleana under the Mahele were not approved, the Land Commission ultimately awarded 28,658 acres to native tenants, less than one per cent of the lands available in the islands. In contrast, by 1864, two hundred thirteen non-native people in Hawaii had purchased over three hundred twenty thousand acres of government land, subject to the rights of native tenants.

In 1876, the predecessors to Alexander and Baldwin commenced construction of a system of ditches and tunnels that now divert, on average, one hundred sixty million gallons of water per day from East Maui streams to irrigate sugarcane fields owned by Hawaiian Commercial and Sugar Company in Central Maui.

In 1902, the Commissioner of Public Lands issued lease number 538 to H. P. Baldwin, leasing lands in East Maui until 1933 for the development, storage, transportation, or other utilization of the water thereon, thereby allowing construction of a ditch system. **This royal lease was issued subject to the condition that there would be no interference with the vested interests in water of land owners in Ke anae, Wailuanui, or other parts of East Maui.**

In 1904, Hawaiian Commercial and Sugar Company, which was Alexander and Baldwin's Maui sugar plantation, while continuing its out-of-watershed diversion of stream flow from East Maui streams, successfully sued to enjoin Wailuku Sugar Company's out-of-watershed stream flow diversions from the Wailuku Stream based upon Hawaiian Commercial and Sugar Company's claim of appurtenant rights connected with its purchase of interests in nearby kuleana.

The Board of Land and Natural Resources presently leases over thirty-three thousand acres of ceded lands to Alexander and Baldwin's East Maui Irrigation Company, from which it presently diverts an average of 60,000,000 gallons of water per year from East Maui streams at one-fifth of a cent per thousand gallons.

Pursuant to article XI, sections 1 and 7, of the Constitution of the State of Hawaii and section 174C-101, Hawaii Revised Statutes, any diverter of water has the legal burden of demonstrating that any diversion of water is not harming the riparian and appurtenant water rights held by downstream taro farmers or those rights traditionally and customarily exercised for subsistence, cultural, and religious purposes, including fishing, gathering limu, and the taking of o'opu, hiniwai, and opae from streams.

The Hawaii Supreme Court has upheld these water rights in four recent court decisions that required diverters of water to carry the burden of demonstrating the absence of harm to those with superior riparian, appurtenant, and traditional rights to water. The First Circuit Court has also ruled that any diversion of water cannot injure others with appurtenant, riparian, or traditional and customary native Hawaiian rights to the same water.

5.0-2

Members of Na Moku Aupuni O Ko'olau Hui, Beatrice Kekahuna, Marjorie Walleit, and other East Maui taro farmers who are native Hawaiian kuleana land owners, have appurtenant, riparian and traditional and customary native Hawaiian rights that are violated by Alexander and Baldwin's East Maui Irrigation Company's stream diversions.

This deprivation of water rights has resulted in a chronic injury to the residents of Waiauani and Ke'anae valleys and has directly impacted their capacity to continue traditional and customary practices, contrary to sound public policy and constitutional protections.

The Board of Land and Natural Resources has, since at least May of 2001, failed to act to fully and timely protect the rights of these residents of East Maui. For the past year, staff of the Department of Land and Natural Resources has failed to timely implement the terms of the interim relief ordered by the Board of Land and Natural Resources while contested case hearings continued to give the East Maui taro farmers timely and prompt interim relief to cure the chronic problems related to inadequate releases of water to support their traditions and customs.

The Commission on Water Resource Management is required under section 174C-71(2)(E), Hawaii Revised Statutes, to act upon any petition to amend interim instream flow standards for a stream within one hundred eighty days, guided by its duties to protect water resources under the public trust doctrine, in order to protect the integrity of fresh water stream ecologies, as well as riparian and appurtenant rights of traditional taro farmers.

East Maui taro farmers filed petitions to amend interim instream flow standards for twenty-seven East Maui streams, currently subject to unmitigated diversions by the Alexander and Baldwin's East Maui Irrigation Company, to restore greater flows to protect their traditional and customary practices which depend on irrigation water for taro, subsistence gathering, and fishing practices.

A scientific study by the United States Geological Survey enables the State Commission on Water Resources Management to predict the degree of restoration to a stream habitat with any given restoration of stream flow, thereby eliminating the absence of any scientific basis for acting on petitions to restore stream flow.

I have been informed that for the past six years, the Commission on Water Resource Management has failed, refused, or neglected to act on petitions to amend the interim in-stream flow standards of twenty-seven East Maui streams filed on behalf of these East Maui residents despite repeated reminders and demands to follow the statutory deadline to act.

The Commission on Water Resource Management has offered no rational basis for delaying action on the pending petitions to amend interim instream flow standards and has not provided any schedule for when action will be taken.

It is because of the State's failure to timely act results in ongoing harm to the superior water rights of these East Maui residents and to the traditional and customary practices guaranteed under the Constitution of the State of Hawaii and other state law.

This is why I offer my comments and urge you, the Board of Land and Natural Resources and the Commission on Water Resource Management to explain why each agency has not ordered Alexander and Baldwin's East Maui Irrigation Company to:

(1) Immediately release all water now being diverted from Waiauani and Waioakamilo streams, and their tributaries, and from the watershed mauka of the Ili of Kupau, so that it may flow unimpeded past its ditch system and into Waiauani Valley for taro irrigation unless Alexander and Baldwin's East Maui Irrigation Company can demonstrate that any given quantity of the water is not needed to keep water temperature in any taro lo'i cultivated by members of Na Moku below 77 degrees Fahrenheit;

(2) Immediately release all water now being diverted from Pi'ina'au and Palauhulu streams, and their tributaries, so that it may flow unimpeded past its ditch system and into Ke'anae Valley for taro irrigation unless Alexander and Baldwin's East Maui Irrigation Company can demonstrate that any given quantity of the water is not needed to keep water temperature in any taro lo'i cultivated by members of Na Moku below 77 degrees Fahrenheit;

(3) Immediately release all water now being diverted from Honopou Stream so that it may flow unimpeded past its ditch systems and into Honopou stream unless Alexander and Baldwin's East Maui Irrigation Company can demonstrate that any given quantity of the water is not needed to keep water temperature in any taro lo'i cultivated by Beatrice Kekahuna, Marjorie Walleit, or their ohana, below 77 degrees Fahrenheit; and

(4) Immediately and affirmatively demonstrate, with clear and convincing evidence, its actual water needs and, within the constraints of available knowledge, the propriety of draining water from public streams to satisfy those needs, such as the practicability of using alternative sources before authorizing the diversion of water from the 33,000 acres of ceded lands in the East Maui forest reserve, over which it has jurisdiction to protect and manage for future generations; and

Furthermore, I am requesting that the Board of Land and Natural Resources and Commission on Water Resource Management to further explain in its report why the Board does not have a regular system and protocol in place that would promptly require the timely release of water into the disputed streams that support the valleys of Honopou, Ke'anae and Waiauani unless, and until, Alexander and Baldwin's East Maui Irrigation Company thoroughly demonstrates that the above taro farmers and stream gatherers no longer require the stream flow released from the Alexander and Baldwin's East Maui Irrigation Company ditch system.

I also request that the Board of Land and Natural Resources and Commission on Water Resource Commission determine whether the staff of the Department of Land and Natural Resources is capable of monitoring the effect of any water diversions, now and in the future, allowed by the Board for any violations of the common law, the constitution, or statutory rights specified by the article XI, section 7 and article XII, section 7 of the Constitution of the State of Hawaii; section 221 of the Hawaiian Homes Commission Act; and sections 171-58 and 174C-101, Hawaii Revised Statutes, and thereafter, provide a simple, clear, and efficient process for investigating reported violations, and conducting timely and frequent reviews of any disputes that arise at regularly scheduled meetings of the Board of Land and Natural Resources so these water rights issues are promptly resolved.

In addition, I request that the Commission on Water Resource Management determine the level of budgeting and staffing required to promptly respond to complaints of interference with appurtenant water rights and in-stream flows necessary to support the continued ability of Hawaiians to pursue their traditional and customary practices dependent on adequate stream flow, and, thereafter, provide a simple, clear, and efficient process for investigating reported violations of these rights, and conducting timely and frequent reviews of any disputes that arise at regularly scheduled meetings of the Commission on Water Resource Management so these water rights issues, complaints, and disputes are promptly resolved, as envisioned by the Legislature pursuant to sections 174C-10 and 174C-13, Hawaii Revised Statutes.

Your immediate response to this serious matter is greatly appreciated. If you need to speak to me directly, please feel free to contact me at (808) 586-6790.

Sincerely,



MELE CARROLL
State House Representative
House District 13

Cc: Mayor Charmaine Tavares
Councilmember Bill Medeiros
Senator J. Kalani English
Edward Wendt
Solomon Kaaumano
Moses Hala, Native Hawaiian Legal Corporation
Timmy Paulo Kaleloku Bailey, Aha Kiole Advisory Maui Representative
David Kawika Kamai, Kaka O'elo, Royal Order of Kamehameha
Clifford Hashimoto, Alii Nui, Royal Order of Kamehameha
Amanda Martin, Executive Assistant to Councilmember Gladys Baisa
Legislative Hawaiian Caucus Members of the Hawaii State Legislature
NCSL National Caucus of Native Americans
Leimomi Kahn, President of the Association of Hawaiian Civics Clubs
Randy Awo, Chief Branch of DLNR DOCCARE
Mr. Ken Kawahara, staff to DLNR Commission on Water Resource Management

6.0 Dan Clark

INSTREAM FLOW STANDARD ASSESSMENT REPORTS (IFSAR)

For the Hydrologic Units of
Honopou (6034), Hanehoi (6037), Piinaau (6053), Waiokamilo (6055), and Wailuanui (6056)

Public Fact Gathering Meeting
Thursday, April 10, 2008
5:00 p.m. to 9:00 p.m.
Location: Haiku Community Center
1008 Hana Highway, Haiku, HI 96708

Public Review Drafts Availability
Kalaninimoku Bldg, Room 227,
1151 Punchbowl St., Honolulu, HI 96813
Maui: Public Libraries in Hana, Kaneohe, and Wailuku
Maui Community College Library
Website: <http://www.hawaii.gov/dlnr/cwrrm/>

Please provide any comments you wish to offer on the public review drafts of the INSTREAM FLOW STANDARD ASSESSMENT REPORTS for each of the hydrologic units:

Good Morning, and thank you for the opportunity to comment.

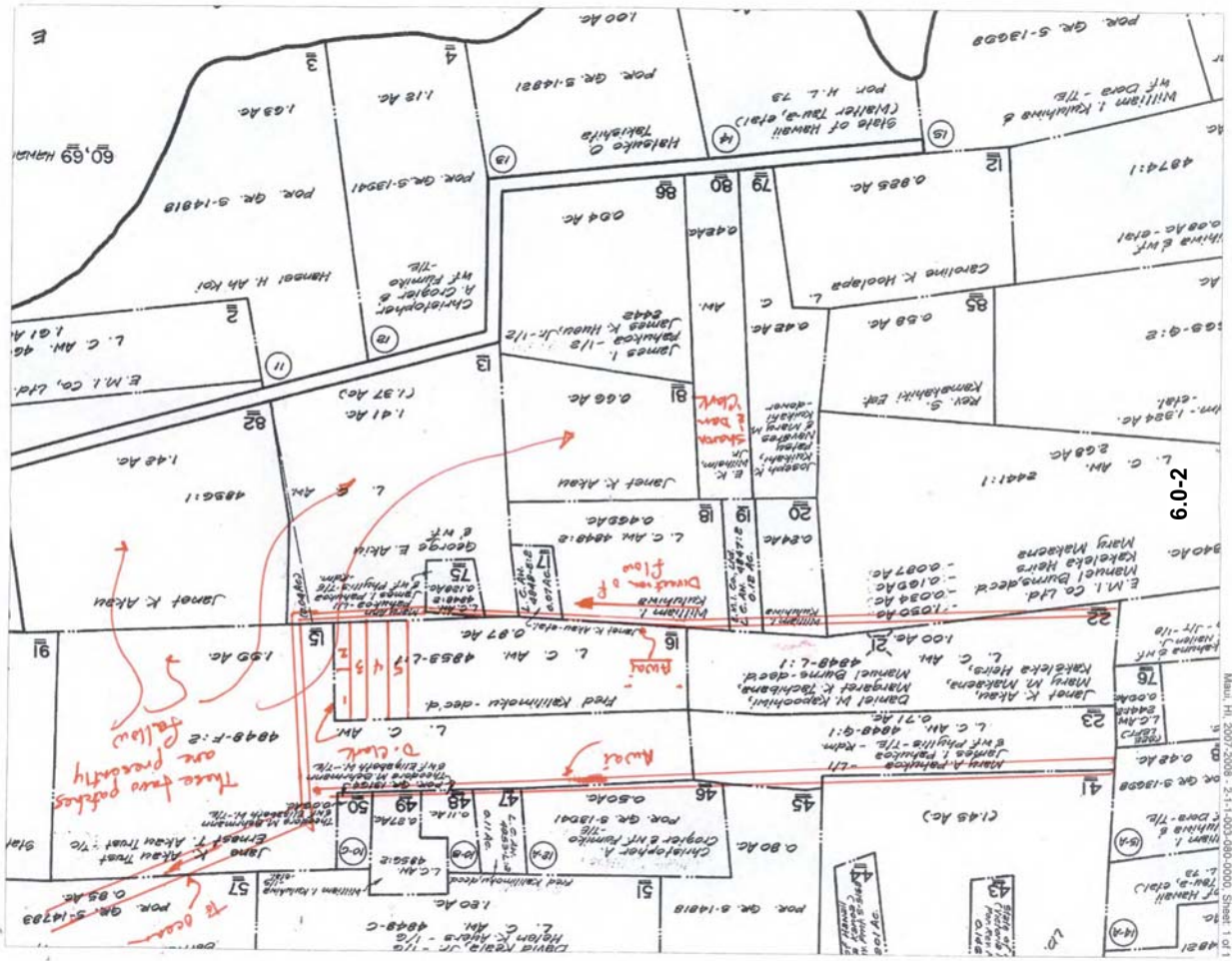
I have been a taro farmer on the Keonole peninsula for seven years now. My taro patches (5 each) are at the end of the planted system (enclosed as a drawing). I have to take water from the stream area to feed my patches just to get good water. If I feel from patch to patch as is traditional, I would have 80' water loss rather than at harvest. The instream flow standard is flawed as there was no baseline in 1988. It's a standard existing because EMI had already intercepted the majority of the stream flow above the Piinaui spring. The original agreement that ditch flows were surplus waters only by the Hawaiian Kingdom, and that farmers dependent on that "cool" water to raise taro would not be compensated as the estimated caretakers of lower lands the State of Hawaii and the DNR are mandated to uphold these conditions and standards. At times I have experienced one to two inches of water on the bottom the entire feeding my patches. The exchange of water is so minimal that it is like a warm bath in my kalo fields. Please do the reasonable thing, and anyone that water farmers community.

PLEASE PRINT Name: **Dan Clark** Phone: [REDACTED]
Affiliation: **Taro farmer**
(if applicable)
Address: [REDACTED]
Email: [REDACTED]

Submit this form (plus additional sheets, if any) via mail or fax. Comments may also be e-mailed.
Mailing address located on the back.

Facsimile: (808) 587-0219
E-mail: dlnr.cwrrm@hawaii.gov (Please include information in the shaded area with the e-mail)
6.0-1

All comments must be received or postmarked by **June 10, 2008**. Mahalo!



Maui, HI, 2007-2008, 2-11-08-2880-0000, Sheet 1 of 1

7.0 Loren E. Clive



"Loren E. Clive"

To: dlnr.cwrn@hawaii.gov

05/24/2008 02:28 PM

cc

bcc

Subject: comment on EMI

Aloha! I am writing to urge the end to the diversion of water from the east side of Maui to feed the cane fields. Cane is no longer the cash crop it once was, and the stinky industrial plant on Pu'unene is the bane of the island. Every morning on the way to work the nauseating smell of burnt sewage assaults my nostrils, and it would be the best thing ever if we could get rid of that eyesore.

Moreover, these greedy sugar people are depriving private landowners of their water and basic sustenance since in this case the disenfranchised are taro farmers. Other considerations include the recent deaths of two young girls playing in the EMI ditches. Sugar as a cash crop is dead, and we don't need it. Please return the water to the aina!

Mahalo,

Loren E. Clive



8.0 Department of Health, Environmental Planning Office

TO: State of Hawaii Commission on Water Resource Management
FROM: State of Hawaii Department of Health, Environmental Planning Office
SUBJECT: Department of Health staff input on Public Review Drafts of Instream Flow Standard Assessment Reports for the Hydrologic Units of Honopou (6034), Hanehoi (6037), Pimaau (6053), Waiokamilo (6055), and Wailuanui (6056) June 10, 2008

NOTE: The Department of Health Environmental Planning Office compiled the attached comments from DOH staff, which should be construed as informal and collaborative staff-level input rather than as official DOH positions.

The Instream Flow Standard Assessment Reports (IFSARs) drafted by the Commission on Water Resource Management (CWRM) are a source of essential information for Department of Health (DOH) Environmental Management programs, particularly water quality management, water pollution control, and polluted runoff control programs in the DOH Environmental Health Administration (EHA). We commend CWRM's initiative to develop IFSARs as standard documentation of the Best Available Information (BAI) for setting measurable instream flow standards, and overall the five East Maui reports drafted for public review are comprehensive, detailed, user-friendly, and accurate. DOH employs similar standard documentation of BAI for developing Watershed Based Plans and Total Maximum Daily Loads, and we suggest working together to find ways of integrating the CWRM instream flow standard assessment process with DOH watershed inventory procedures. This would strengthen the effectiveness and improve the efficiency of our water resource management efforts by building interagency collaboration and reducing duplications of effort.

The following general comments apply to the five draft IFSARs and to the overall instream flow standard assessment reporting process. We suggest additional CWRM consultation with DOH to address these comments and to review stream-specific information for Honopou, Hanehoi, Pimaau, Waiokamilo, and Wailuanui streams. If you have any questions about these comments, please contact Kelvin Sunada, Environmental Planning Office Manager, at 586-4337.

1.0 Introduction

Instream Flow Standards (Figure 1-1)

In order to better reflect the nature of water quality information to consider in setting measurable instream flow standards, we suggest that "Water Quality Standards" be added at the top of the information listed under the "Water Quality" menu in Figure 1.1.

Interim Instream Flow Standards (Figure 1-2)

In order to better integrate DOH responsibilities for water quality maintenance (as mandated by and delegated under the State Water Code and the federal Clean Water Act, and as represented by the DOH Director's role as a member of the CWRM) with the interim instream flow standard and permanent instream flow standard processes represented in Figure 1-2, we suggest that the DOH-EHA be included in preparing the CWRM staff recommendations for IFS amendments and proposed IFSs.

4.0 Maintenance of Fish and Wildlife Habitat

In addition to incorporating stream survey data from the State of Hawaii Division of Aquatic Resources, we suggest that the Hawaii Stream Visual Assessment Protocol and the Hawaii Stream Bioassessment Protocol be completed in each stream and the results incorporated into the IFSAR before it is used for decisionmaking purposes. The results of these protocols provide an additional line of "basic evidence that conveys the general health of the subject stream," and their consideration would help to better integrate DOH responsibilities for water quality maintenance with the interim instream flow standard and permanent instream flow standard processes.

5.0 Outdoor Recreational Activities

We suggest that the use of DOH specific water quality criteria for recreational areas in inland recreational waters [HAR 11-54-8(a)] as a benchmark for setting measurable instream flow standards to protect full-body contact outdoor recreational activities be discussed in this section of the IFSARs.

10.0 Maintenance of Water Quality

There are numerous aspects of the IFSAR water quality information that merit clarification and correction by DOH. For future IFSTAR reports, we suggest that DOH-EHA be consulted prior to, rather than after, the publication of public review drafts. For the current draft IFSTAR reports, we suggest that CWRM work with the DOH Environmental Planning Office (EPO) to clarify and correct the water quality discussions in each report, focusing on:

1. distinctions between "State water quality standards" (in a generic Clean Water Act context) and "State of Hawaii water quality standards" (in the State regulatory context);
2. the types of water quality decisions issued by DOH and their relationship with data availability (e.g. "exceedance of WQS" and "insufficient data for assessing exceedance of WQS" are two types of decisions issued in the 2006 Water Quality Monitoring and Assessment Report);
3. the assessment methods and decision criteria used to determine exceedances of State water quality standards (e.g. "insufficient data for assessing exceedance of WQS" is not equivalent to "no exceedance of Water Quality Standards was found");
4. distinctions between classifying waters in the generic context and "classifying" waters according to "Classes" of waters established by the State of Hawaii water quality standards. For example, water quality parameters are applied to waterbody types, not classes of waters, thus the purposes for "classifying" waters do not include "applying water quality parameters;"
5. the regulatory distinction between Class 1.a. and 1.b. inland waters, particularly with regard to the defining characteristics of each Class and the designated uses protected by the State water quality standards in each Class;
6. the actual distribution of Class 1.a., 1.b., and 2. waterbody segments within the streams;
7. distinctions between ambient water quality and water quality standards attainment (e.g. clarification of "It should be noted that there is no direct relationship between elevation and water quality;"

8. Clean Water Act requirements for protecting existing uses, particularly as related to the protection of traditional and customary rights and the support and perpetuation of traditional and customary beliefs, values, and practices.

13.0 Noninstream Uses

For purposes of hydrologic and water quality analysis, and to otherwise support more comprehensive understanding of watershed structure and mechanics, we suggest that:

1. Figure 13-XX showing stream diversions also include points where diverted water can be returned to the streams.
2. The information in Figures 13-XX (showing stream diversions and points where diverted water can be returned to the streams), 10-XX (showing DOH classes of waters), 7-XX (showing aesthetic points of interest), 5-XX (showing recreational points of interest), 3-XX (showing drainage basin outlets), and 3-XX (showing location of diversions, irrigation systems, and selected ungaged sites), as well as the location of all known sampling locations for other stream characteristics (biological, chemical, and physical) be consolidated into a single hydrologic network diagram/schematic that indicates all flow nodes and potential flow directions.

9.0 Department of Land and Natural Resources, Division of Forestry and Wildlife



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE
1115 KUNIA ROAD, SUITE 125
HONOLULU, HAWAII 96813
TEL: (808) 587-0166 FAX: (808) 587-0160

June 4, 2008

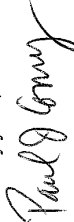
Mr. Ken C. Kawahara
Deputy Director - Water
CWRM, DLNR
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Kawahara:

Subject: Public Review Drafts, Instream Flow Standard Assessment Reports for the Hydrologic units of Honopou, Hanehoi, Piinaau, Waiokamilo, and Wailuanui.

DLNR, Division of Forestry and Wildlife has received and reviewed your subject request and provide the following comments for your consideration. CWRM is informing the public of the interim instream flow standard process and is soliciting comments from all interested people that may be affected by such water management decisions. DOFAW supports CWRM's process to present the best available information to a given hydrologic unit in order to make management decisions for the benefit of all instream uses. DOFAW has neither objections nor comments to offer at this time but is available to assist in any way, upon request. Thank you for the opportunity to comment on your subject document.

Sincerely yours,


Paul J. Conry
Administrator

LAURA H. THIEREN
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

SPATIAL AND DESIGN INFORMATION
SYSTEMS UNIT
COMMISSION ON WATER RESOURCES MANAGEMENT

CONSERVATION AND RESTORATION
COMMISSION ON WATER RESOURCES MANAGEMENT

ENGINEERING AND SURVEYING
SECTION - FRESH WATER
HONOLULU, HAWAII
KAWAHARA BUILDING
STATE HOUSE

RECEIVED
08 JUN 5 10:25
COMMISSION ON WATER
RESOURCES MANAGEMENT

10.0 Marco and Meredith Einaudi



Marco Einaudi

06/10/2008 07:31 AM

To dnr.cwrm@hawaii.gov

cc

bcc

Subject Comments on IFSAR

Dear Sirs:

In reply to your call for public comments on the IFSARs, we submit the comments that follow.

The interim reports contain some valuable data but they are difficult to read because they lack a graphical summary and there are no conclusions given. Further, the five hydrologic units reported on in the IFSARs account for a very small percentage of the East Maui watershed between Huelo and Nahiku. Why were these, and not others, chosen? When will we see results for the whole watershed?

Some of the maps presented in the IFSARs appear to be based on a geographic information system, GIS (e.g., Figs. 2.7 & 2.8), a very powerful tool for generating summary maps that integrate important information in one view. An integrated view is especially important in presenting results to the general public; the absence of such a broader view is unfortunate. Types of data that could be integrated in one comprehensive GIS map could include, for example, average rainfall (a first measure of runoff in the absence of real numbers), topography and drainage basins, land ownership, areas of taro farming, distribution of endangered species, location of ditches and wells used by EMI to divert water, and location of state land that is leased to EMI for water diversion. Some of these data are presented as individual maps, but are not in every case legible. For example, Fig. 2-5 in 6034 Honopou IFSAR (mean annual rainfall) shows 4 contour lines, only one of which is labeled and no contour interval is given. Based on integration of information such as that listed above, a "hot spot" map of the East Maui watershed could be easily generated. Such a map could then be used to focus the discussion and help lead to conclusions.

The IFSARs illustrate the need for increasing the scope and accuracy of data on the stream flows and on volume of waters diverted by EMI. Table 3.5 in 6034 Honopou IFSAR is one example of the need for modern data: the natural and diverted stream flows summarized on this table are based on data from 1933 and 1946. Surely, decisions cannot be made on such sparse and antiquated data because changes in stream flow and recharge of aquifers are known to take place; your Fig. 13-6 in 6034 Honopou IFSAR shows an estimated 44% decrease in recharge in the period from pre-1979 to 2000-04 in central and west Maui. We need more

10.0-1

gauges, upstream and downstream from diversion sites, and the IFSARs could include discussions of such needs.

When runoff falls below certain levels, EMI has been known to pump the aquifers but they appear to have resisted providing information on water extracted. As an example of their lack of transparency, at a public meeting we attended several years ago, it was reported that when EMI refused to release information on how much water they were pumping, residents obtained copies of EMI's electric bills in an attempt to extrapolate how much they pumped based on power usage.

If this information cannot be obtained voluntarily, the Commission should subpoena EMI to obtain this information as part of their obligation to protect native Hawaiian water rights and ecosystems.

On the broader issues, we urge the State to maintain the current year-to-year water lease-agreement with EMI, and to not commit to leases longer than one year. The current droughts in other parts of the world (e.g., Australia and Chile) point to the necessity of maintaining short-term obligations which can be recalibrated annually to balance the water needs for domestic use, habitat for Hawaii's native stream organisms, taro cultivation, agriculture, and others. We also support the view that water lease agreements with EMI become null and void if sugar is no longer grown on Maui and that leased water rights will revert to the state, including ownership of the ditches not on A&B lands. Investors worldwide are already recognizing that water is a resource of growing scarcity that has a high financial value. Water companies, like mining companies and petroleum companies, are consolidating to increase their power base. The state of Hawaii and the commissions which serve it will be remis in their responsibility to the inhabitants of these islands, present and future, if they allow windfall profits by some from a resource which belongs to all of Hawaii's residents.

Marco Einaudi
Emeritus Professor of Geological & Environmental
Sciences, Stanford University

Meredith Einaudi
Master of Education

10.0-2

11.0 Mark Haddad



markhaddad

[Redacted]

05/10/2008 06:02 PM

To "dlnr.cwrm@hawaii.gov" <dlnr.cwrm@hawaii.gov>

cc Bridge Elaine [Redacted] Sundram Steve

bcc

Subject Water diversions

Please stop diverting water from E. Maui. This water needs to stay in its place both for the farmers and residents of the area,as well as the visitors to Maui. If the flow becomes a trickle, the falls and streams will dissipate to the point that the draw to visit and swim will be gone.
Please be sensitive to local environment.

Mark Haddad,M.D.
Maui resident and E.R.Physician
Maui Memorial

Sent from my iPhone

12.0 Hawaii Farm Bureau Federation



2343, Rose Street, Honolulu, HI 96819
PH: (808) 848-2074; Fax: (808) 848-1921
e-mail info@hfbf.org

June 9, 2008

TESTIMONY

**INSTREAM FLOW STANDARD ASSESSMENT REPORTS
FOR THE HYDROLOGIC UNITS OF
HONOPOU (6034), HANEHOI (6037), PIINAU (6053),
WAIOKAMILO (6055), AND WAILUANUI (6056)**

Hawaii Farm Bureau Federation, Hawaii's largest advocacy organization for General Agriculture, submits these comments on behalf of the agricultural industry in Hawaii.

The Water Code which provides the process to amend an interim IFS directs the Commission to "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." The Instream Flow Assessment Reports for the East Maui Stream contain data about the diversions and the economic impacts of the users of the waters. However, no where in the document is there reference to the State Constitution and its' reference to agriculture. We believe that Article XI Section 3 of the State Constitution clearly recognizes agriculture not only as an economic interest but as a public trust entity worthy of protection and a recognition to its' content, critical for a fair process in establishing the IFS. The Constitution states:

Section 3. The State shall conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands. The legislature shall provide standards and criteria to accomplish the foregoing

Lands identified by the State as important agricultural lands needed to fulfill the purposes above shall not be reclassified by the State or rezoned by its political subdivisions without meeting the standards and criteria established by the legislature and approved by a two-thirds vote of the body responsible for the reclassification or rezoning action. [Add Const Con 1978 and election Nov 7, 1978]

Agriculture cannot exist without water. There is ample reference in the assessment reports about droughts and its' impact. Much of agriculture cannot be put on hold during a drought. While there are entities with drought tolerant crops, many vegetable crops will die. Under such a scenario, the intent of the Constitution to "increase agricultural self sufficiency" will not be met. We believe the crafters of the Constitution sought to protect Hawaii, the land mass farthest from any adjacent land mass in the

12.0-1

world for putting its' citizenry under undue risk in catastrophic times. We saw this happen during 9/11 and the Aloha Cargo shutdown. Our ability to feed ourselves is measured in days, not months that it takes to grow a crop.

We believe the instream flow standards should truly be based on a case by case basis. Each stream should not be expected to meet all and every need of the public trust. Certain streams should be kept pristine to meet instream uses to its' maximum, while others should be recognized for its' offstream uses.

We appreciate this opportunity to provide our opinion on this matter. As we, in the agricultural community seek to finally implement the Constitutional Mandate regarding agricultural self sufficiency and diversity, water is one of our bottlenecks. Truly understanding agriculture's need along with other needs is critical to this process. Agriculture as we see it is the large scale operations that are productive and provide for the masses so every man, woman and child in Hawaii will not need to work in their garden everyday to provide for themselves even during catastrophic events that may isolate Hawaii from the rest of the world. They are left free to choose careers and lifestyles of their choice.

Pursuant to Act 183 SLH 2005, the process to identify Important Agricultural Lands as mandated by the Constitution, has been set into motion. A key criteria for designation is whether viable agricultural operations can occur on the land. This makes water one of the key components in the designation process. After designation, removal of lands from the IAL designation is very difficult. One of the few ways is the lack of water. In summary, it is the availability of water that will allow for the designation of Important Agricultural Lands.

We appreciate this opportunity to provide our views on this important subject. Decisions made on these streams will play a critical role in whether Hawaii can increase its' level of self sufficiency. We respectfully request that the Constitutional Mandate relating to Agricultural Lands be a considered in the decisionmaking process. If there are any questions, please contact Alan Takemoto at 808 848 2074.

12.0-2

13.0 Hawaiian Commercial & Sugar Company

- 13.1 Comments on Public Review Draft Instream Flow Standard Assessment Reports for the Hydrologic Units of Honopou (6034), Hanehoi (6037), Piinaau (6053), Waiokamilo (6055) and Wailuanui (6056)**
- 13.2 Schematic of diversion and irrigation system in and around Waiokamilo, Kualani Streams (Exhibit A-25)**
- 13.3 Photograph that depicts the concrete diversion box near Hana Highway (Exhibit A-26)**
- 13.4 Photograph that depicts the grate near Hana Highway (Exhibit A-27)**
- 13.5 Letter from EMI to Mrs. Apolonia Day discussing a number of issues pertaining to the condition of the irrigation system and EMI's offers of assistance to the taro growers (Exhibit A-28)**
- 13.6 Registration of Stream Diversion and Declaration of Water Use (Exhibit A-29)**
- 13.7 Photographs taken on or about March 18, 2004 depicting the condition of Dam 3 on that day (Exhibit A-31)**
- 13.8 Photograph taken on or about March 18, 2004 depicting the repair work performed to Dam 2 and Dam 3 (Exhibits A-32 through A-36)**
- 13.9 Waiokamilo Stream Measurements 60' Above Diversion Dam #2 8/5/86 thru 7/26/05 (Exhibit A-37)**
- 13.10 Photographs showing the before and after condition of Waiokamilo Stream diversions**
- 13.11 Photographs of sinkhole in Waiokamilo streambed between Akeke Springs and Dam 3**

- 13.12 Photographs of Waikani Falls and pool (Exhibit A-56)**
- 13.13 Spreadsheet showing water measurements taken at Kekahuna auwai between March 15, 2004 and May 20, 2005 (Exhibit A-13)**
- 13.14 Site Visit Regarding Honopou, Puloa and Hanehoi Streams, Makawao, Maui prepared by Commission on Water Resource Management (CWRM) (Exhibit A-39)**
- 13.15 Memorandum to File by Garret Hew re 3/11/04 Site Visit to Honopou and Puolua Streams (Exhibit A-12)**
- 13.16 Written Testimony of Thomas R. Payne, M.S.C. from the Na Wai Eha contested case hearing**
- 13.17 Oral testimony of Thomas R. Payne from the Na Wai Eha contested case hearing.**
- 13.18 Written Testimony of John I. Ford, M.S. from the Na Wai Eha contested case hearing**
- 13.19 Letter from Manabu Tagomori to HC&S.**
- 13.20 Written testimony and oral direct testimony of G. Stephen Holaday from the Na Wai Eha contested case hearing, with exhibits**
- 13.21 Written testimony and oral direct testimony of Rick W. Volner, Jr. from the Na Wai Eha contested case hearing**
- 13.22 Letter from Rick Volner to the Commission on Water Resource Management commenting on the State Water Resource Plan Update**
- 13.23 Excel spreadsheet re HC&S field acreages and water sources**



RECORDED
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COMMUNICATIONS SECTION

June 10, 2008

Commission on Water Resource Management
State Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Public Review Draft Instream Flow Standard Assessment Reports for
the Hydrologic Units of Honopou (6034), Hanehoi (6037), Pinaau
(6053), Waiokamilo (6055) and Waiuanui (6056)

Dear Commissioners:

I am writing to you in my capacity as the Manager of Water Resources for Hawaiian Commercial and Sugar Company ("HC&S"), a division of Alexander & Baldwin, Inc. ("A&B"). I am also the President of East Maui Irrigation Company, Limited ("EMI"), a wholly owned subsidiary of A&B. The purpose of this letter is to provide comments on behalf of HC&S and EMI (collectively referred to hereafter as "HC&S") to the Public Review Draft Instream Flow Standard Assessment Reports for the Hydrologic Units of Honopou (6034), Hanehoi (6037), Pinaau (6053), Waiokamilo (6055) and Waiuanui (6056) dated March 2008 (the "IFS Reports").

HC&S would like to acknowledge the considerable effort that the Commission on Water Resource Management ("CWRM") staff has made to collect and present in these voluminous reports information on each of the hydrologic units, particularly given the limited resources that have historically been afforded to this project. Even so, HC&S notes that the IFS Reports have sections that are admittedly incomplete, pending receipt of further information and comments, such as from the Division of Aquatic Resources ("DAR") and from the consultant retained by CWRM to field-verify existing stream diversions.

It is HC&S' understanding that staff intends to utilize these reports to develop recommended Interim Instream Flow Standards ("IFS"). While the IFS Reports are well organized into twelve different categories of information pertaining to the streams, there is no methodology proposed for how staff intends to utilize that information in formulating recommendations to the Commission, nor is there any indication as to whether, when staff does settle upon such a methodology, there will be any opportunity for further comment. This is a matter of great concern to HC&S because the factual, legal and policy issues that are involved in determining IFS in general, but particularly in East Maui, are enormously complex and of vital interest to HC&S, the County of Maui and, ultimately, the entire State of Hawaii. This is

particularly true given that, to HC&S' understanding, this will be the first time that specific IFS will be set by CWRM action other than in the context of a contested case proceeding, such as the long litigated Waiahole case and the currently pending Na Wai Eha contested case, in which HC&S is a party.

The IFS Reports appear to contemplate a highly expedited process for acting upon petitions to amend IFS that will, by virtue of the compressed time periods (from the date of publication of the Public Review Drafts) afforded for public review and comment, necessarily result in a far more abbreviated analysis of the facts, legal issues and public policy considerations at stake than has occurred in either the Waiahole or the Na Wai Eha cases. While such an abbreviated process may well be appropriate for streams where offstream uses are relatively small or do not span multiple hydrologic units, HC&S questions whether it would be appropriate for East Maui where the scale of offstream uses is significant, does span multiple hydrologic units, and in which the public interest is substantial.

In East Maui, the five hydrologic units for which IFS Reports have been published are a mere subset of the hydrologic units covered by the twenty seven pending petitions to amend IFS. These petitions represent an effort by individuals to substantially reduce the surface water collected by EMI and delivered via its integrated system of diversions, ditches and tunnels primarily to HC&S, to irrigate approximately 30,000 acres of its 35,000 acre sugarcane plantation. A significant portion of this water is also delivered to the County of Maui Department of Water Supply ("DWS") to supply the domestic and agricultural needs of upcountry residents.

In terms of both the sheer volume of water at issue and the economic importance of the offstream uses potentially curtailed, the interests at stake in East Maui far exceed the interests at stake in either Waiahole or Na Wai Eha. And while we too would like to see an IFS decision sooner rather than later, HC&S believes it to be imperative that the information gathered and the level of review and analysis brought to bear be commensurate with the magnitude of the interests at stake.

HC&S is appreciative of the opportunity to review and comment on the IFS Reports, and has sought to assemble herewith a package of information that will be as useful as possible given the constraint of the June 10, 2008 deadline imposed by staff. To that end, this submission is organized as follows:

- Reasons why the analysis of all 27 East Maui IFS petitions needs to be consolidated
- General comments re Sections 3 of the Reports: Hydrology
- Specific comments re Waiokamilo
- Specific comments re Waiuanui

- Specific comments re Piinaau
- Specific comments re Honopou
- Specific comments re Hanehoi
- Comments regarding Sections 4 of the Reports: Fish and Wildlife Habitat
- Comments regarding Sections 13 of the Reports: Noninstream Uses

It was simply not possible, however, for HC&S to prepare within this short comment window the full range of appropriate information and analysis that needs to be considered by the Commission before it acts on the 27 pending petitions. HC&S will continue, therefore, to supplement this submission as it assembles more data and analysis regarding HC&S' irrigation needs and the efficiency of its use, the absence of practicable alternatives to its use of EMI ditch water, the economic impacts of restricting its access to EMI ditch water, the analysis of stream macrofauna habitat, etc.

The Analysis Of All 27 East Maui IIFS Petitions Needs To Be Consolidated

In the final analysis, the 27 pending petitions call upon the Commission to "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." Haw. Rev. Stat. § 174C-71(2)(D). Because the EMI ditch system is a single system which combines surface water from multiple sources for largescale offstream agricultural and domestic uses, the 27 pending petitions to amend IIFS need to be analyzed together – not separately.

The reason is very straightforward. While it may be possible, at least to a point, to examine the instream values of each of the East Maui streams on a stream by stream basis, the value of the offstream uses can only be studied and meaningfully measured in the aggregate. For example, a proper analysis of the economic impacts to HC&S of reduced irrigation requires consideration of impacts on the economies of scale that HC&S depends upon to remain commercially viable. It is simply impossible for this to be taken into account if the balancing takes place on a piecemeal, i.e., stream by stream, basis.

Even the weighting of instream values needs to take regional factors into account, such as by assessing the collective contributions to the oceanic larval pool from reproductive activity by amphidromous species in all the streams in a particular region. This enables a bigger picture evaluation of the overall health of species in the region, rather than narrowly focusing upon just the populations occurring in individual reaches of individual streams.

It is also critical to examine what happens during low flows, looking at the system and the offstream uses as a whole. For example, during extended periods of dry weather, the relative contributions of different streams to the EMI ditch system may vary greatly. Some streams may

13.1-3

contribute little or nothing to the system, and the relative percentage of the total ditch flows used by DWS, rather than by HC&S, may rise dramatically. Meanwhile, in streams that are spring fed in their lower reaches, such as Waioakamilo and Palauhulu, the flows that have been relied upon by taro farmers for centuries may well continue, essentially unabated, because the springs arise at elevations far below where EMI's stream diversions are located and do not depend upon a continuous source of surface runoff.

The Water Code expressly contemplates grouping streams together when considering Interim Instream Flow Standards in Haw. Rev. Stat. §174C-71 (2)(F):

Interim instream flow standards may be adopted on a stream-by-stream basis or may consist of a general instream flow standard applicable to all streams within a specified area

Several years ago, HC&S participated in stream protection meetings convened by CWRM staff that brought together people representing a wide range of interests. There was, for good reason, widespread consensus in those meetings on taking a regional approach to setting IIFS. HC&S submits that nothing has changed since them to warrant taking a different approach now.

General Comments Regarding Sections 3 of the Reports: Hydrology

All five of the IFS Reports rely heavily on use of regression equations from Gingerich (2005) to estimate median and low (Q_{95}) flowrates. Although these equations are easy to apply, there are a couple of potentially serious errors in doing so. First, the equations were developed for a limited area of East Maui. Two of the five streams for which IFS Reports were done, Hanehoi and Honopou, are three and five miles to the west of the study area of Gingerich (2005). Use of the Gingerich's regression equations for these two streams is without foundation and should not be acceptable as a regulatory tool.

Second, the relative errors in the application of the regression equations within the study area are clearly documented in Gingerich (2005). Particularly in the case of Q_{95} flows, these errors are very large. None of the IFS Reports even note the potential error in using these equations.

Third, the Q_{95} regression equations for total and base flow use only two parameters, rainfall and the inverse of maximum basin elevation. There is no accounting in these equations for gaining or losing stream reaches which dominate actual low flow statistics. Given the simplistic predictions of these equations and their large relative errors as documented in Gingerich (2005), it is hard to accept that this should be the basis of regulatory controls for the use of stream water. Actual low flows should be documented by a series of seepage run measurements in order to provide a valid basis for regulation.

13.1-4

Comments Specific To Hydrologic Unit 6055: Waiokamilo

Among the streams addressed in the March 2008 IFS Reports, Waiokamilo Stream has attracted the most controversy because of claims made by some of the taro farmers in Waiuanui Valley that EMI's diversions are depriving them of an adequate supply of irrigation water during periods of dry weather. Importantly, however, since mid 2007, as the result of a ruling by the Board of Land and Natural Resources ("BLNR") from which EMI licenses the State owned watershed lands above Waiokamilo Stream, EMI has not diverted any water from Waiokamilo Stream or any of its tributaries — a fact that should be but is not mentioned in the IFS Report. Further, as demonstrated by stream flow measurements taken by the United States Geologic Survey ("USGS"), there has been no enhancement of stream flows during dry periods by reason of EMI having closed its diversions.

The important lesson to be learned from this experience is that complaints regarding the alleged effects of the EMI Ditch System on traditional taro farmers must be carefully scrutinized and compared with both the historical record and the facts on the ground. To a significant extent, this is exactly what has occurred between the BLNR contested case proceeding held in 2005, and the stream flow monitoring by USGS that has followed.

EMI's Koolau Ditch, completed in 1904, is the only one of its ditches that reaches far enough east to collect water from the Waiokamilo Hydrologic Unit. There have been no major changes to the Koolau Ditch since it was originally constructed, although there have been some minor enhancements in the collection of seeps with the use of PVC pipes. All of these minor enhancements, however, predated my employment with EMI in 1985. In other words, there has been no increase in EMI's capacity to collect water from Waiokamilo Stream and its tributaries since 1985. This is also true for the Pimaau and Waiuanui Hydrologic Units.

The Koolau Ditch intersects Waiokamilo Stream at an elevation of approximately 1,300 feet along the face of a cliff. The primary diversion is located approximately 1600 feet upstream of Kikokiko Bridge, where the Koolau Ditch and the ditch access road intersect the stream. The diversion was originally constructed this way because this 1600 foot section of the stream is a losing reach, and therefore a flume and concrete ditch needed to be installed to bypass this leaky section of the streambed.

Several hundred feet below Kikokiko Bridge, the stream is fed by ground water springs known as "Banana Springs," also known as "Akeke Springs." The IFS Report notes, at page 28, that when USGS took measurements on May 11, 1999, "The stream gained about 3.8 million gallons per day from the spring, which discharges from the Honomanu Basalt (Gingerich, 1999)." This is consistent with measurements that have been taken by EMI at various times, none of which ever recorded less than 3 mgd in Waiokamilo Stream at a gauging station installed by EMI in 1986 at a point just above where the taro diversion dam known as "Dam 2" is located.

As discussed extensively in the testimony and exhibits submitted to the BLNR in the 2005 hearing, Akeke Springs is the primary source of taro irrigation water in the Waiuanui area and, as noted above, is below the EMI ditch system. Ancient 'auwai systems were designed to

13.1-5

capture Akeke Spring water, divert it around leaky sections of streambed, and carry it into Waiuanui Valley at elevations from which it could be distributed by gravity flow to most of the sloping valley floor. A schematic of the system that was introduced as Exhibit A-25 in the 2005 hearing is attached (Tab 1).

As depicted in Exhibit A-25, Dam 3 directs the flow of Waiokamilo Stream to the east around a porous pool that would otherwise receive the bulk of the stream flow and would significantly reduce downstream flow. Below Dam 3 is Dam 2, which diverts a portion of the stream flow via an 'auwai to Kualani Stream, from where it ultimately flows to Dam 1, into the 'auwai supplying the Lakini and Waiuanui taro lo'i. Water exiting from the Lakini lo'i then flows under the Hana Highway at two locations: a culvert that feeds into a concrete diversion box from which water can be diverted into two ditches (the "upper ditch" and the "lower ditch") and through a grate that takes the water under the Hana Highway and into another ditch below the "lower ditch". Attached as Exhibit A-26 (Tab 2) is a photograph that depicts the concrete diversion box. Attached as Exhibit A-27 (Tab 3) is a photograph that depicts the grate. In addition, there is a diversion dam on Waiokamilo Stream below the Hana Highway that feeds another 'auwai in the valley.

When I first joined EMI in 1985, there was already a history of EMI maintaining a dialogue with and assisting the taro growers regarding their irrigation needs. For example, attached hereto as Exhibit A-28 (Tab 4) is a copy of a July 30, 1982 letter from EMI to Mrs. Apolonia Day discussing a number of issues pertaining to the condition of the irrigation system described above, and EMI's offers of assistance to the taro growers. Mrs. Day later assumed the role of president of an organization called the "Waiuanui Taro Growers." In that capacity, she approached me and requested my assistance in registering the diversions used by the taro growers in order to comply with the registration requirement of the State Water Code. In response to her request, I assisted in the preparation of the Registration of Stream Diversion Works and Declaration of Water use filed with CWRM on May 30, 1989 that described, among other matters, the location, use and construction materials for diversion structures in the irrigation system. A copy of that registration document is attached hereto as Exhibit A-29 (Tab 5).

Sometime in the early 1990's, the condition of the "upper ditch" was very poor due to severe leaks in the ditch and an excessive growth of hau. EMI coordinated an effort to assist with a repair of the upper ditch. To assist the growers, EMI donated a quantity of 12 inch PVC pipe to the growers for their use in repairing the leaking portions of the upper ditch. The pipe was hauled and delivered to the growers at EMI expense but was never installed. The upper ditch was later abandoned and is currently overgrown with hau.

More recently, I have offered EMI's assistance on several occasions to Mr. Ed Wendt, who represents Na Moku 'Aupuni o Ko'olau Hui ("Na Moku"), the group that filed 25 of the 27 pending petitions to amend IIFS in East Maui. On March 15, 2004, in an attempt to resolve complaints about the availability of water to Waiuanui taro growers, A&B, EMI, and Na Moku, among other parties, entered into an Interim Agreement re Taro Water in East Maui (the "Interim Agreement").

13.1-6

It was recognized at the time of the Interim Agreement that Dam 3 was leaking water into a lower pond and in need of repair. Attached as Exhibit A-31 (Tab 6) is a photograph taken on or about March 18, 2004 depicting the condition of Dam 3 on that day. It was also recognized that, with respect to Dam 2, gravel needed to be removed from the mouth of the 'auwai leading from Dam 2. Pursuant to the Interim Agreement, EMI agreed to: (a) reconstruct Dam 3 to coincide with its size and condition at the time of its registration with CWRM in order to improve the reliability of the irrigation water supply, reduce the need for ongoing repairs to the structure, and prevent the dam from washing away entirely, and (b) clear gravel and other debris blocking the 'auwai leading from Dam 2.

On October 18, 2004, EMI commenced work on the reconstruction of Dam 3. The work was completed on October 28, 2004. Also on October 28, 2004, EMI cleared gravel from the mouth of the 'auwai leading from Dam 2 and other debris in the streambed mauka of Dam 2. Photographs taken on October 28, 2004 depicting the repair work performed are attached hereto as Exhibits A-32 through A-36 (Tab 7). No work was done on Dam 1 because Mr. Wendt advised EMI that Na Moku would address the maintenance and repairs needed for this structure.

There is an EMI gauging station immediately mauka of Dam 2 that was established in 1986, but EMI thereafter discontinued taking readings. After the repairs were done, the gauging station was recalibrated to account for changes in the dimensions of the stream channel and measurements were resumed in 2005. On July 26, 2005, the gauging station measured the flow rate of Waiokamilo Stream at between 3.57 and 3.85 mgd. See Exhibit A-37 (Tab 8).

Notwithstanding the Interim Agreement, the BLNR hearing proceeded in 2005 because Na Moku claimed that the repairs made by EMI to Dam 3 and the maintenance done at Dam 2 did not result in enough of an enhancement to stream flows. A brief summary of the salient facts introduced in the hearing regarding taro cultivation with Waiokamilo Stream water is as follows:

- The Koolau Ditch was completed in 1904 and has not been significantly altered since then.
- Notwithstanding the continuous operation of EMI's Koolau Ditch diversion since at least 1904, from 30 to 50 acres of taro has been cultivated for most of the last century with Waiokamilo Stream water, primarily delivered to Waiuhau Valley via the Dam 2 and Dam 1 diversions, and then routed under the Hana Highway.
- Evidence was submitted that Akeke Springs consistently produces at least 3 mgd.
- At the time of the hearing, there were approximately 17 acres of taro in cultivation utilizing Waiokamilo Stream water above and below the Hana Highway.

13.1-7

- Expert testimony was submitted from Dr. De La Pena on behalf of EMI that 50,000 gallons per acre per day ("gad") was an adequate volume of water for wetland taro.
- Expert testimony was submitted from Paul Reppun on behalf of Na Moku that 100,000 to 300,000 gad was required for wetland taro.

After the completion of the hearing and extensive briefing, the BLNR decided that insufficient evidence was presented upon which it could determine the water requirements of the taro farmers measured in gad. The BLNR further found that, based on the evidence of stream flow originating in Akeke Springs, i.e., below the Koolau Ditch, "There should be sufficient water available in Waiokamilo Stream below EMI's diversions to support the 17 acres of lo'i in Waiuhau currently in cultivation that depend on water from Waiokamilo Stream," but that the "observed result is that the flow through of water from Waiokamilo Stream through Lakini is not sufficient to regularly and dependably irrigate all the fields that Na Moku members and their ancestors were able to irrigate below the Hana Highway" prior to the 1904 completion of the Koolau Ditch.

From this, the BLNR concluded that the evidence, "suggests that taro farmers in the lower Waiuhau valley have inadequate water in the lower valley that is available to them for their present taro growing needs. The precautionary principle requires an interim release of water into Waiokamilo Stream, subject to adjustment based on further monitoring."

Accordingly, and even though no evidence was presented regarding what the natural, undiverted stream flow would be during dry conditions, the BLNR ordered that "A&B/EMI shall decrease current diversions on Waiokamilo Stream such that the water flow can be measured below Dam #3 at the rate of 6,000,000 gpd based on a monthly moving average on an annual basis."

Because EMI believed that, even if no water was diverted from Waiokamilo Stream, the natural flow would be less than 6 mgd, except during freshets, EMI closed off all of its intakes on Waiokamilo Stream and its tributaries by the summer of 2007. Attached are photos showing the before and after condition of these diversions (Tab 9).

The DLNR then contracted USGS to install a gauge and continuous recorder just above Dam 3 to monitor the stream flows. The readings are available online at <http://waterdata.usgs.gov/nwis/uv?16521300>. The measurements have consistently recorded flows of less than 3 mgd during periods of low flows, i.e., even less than the 3.8 mgd flow from Akeke Springs that USGS measured in 1999, before EMI closed off its diversions.

The closing off of the EMI diversions has not yielded increased stream flows above Dam 3 because water is lost through filtration into the ground between the location of the EMI diversions and Dam 3. As previously noted, the Koolau Ditch intakes were originally built to bypass leaky sections of streambed just above the ditch. After the intakes were closed off, the water was able to again filter into the ground/streambed rather than augmenting stream flows below.

13.1-8

In addition, EMI has documented at least one major sinkhole that has opened up in the Waiokamilo streambed between Akeke Springs and Dam 3 (photo attached, Tab 10) and there may be others. This explains why there is even less water at Dam 3 during low flows now than had been consistently measured in the past. There are traces of concrete on rocks around this sinkhole indicating that, in the past, it had been sealed off from the main stream channel to augment flows similarly to the manner in which Dam 3 diverts water away from a sinkhole in the streambed. With the benefit of hindsight, it is easy to understand why the ancient Hawaiians constructed the 'auwai system to avoid leaky sections of the stream. Further, given the power of flash floods during storm conditions to shift boulders and alter the stream channel, it seems likely that constant vigilance and aggressive maintenance was required along the losing reaches of the stream to insure that water would be consistently diverted around new sinkholes, as they appeared.

The IFS Report for Waiokamilo fails to reflect this physical reality because it relies on regression equations to estimate from rainfall and drainage basin data what the natural (undiverted) stream flows would be. To HC&S' understanding, as previously noted in its general comments to Sections 3 of the IFS Reports, this methodology does not take into account geologic conditions, such as a highly permeable substratum.

The IFS Report fails to even mention or analyze the data from the USGS continuous recorder installed on Waiokamilo Stream above Dam 3. At periods of low flow, the gauge is recording flows of from 2.5 to 3.0 cfs, as compared to the TFO₉₅ (total flow that is exceeded 95% of the time) estimate of 5.4 cfs predicted by Table 3-2 at page 29 of the IFS Report.

The important point here is that, even though EMI has completely stopped diverting water from Waiokamilo Stream, during periods of low flow this has not resulted in any measurable increase in the flows below the EMI diversions because the relatively modest surface water flows from the upper elevations during dry weather do not naturally reach the middle and lower elevations of the stream, but are instead lost to filtration into the ground. This fact is not predicted in the regression equations, which do not take into account water lost to filtration into the ground.

Thus, because of the BLNR ruling, which erroneously assumed that decreasing EMI's Koolau Ditch diversions would result in increased stream flows below the Koolau Ditch during dry weather, HC&S is currently unable to divert any water from Waiokamilo Stream to irrigate its fields at all, including during the dry summer months — but there is no corresponding benefit to instream values during these periods.

This illustrates the importance of regulators having accurate hydrologic information based on actual measurements of stream flow and direct observation of physical conditions in the field. The Waiokamilo situation is clear proof that heavy reliance upon purely mathematical extrapolations from assumed conditions induces large margins of error which may lead to poor decisions with regard to the setting of IIFS.

13.1-9

HC&S believes that, given the losing nature of the stream between the Koolau Ditch and Akeke Springs, there is no benefit to increasing the instream flows on Waiokamilo Stream, while there are negative economic impacts. Thus, there is no reason to amend the IIFS for Waiokamilo Stream.

Comments Specific To Hydrologic Unit 6056: Waiuanui

Taro growers in Waiuanui Valley have historically diverted water from Waiuanui Stream to irrigate taro patches in the eastern portion of the valley. Water from Waiuanui Stream flows under Hana Highway over Waikani Falls, and collects in a pond below the falls. Springs are the main source of water to this portion of the valley.

An 'auwai intake from the pond carries water to the patches utilizing Waiuanui water. An 8 inch pipe with an elbow fitting installed in the pond to a depth of several feet below the 'auwai intake was used for many decades to reliably draw water from the pond to the taro patches on the eastern side of the valley located at elevations low enough to be gravity fed from the pond.

A landslide that occurred a few years prior to the 2005 BLNR hearing partially filled the pond with boulders and broke the elbow joint off of the 8 inch pipe, limiting the ability of the pipe to take water from the pond when the pond level drops during dry weather.

EMI inspected the pond (photos attached, Tab 11) and broken pipe after the landslide and offered to assist in repairs. No consensus was ever reached, however, as to how to go about addressing the problem and EMI believes that conditions remain as they were after the landslide.

When the BLNR contested case hearing was held in 2005, approximately 2.5 acres of taro was then being cultivated with Waiuanui Stream water. During the hearing, Na Moku President Ed Wendt confirmed that the patches Na Moku was seeking additional water to cultivate could only get their water from Waiokamilo Stream, not Waiuanui Stream, due to gravity flow considerations. Accordingly, the BLNR decision did not order any releases into Waiuanui Stream.

EMI submits that it would not make sense to amend the IIFS for Waiuanui Stream for considerations of taro cultivation prior to 1) an effort being undertaken to repair the pipe intake, and 2) an evaluation of the result. Otherwise, as is the case with Waiokamilo Stream, reducing EMI's diversions at the elevation of the Koolau Ditch may result in no potential benefit to taro growers to compensate for the negative economic impacts to HC&S of losing the water it receives from this source during periods of dry weather.

Comments Specific To Hydrologic Unit 6053: Pinaau

Pinaau and Palauhulu Streams, like Waiokamilo Stream, are only diverted by EMI at the level of the Koolau Ditch, far above the springs below that have historically been relied upon by taro farmers. Only Palauhulu water is used by the Keane taro growers. During the 2005 BLNR

13.1-10

contested case hearing to determine whether interim releases were necessary to meet taro farming needs, no request was made for releases from these streams.

EMI believes that, due to conditions in these streams similar to Waiokamilo Stream, i.e., leaky sections of streambed below the Koolau Ditch, water that is currently taken into the Koolau Ditch during low flows would be lost to filtration into the ground rather than augmenting stream flows at the lower elevations.

As outlined below, this physical reality is not reflected in Section 3 of the IFS Report for Piinaau because of its misplaced reliance upon regression equations to estimate what the natural flow in these streams would be absent the EMI diversions.

With respect to Piinaau Stream:

- Table 3-1 at page 31 of the IFS Report for Piinaau is entitled, "Stream flow statistics estimated using regression equations, lower and upper confidence intervals, standard errors, measured flow, and relative errors for engaged basins in Piinaau and Palauhulu Streams (Gingerich, 2005)."
- The TFO₉₅ estimates predict that, 95% of the time, the natural flow of Piinaau Stream exceeds 9.4 cfs at 1,322 feet, 12 cfs at 475 feet and 13 cfs at 35 feet.
- The only actual measurements listed are >0.47 cfs at the lower two sites which are stated to be from 1928, with "an unknown amount of upstream diversion at Koolau Ditch." This results, according to the table, in "relative error" of "<2500" at the middle site and "<2700" at the lower site.
- Piinaau Stream is diverted above the Koolau Ditch at an approximate elevation of 1320 feet. Because of the degree of filtration into the ground/streambed at the elevation of the ditch, the water is actually captured several hundred feet above the ditch and delivered to the ditch via a 6 inch pipe. Based on EMI's observations over the years, during periods of low flows, all of the water that is captured upstream by the pipe would otherwise seep into the streambed, i.e., it would not flow down past the ditch even if none were taken into the ditch.
- Assuming this to be true, there is no contribution to the stream flow of the middle and lower reaches of Piinaau Stream from the upper reaches during periods of low flows, because of extensive filtration into the streambed. The flows observed in the lower section are spring fed.
- These observable facts are not predicted by the regression equations, which instead predict that, 95% of the time, the flow in the middle reach is at least 12 cfs. If the 0.47 cfs measured in 1933 was, as stated, taken at a Q₉₀ flow, i.e., when no surface water would naturally be reaching the middle reach from the upper

13.1-11

reach, then the regression equations overstate the actual undiverted flow by 25.5 times.

- This demonstrates the unreliability of the regression equations for estimating undiverted stream flow, and the importance of direct measurements and on the ground observations.

With respect to Palauhulu Stream:

- Table 3-1 at page 32 of the IFS Report does not contain any measured flows above elevation 71 feet against which to cross check any of the estimates generated from regression equations.
- The comment next to the estimate for the middle elevation, at 517 feet, indicates that Plunkett Spring contributes an average flow of 2.7 cfs (citing Stearns and Macdonald, 1942), "but stream goes dry due to infiltration losses so effects of natural flow addition are unknown."
- There is no explanation in Tables 3-2 and 3-3 as to how the estimates of what the undiverted stream flow would be at the middle elevations were arrived at, but if the situation were to be similar to Waiokamilo and Piinaau Streams to the East and West, respectively, any undiverted water would filter into the ground during low flows rather than augmenting stream flows in the lower elevations.

For the foregoing reasons, HC&S believes that it would make no sense to amend the IFS for the Piinaau Hydrologic Unit since reducing EMI's diversions will likely have no impact on stream flows in the lower elevations during periods of dry weather.

Comments Specific To Hydrologic Unit 6034: Honopou

Honopou Stream was one of the streams that was the subject of the 2005 BLNR hearing. Specifically, Beatrice Kekahuna, who is also one of the petitioners who filed the pending petition to amend the IFS for Honopou Stream, has an 'auwai that takes water from Honopou Stream below EMI's Haiku Ditch, one of four EMI ditches that intersect Honopou Stream.

As was the case with Na Moku in Wailuanui Valley, EMI attempted to work with Ms. Kekahuna prior to the BLNR hearing to address her needs. On March 9, 2004, EMI installed a 4" pipe in addition to the two already existing 4" pipes bypassing Haiku Ditch on Honopou Stream above her 'auwai. The 4" pipe was installed for the purpose of insuring that a minimum of 100,000 gallons per day (gpd) would be delivered to Mrs. Kekahuna's 'auwai.

During a site visit conducted on March 11, 2004 (the "3/11/04 Site Visit"), I measured the flow rate of water coming through the three 4" pipes at Haiku Ditch on Honopou Stream at 361,224 gpd. I measured the amount of water flowing through the additional 4" pipe at approximately 112,000 gpd. The intake to Mrs. Kekahuna's 'auwai is controlled by a gate that

13.1-12

she normally keeps partially closed because if she were to keep it all the way open, water would overtop the 'auwai where it crosses her yard next to her house and flood her lawn. EMI agreed to assure her at least 100,000 gpd at this point and took measurements to monitor the amount of water that was available to her.

Attached as Exhibit A-13 (Tab 12) is a spreadsheet showing water measurements taken at the 'auwai between March 15, 2004 and May 20, 2005. The measurements were taken with a portable Parshall Flume with a maximum capacity to measure 235,000 gpd. As shown in the spreadsheet, every time a measurement was taken during the 14-month period, the flow rate at Kekahuna's 'auwai was in excess of 235,000 gpd except for one time on September 10, 2004 when flow was measured at 219,000 gpd (see the "Flow" column of Exhibit A-13). At certain times, the flow rate was so high that it was not possible to obtain a measurement with the Parshall Flume.

When taking measurements of flow rate at Kekahuna's 'auwai, it was necessary each time to open the gate to the 'auwai completely in order to obtain an accurate reading of the full amount of water available for diversion into the 'auwai. Sandbags were used to channel all of the water in the 'auwai into the Parshall Flume for an accurate measurement. During the period covered by the measurements, the flows in Honopou Stream at the intake to her 'auwai have been controlled by the area of the gate opening such that Mrs. Kekahuna has never taken all of the water that was available to her because if she did, it would overflow the banks of her 'auwai during times of high flows in Honopou Stream.

Exhibit A-13 reflects a full year's worth of flow measurements at Mrs. Kekahuna's 'auwai. During the year-long measurement period, there were dry periods as well as rainy periods, as shown in the column in Exhibit A-13 labeled "Rain." The flow rate measured at Mrs. Kekahuna's 'auwai consistently remained in excess of 235,000 gpd throughout the year except on one occasion, even during times of low rainfall. For example, there was no rainfall recorded on 6/17/04, 7/23/04, 7/30/04, 8/20/04, 9/03/04, 10/15/04, 11/05/04, 11/12/04, 11/22/04, 12/17/04, 1/20/05, 1/26/05, and 4/22/05, and yet, the flow rate recorded on those days was in excess of 235,000 gpd.

In view of the foregoing evidence, the BLNR concluded that there was adequate water available at Mrs. Kekahuna's 'auwai for her anticipated taro needs as of the date that it rendered its ruling, but ordered that the situation be monitored. EMI continues to pass water through the three pipes at its Haiku Ditch diversion. Accordingly, HC&S does not believe there is any reason for an amendment of the IIFS for Honopou for purposes of Ms. Kekahuna's anticipated taro growing needs.

Apart from providing this background information relative to the BLNR hearing as it related to Ms. Kekahuna, HC&S has the following concerns regarding the hydrologic data contained in Section 3 of the IFS Report:

- Table 3-7 at page 32 of the IFS Report for Honopou is entitled, "Flow statistics estimate using regression equation for ungaged basins of Honopou and Puniawa."

13.1-13

- The TFO₉₅ (the flow that is exceeded 95% of the time) for the Honopou middle site, which is stated to be at an elevation of 595 feet, is 4.3 cfs.
- Table 3-5, however, on the previous page, contains direct measurements from four different elevations that were taken by USGS on October 21, 1933 and July 5, 1946. The measurements from USGS Station 1651000, at elevation 557 feet, were 0.15 cfs on October 21, 1933 and 0.55 cfs on July 5, 1946. The regression equation estimate for the flow that is exceeded 95% of the time thus exceeded the actual flow measured by 28.67 and 7.82 times, respectively.

This again clearly demonstrates the unreliability of the use of regression equations, in lieu of direct measurements, for estimating natural stream flow.

Comments Specific To Hydrologic Unit 6037: Hanehoi

Hanehoi Stream and its tributary, Puolua Stream, in the Hanehoi Hydrologic Unit, were also addressed in the 2005 BLNR hearing. Specifically, there was a claim by Ernest Schupp, who was then farming some leased land on Puolua Stream just below EMI's Haiku Ditch, that there was an inadequate supply of cool water at the intake to his 'auwai for the approximately one acre of taro that he was seeking to cultivate.

During a field visit to areas around Honopou, Puolua, and Hanehoi Streams conducted by the staff of CWRM on August 13, 2001, CWRM staff took measurements of the temperature of the water entering Shupp's 'auwai. A copy of a report of the field visit prepared by CWRM staff is attached hereto as Exhibit A-39 (Tab 13). The report states that the water entering Shupp's 'auwai was measured at 70° F and the water exiting the 'auwai was measured at 80° F.

During the 3/11/04 Site Visit, I took measurements of the flow rate at the Haiku Ditch diversion on Puolua Stream, which supplies water to Shupp's 'auwai. I measured the flow rate at Haiku Ditch at 262,000 gpd. See Exhibit A-12 (Tab 14).

During the 3/11/04 Site Visit, I observed that Shupp's 'auwai was in disrepair and not in use. Shupp's lo'i was not in production. On behalf of EMI, I offered to provide him with assistance to repair his 'auwai. Shupp informed me that when he was ready to grow taro again, he would contact EMI. Shupp never did contact EMI before the 2005 BLNR Hearing. The BLNR decision concluded that there was adequate water in Puolua Stream at Mr. Shupp's 'auwai for his anticipated taro needs, and that the evidence did not support his claim. HC&S is not aware of any changes in conditions that would warrant an IIFS amendment to accommodate taro cultivation in the Hanehoi Hydrologic Unit.

Apart from providing this background information relative to the BLNR hearing as it related to Mr. Shupp, HC&S has the following concerns regarding the hydrologic data contained in Section 3 of the IFS Report:

- Table 3-2 at page 28 of the IFS Report for Hanehoi is entitled, "Flow statistics estimate using regression equations for ungaged basins of Honopou and Puniawa."

13.1-14

- The TFO₉₅ estimates range from 3.07 cfs at the outlet of Hanehoi Stream to 0.74 cfs at the middle site on Huelo Stream.
- There are no actual measurements provided, however, to compare these estimates to. If the regression equations overstate actual stream flow in Hanehoi and Huelo Streams to the same degree as they do in Honopou Stream, the actual undiverted stream flows could be far less than estimated in Table 3-2.

Comments Regarding Sections 4 Of The IFS Reports: Maintenance Of Fish And Wildlife Habitat

Sections 4 of each of the IFS Reports, which are designed to address "Maintenance of Fish and Wildlife Habitat," appear to be a template with little or no stream specific data. There are some references to stream survey data being collected or updated by DAR but the updated survey results are not included in the March 2008 IFS Reports.

HC&S understands that DAR may have subsequently completed its work, and some results may be included in its Atlas of Hawaiian Watersheds. HC&S has not had sufficient time to review or interpret the DAR results with its consultants and must therefore reserve any comments on the DAR stream surveys for a supplemental submission.

HC&S would like to note, however, that some of Sections 4 cite and refer to a 2005 USGS study of the "Effects of Surface-Water Diversions on Habitat Availability for Native Macrofauna, Northeast Maui, Hawaii." The IFS Reports fail to mention, however, that questions have been raised about the approach taken in that study and some of the methods employed.

The USGS employed a method of habitat modeling known as "PHABSIM," which stands for, "Physical Habitat Simulation." The USGS is in the process of doing a similar study in the Na Wai Eha streams and the value and appropriateness of such a study were the subject of expert testimony submitted in the Na Wai Eha contested case. Stream Biologist Thomas R. Payne, M.S.C., in his written testimony, a copy of which is attached (Tab 15), testified as follows:

PHABSIM analysis is based solely on water velocity, water depth, and substrate and/or cover suitability for particular species at discrete sample points in a stream. It does not consider species interactions, food availability, recruitment, migration, predation, competition, water quality, sedimentation, aesthetics, safety, or other potential influences on aquatic species population levels. Population abundance is only indirectly inferred from PHABSIM results, without any direct quantification or prediction of individual species numbers or density, and the method as a whole remains unvalidated for Hawaiian streams and aquatic organisms. If a validation of PHABSIM were to be done in Hawai'i, it would consist of a specific study of the direct or indirect relationship between habitat variability and target species population dynamics, using methods described by Bovee et al. (1994).

13.1-15

In addition to being unvalidated in Hawai'i, PHABSIM simply generates an index of aquatic habitat suitability in relation to streamflow. One index is generated for each aquatic species at each study site on each stream, and these graphs must be reconciled and interpreted. As accurately stated in Gingerich and Wolff (2005), "no single answer results from this approach. The results are meant to show relative changes in habitat with changes in base flow. These results are intended to be used along with other biological and hydrological information in development, negotiations, or mediated settlements for instream flow requirements." In other words, considerable work remains to be done before defensible instream flow standards could be recommended from PHABSIM studies alone.

Mr. Payne also provided extensive oral testimony, a transcript of which is also attached (Tab 16) for your convenience.

Stream biologist John I. Ford, M.S., of SWCA Environmental Consultants, also testified in the Na Wai Eha case and his written testimony, which contains a good discussion of the published literature regarding some of the amphidromous species that populate Hawaiian streams and the factors affecting their adaptation to various flow conditions, is also attached (Tab 17).

HC&S will supplement these comments with additional information after it has had the opportunity to fully review the DAR survey results with its consultants.

Comments Regarding Sections 13 Of The IFS Reports: Noninstream Uses

HC&S notes that in Sections 13 of the IFS Reports, which discuss "Noninstream Uses," there are references to EMI's registration of its "major" and "minor" diversions as follows:

Though EMI registered all of its "major" diversions (included in Table 13-1), EMI opted not to register their "minor" diversions and instead provided a map, lists, and photographs. Though these minor diversions may vary widely in construction, one example consists of a small concrete basin collecting ground water seepage, which then transports the collected water via a gravity-flow PVC pipe to a larger ditch, ultimately joining one of the primary systems. The registration of these minor diversions is arguable since the contribution of these small seeps and springs to total streamflow is unknown.

(Emphasis added).

The registration of all of EMI's diversions under the Water Code, after it was adopted, was a very large undertaking and one which was assigned to me. In formulating an approach to how to register all of these "minor" diversions, for which there was no existing precedent, I

13.1-16

consulted with and followed the advice I was given by Commission staff. I believe that staff approved of the approach taken given the following comments later made by then deputy director of CWRM, Manabu Tagamori, "[I]f we had an award for the best submission of registration and declaration of use forms, it would be won by East Maui Irrigation." (See copy of letter dated May 30, 1990, Tab 18). HC&S respectfully submits that any intimation in the IFS Reports that EMI may not have adequately registered all of its "minor" diversions is unjustified.

While the IFS Reports acknowledge in Sections 13 that, "The presence of the EMI system adds considerable complexity to the Commission's role in weighing instream and noninstream uses," there is insufficient information in the 8 pages that follow to even begin the required balancing analysis, nor is any method of analysis proposed or discussed. Inasmuch as this is at the crux of what the Commission must do pursuant to Haw. Rev. Stat. §174C-71(2)(D), and the public and private interests at stake are enormous, HC&S does not believe that the Reports are developed enough on this point for meaningful comment, because there is no hint as to how the staff intends to use the relatively small amount of information abstracted in these pages in formulating recommendations as to how to balance instream values against the economic impacts of reducing offtstream uses.

HC&S intends to supplement this submission with more information. To immediately assist the staff, however, HC&S is including herewith excerpts from some of the testimony and exhibits from the pending Na Wai Eha contested case hearing, in which HC&S' use of approximately 50 mgd to irrigate just over 5000 acres of sugar cane is at issue. Specifically, the written testimony and oral direct examination of G. Stephen Holaday, the President of A&B's Agribusiness Group, is attached (Tab 19) along with related exhibits because, even though it is framed around the Na Wai Eha issues, it should be useful for purposes of understanding some of the strategic business considerations involved in coping with the negative economic impacts of reduced access to surface water for irrigation of HC&S sugarcane fields.

Also attached (Tab 20) is the written testimony and oral direct examination of Rick W. Volner, the Senior-Vice President of Agricultural Operations for HC&S. Again, while this testimony was prepared and framed around the impacts of reduced irrigation water from Na Wai Eha, rather than from East Maui, it contains useful explanations of HC&S farming operations and the management of its irrigation systems and practices. HC&S is in the process of compiling information and comments that are more directly applicable to East Maui, which will be made the subject of supplemental submissions.

Also attached is a copy of Mr. Volner's January 11, 2008 letter (Tab 21) to the Commission commenting on the State Water Resource Protection Plan Update, with specific reference to the Public Review Draft Water Resource Protection Plan's recommended values for sustainable yields for the Kahului, Paia and Makawao aquifers. HC&S notes that the IFS Reports do not appear to discuss in any detail the tension between HC&S' use of surface water from East Maui and its use of brackish well water pumped from these aquifers. HC&S already relies heavily upon these aquifers to irrigate its fields when EMI ditch flows are low. While HC&S, as stated in Mr. Volner's letter, believes that the current and proposed sustainable yields for these aquifers are too low, HC&S respectfully submits that, given the current and proposed sustainable yields for these aquifers, it is apparent that HC&S has no practicable alternative to its

current use of EMI ditch water from East Maui to irrigate its sugarcane fields for purposes of Haw. Rev. Stat. § 174C-71(1)(E).


In response to a specific request for information HC&S received from Commission staff on April 24, 2008, a spreadsheet of HC&S fields broken down by acreages and water sources is attached (Tab 22). Enclosed behind Tab 23, in addition, is a CD of digital files containing HC&S field polygons with field numbers data attached. This should be used only for illustrative purposes and is not accurate with regard to field acreages.

In closing, HC&S would like to emphasize that the stakes for HC&S, and the public, are much larger in East Maui than in Na Wai Eha, since the EMI ditch system is used to irrigate approximately 30,000 acres, i.e., the vast majority of HC&S' plantation. Accordingly, the necessity for a thorough analysis of the economic impacts of reductions in the availability of surface water to HC&S from the East Maui streams is even more important than in the Na Wai Eha case, which has consumed weeks of testimony and extensive briefing for several months before the hearing, and post hearing briefing that has not yet been completed. HC&S believes that much more in the way of an economic impacts analysis, in particular, need to be completed. HC&S fully intends to prepare a comprehensive supplemental submission focused on these impacts to assist staff in developing its final recommendations to the Commission.

Thank you for the opportunity to provide these comments.

Very truly yours

HAWAIIAN COMMERCIAL & SUGAR COMPANY



Garret Hew
Manager, Water Resources

Attachments to Letter from Garret Hew to
Commission on Water Resource Management dated June 10, 2008

<u>Tab</u>	<u>Date</u>	<u>Description</u>	<u>Tab</u>	<u>Date</u>	<u>Description</u>
1.	07/30/82	Schematic of diversion and irrigation system in and around Waiokimilo, Kualani Streams (Exhibit A-25)	14.	03/11/04	Memorandum to File by Garret Hew re 3/11/04 Site Visit to Honopou and Puolu Stream (Exhibit A-12)
2.	05/30/89	Photograph that depicts the concrete diversion box near Hana Highway (Exhibit A-26)	15.	10/25/07	Written Testimony of Thomas R. Payne, M.S.C. from the Na Wai Eha contested case hearing
3.	03/18/04	Photograph that depicts the grate near Hana Highway (Exhibit A-27)	16.	12/11/07	Oral testimony of Thomas R. Payne from the Na Wai Eha contested case hearing
4.	10/28/04	Letter from EMI to Mrs. Apolonia Day discussing a number of issues pertaining to the condition of the irrigation system and EMI's offers of assistance to the taro growers (Exhibit A-28)	17.	10/26/07	Written Testimony of John I. Ford, M.S. from the Na Wai Eha contested case hearing
5.	07/26/05	Registration of Stream Diversion and Declaration of Water Use (Exhibit A-29)	18.	05/30/90	Letter from Manabu Tagomori to HC&S.
6.	08/31/01	Photograph taken on or about March 18, 2004 depicting the condition of Dam 3 on that day (Exhibit A-31)	19.	09/14/07 10/26/07 11/16/07 01/31/08	Written testimony and oral direct testimony of G. Stephen Holaday from the Na Wai Eha contested case hearing, with exhibits
7.	03/18/04	Photographs taken on October 28, 2004 depicting the repair work performed to Dam 2 and Dam 3 (Exhibits A-32 through A-36)	20.	09/14/07 10/26/07 11/16/07 01/29/08	Written testimony and oral direct testimony of Rick W. Volner, Jr. from the Na Wai Eha contested case hearing
8.	07/26/05	Waiokamilo Stream Measurements 60' Above Diversion Dam #2 8/5/86 thru 7/26/05 (Exhibit A-37)	21.	01/11/08	Letter from Rick Volner to the Commission on Water Resource Management commenting on the State Water Resource Protection Plan Update
9.	08/31/01	Photographs showing the before and after condition of Waiokamilo Stream diversions	22.		Excel spreadsheet re HC&S field acreages and water sources
10.		Photographs of sinkhole in Waiokamilo streambed between Akeke Springs and Dam 3	23.		CD containing miscellaneous HC&S digital files
11.		Photographs of Waikani Falls and pool (Exhibit A-56)			
12.		Spreadsheet showing water measurements taken at Kekahuna 'auwai between March 15, 2004 and May 20, 2005 (Exhibit A-13)			
13.		Site Visit Report Regarding Honopou, Puloa and Hanehoi Streams, Makawao, Maui prepared by Commission on Water Resource Management (CWRM) (Exhibit A-39)			

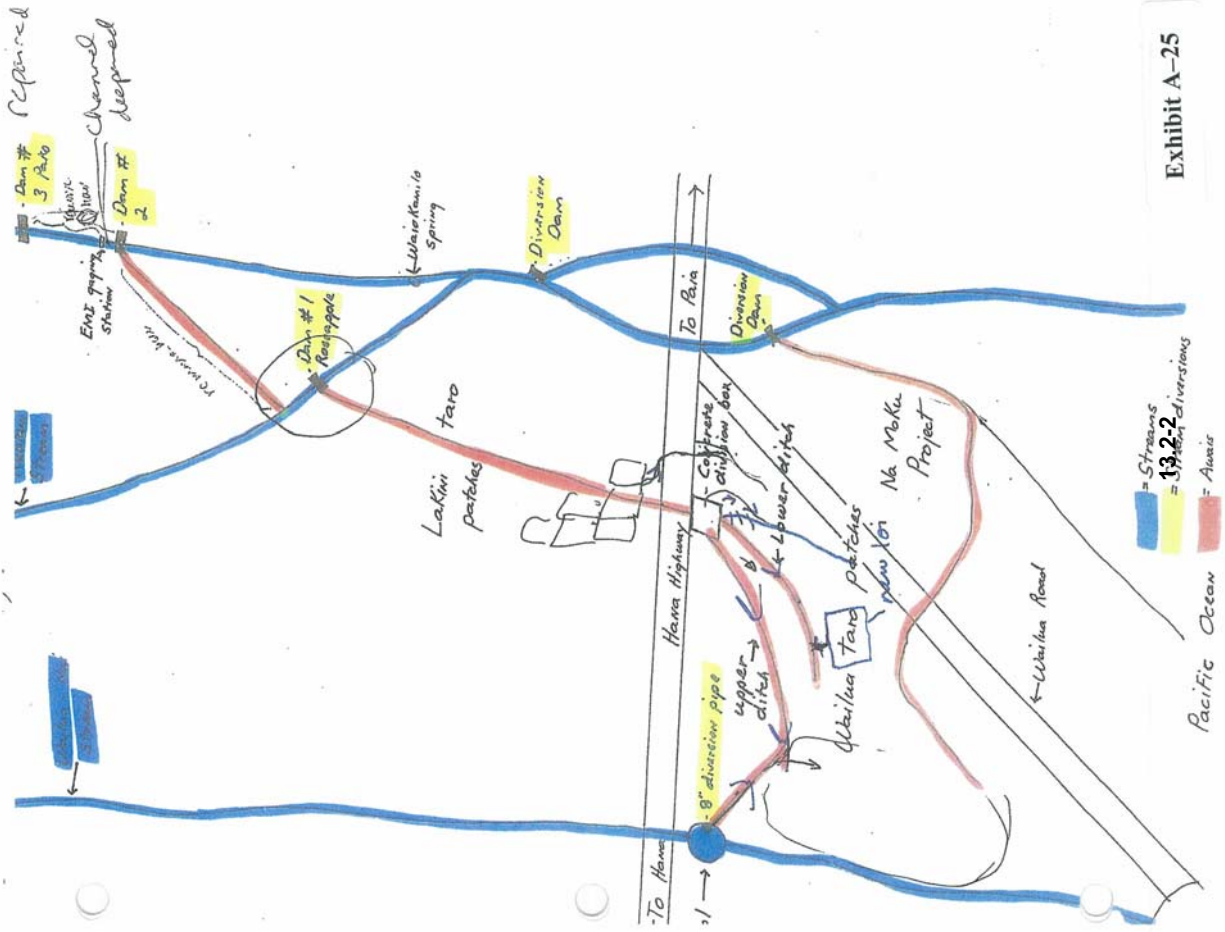


Exhibit A-25

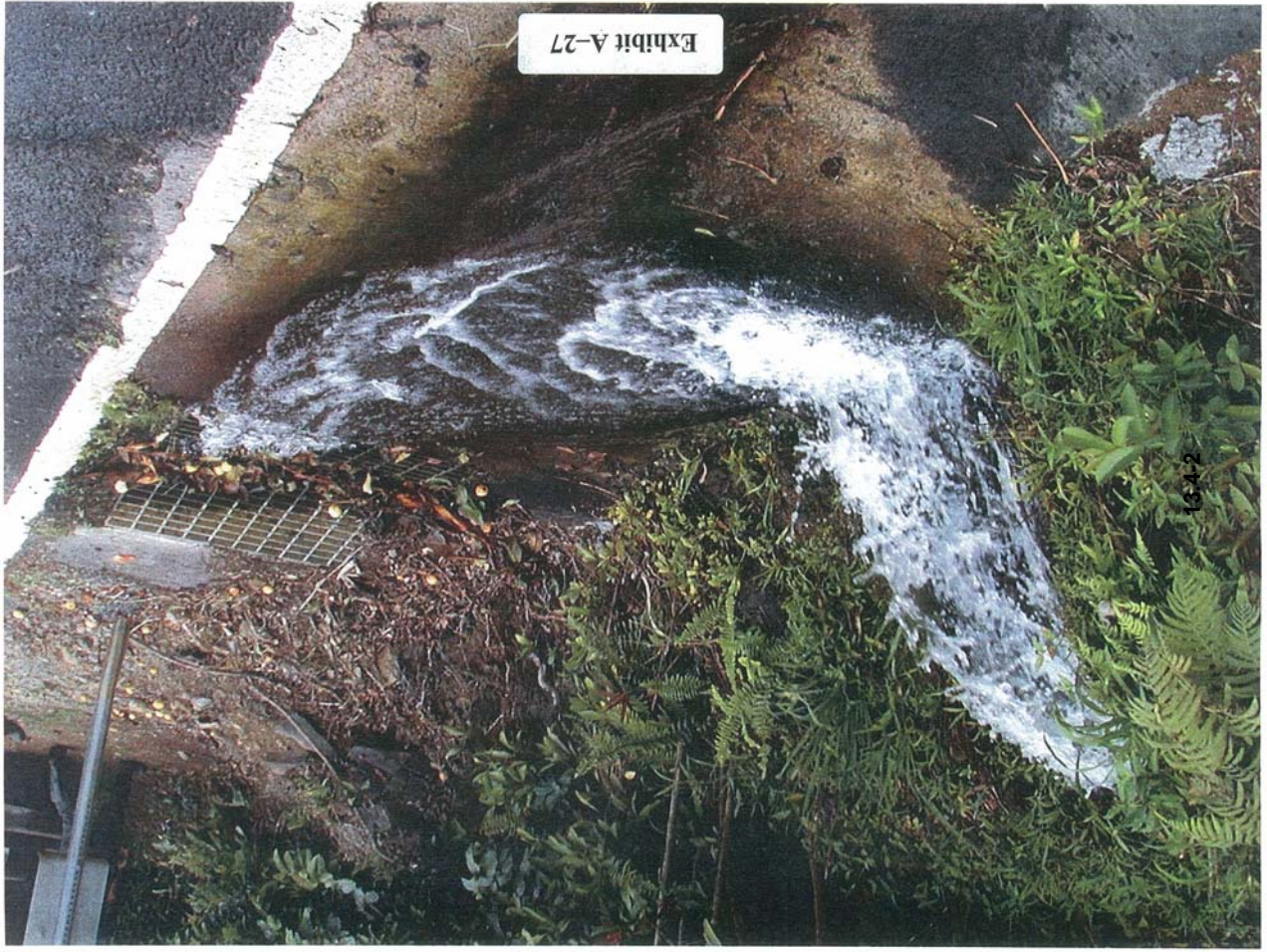


Exhibit A-26

13.3-2

2

13.3-1



3

13.4-1

ALEXANDER & BALDWIN, INC.
HONOLULU - SAN FRANCISCO

EAST MAUI IRRIGATION COMPANY, LIMITED

A SUBSIDIARY OF ALEXANDER & BALDWIN, INC.

P. O. BOX H
PAIA, MAUI, HAWAII 96779

July 30, 1982

Mrs. A. Day



Dear Mrs. Day:

In response to the Board of Land and Natural Resources' request that EMICO meet with the Keanae-Wailua Community Association to discuss taro growing water matters, a meeting was held on February 23, 1982, at the YMCA in Keanae. At that meeting, it was decided that EMICO employees would meet with a committee of taro growers for an on-site inspection of the water delivery systems for the taro growing areas of Keanae-Wailua. You were to appoint that committee.

On June 21 and 24, R. Warzecha, S. Cabral, and R. Puu of EMICO met with the taro growing committee of Mrs. Day, Sam Akina, and Eddie Wendt. The following facilities were inspected:

1. Waikani Falls intake, pipeline, and open ditch.
2. The upper open ditch from the taro fields to the concrete control box at the Hana Highway.
3. The lower open ditch from the taro fields to the control box at the Hana Highway.
4. The diversion dam on Waioakamilo Stream, the open ditch to Kualani Stream, the diversion dam on Kualani Stream, and open ditch to the concrete control box at the Hana Highway.
5. The diversion dam diverting Waioakamilo Stream to Kualani Stream just mauka of the Hana Highway bridges.
6. The diversion dam just makai of Hana Highway on Kualani Stream to the lower Wailua taro fields.

After the field inspection, we suggested our Field Superintendent Stephen Cabral meet on an informal basis with the taro farmers to discuss their water delivery systems. This meeting was held on

Mrs. A. Day

- 2 -

July 30, 1982

July 7, 1982, with several of the Keanae-Wailua taro farmers present in addition to a number of individuals who are not taro farmers.

As a result of the above meetings, we offer the following observations and suggestions:

1. We strongly recommend that the taro growers form an association that represents all of the growers. This might be one association or one for Keanae and one for Wailua. This association that represents all of the growers would make the logical group for EMI to work with. The association would also be in a position to apply for Federal and State grant monies that might be available.

2. The Waikani intake and pipeline appear to be in good condition. The open ditch is in fair condition, however, it has several sections that are leaking badly and water loss is occurring. These sections should be repaired. Some possible solutions would be to install several pieces of the old concrete irrigation flume located on the site in the leaky sections or a length or two of 12" PVC pipe could be used in each place.

3. The three stream diversions, upper Waiokamilo, Kualani, and Lower Kualani, all need repair work. They are leaking and losing water. They should also be improved to better control flood waters.

4. The main diversion ditch from Waiokamilo Stream to the concrete control box at Hana Highway needs maintenance. There are several sections that are severely overgrown with grass. This grass retards the flow and causes excessive water loss. Routine spraying or other weed control measures should be practiced. There are several sections of this ditch that have excessive gravel and silt accumulated. These should be cleaned and maintained in good order.

5. The upper and lower open ditches from the concrete control box to the fields are in extremely poor condition. Great quantities of water are lost due to leakage and improper conveyance methods (diversions) from the ditch to the taro fields. These ditches need to be cleaned of silt and gravel, the leaky sections should be repaired to stop the water loss, the grass in some sections needs to be controlled. The diversions along these ditches need to be improved to better control the amount of water diverted at each point. The diversion ditches down to the taro fields need the same type maintenance. We suggest keeping the ditches clean of overgrown hau, however, keeping the ditches shaded will

13.5-3

Mrs. A. Day

- 3 -

July 30, 1982

reduce weed control problems.

6. It is advisable to keep cattle off the ditch banks as they break down the banks, causing oversilting and probable water loss.

7. The Keanae diversion and flume are in excellent shape. Removing the rust and painting would prolong the life of the metal flume.

8. EMI is convinced that there is sufficient water available for the taro growers from the traditional sources. The water as collected needs to be transported without the major losses that now exist.

Specific items that EMI Co. is willing to assist in are as follows:

1. EMI has already replaced two wooden gates along Waikani ditch that were rotten.

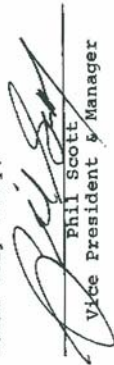
2. EMI has installed a flood water control at the head of the flume to the Keanae taro fields. This should help control excessive water in the flume during high stream-flow periods.

3. EMI can provide on-site advice for the cleaning and improving of the open ditches delivering water to the taro fields. We will meet with the farmers on-site, when they are ready, to begin the necessary repairs. We can advise them on what needs to be done and suggest ways of doing it. The burden of labor will have to be theirs.

4. EMI is willing to undertake certain improvements to the stream diversion dams located at: (a) Waiokamilo Stream, (b) Upper Kualani Stream, (c) Lower Kualani near the Hana Highway Bridge. We will require the assistance and advice of a duly appointed representative of the taro farmers to assure us that the water controls that we install and improve will be acceptable to the taro growers' interest.

5. EMI will use dynamite to remove the large rocks at the mouth of the intake from Keanae Stream. This will be done after the gravel is removed.

Yours very truly,



Phil Scott
Vice President & Manager

PS:ec
cc: S. Ono (DLNR), E. Ansal,
H. Tavares, S. Cabral
PFC, RLW

13.5-4



RECEIVED

19 MAY 30 9:22

STATE OF HAWAII
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Water Resources
Division of Water Resource Management
LAND DEVELOPMENT

REGISTRATION OF STREAM DIVERSION WORKS
AND
DECLARATION OF WATER USE

INSTRUCTIONS: Please type or print. If information is not available or not applicable, indicate on this form as completely as possible. Sign and seal form to the Division of Water Resources Management, P.O. Box 577, Honolulu, Hawaii 96808. Phone: 548-3448 or 548-7443 for assistance.

MULTI-RESOURCE STREAMS: For a stream of high or mixed resource value, submit a single paragraph to describe the stream system. For a stream of low or single resource value, submit a separate paragraph for each resource. Attach a map showing the location of the stream for each resource and the location of the diversion. Attach a map showing the location of the diversion. Attach a map showing the location of the diversion.

(Break-down information attached)
STREAM NAME: Waikonae Stream, Kona, Hawaii Island: Pali
DIVERSION STRUCTURE NAME: Small Stream Diversion Structure
DIVERSION SYSTEM NAME: _____

A. DIVERSION WORKS OPERATOR
Firm name: State of Hawaii
Contact person: _____
Address: _____
Zip: _____ Phone: _____

B. OWNER OF DIVERSION WORKS SITE
Firm name: _____
Contact person: _____
Address: _____
Zip: _____ Phone: _____

C. STREAM DIVERSION LOCATION
Trib. Map Key: 10000
Town, Place, District: Honolulu, Honolulu - Hawaii
Attach USGS "Quadrangle" map (scale 1:24,000), tax map, or other map showing the diversion location.

D. STREAM DATA
Streamflow at diversion site is: Perennial (year-round) Intermittent (seasonal only)
is streamflow gauged? Yes No
If yes, provide gage name, and show location on map. Name: _____
Average flow before diversion: 10 cfs mgd gpm cfs

E. DIVERSION STRUCTURE DATA
Year constructed: 1970 Elevation (mean water level): 111
Diversion structure is: Concrete Wood Pipe Other (specify): Ditches
Small Stream Diversion Structure
Diverted flow is: Controlled Uncontrolled
Divertable capacity is: 10 cfs mgd gpm cfs
Submit an "as-built" drawing and dated photograph of the diversion works, if available.
Hydrograph information ... (continued over)

For Official Use Only:
Date received: _____ Date accepted: _____ Hydrologic Unit: _____
Field checked by: _____ Date: _____ Latitude: _____ State Diversion No.: _____
Comments: _____

Reference: Hawaii Revised Statutes, Chapter 174C, Hawaii Administrative Rules, Chapters 11-187 to 11-171.

5

F. DECLARATION OF WATER USE

NOTE: The purpose of the Declaration of Water Use is to obtain information necessary for the management of the State's water resources. The Declaration does not confer a right to water or to any other benefit.

Location and name of measurement point (show on location map): NAI
 Water use data are recorded: Continuously Daily Other NAI
 Method of measurement (check box and describe same): Weir Rating frame Other
 Description: NAI

Quantity of Use (Report general or estimated monthly water use from the duration described on the reverse side of this form, for the calendar years 1980 through 1987):

WATER USE, IN Millions of gallons (unit of measurement)

	1983	1984	1985	1986	1987
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
ANNUAL					

Typical lines of usage: 24 hrs continuous

Type of Use (check all categories below that apply and provide additional information as indicated):

- Category
- Municipal (including streets, parks, businesses)
 - Domestic (residential serving 25 people or less)
 - Irrigation
 - Industrial
 - Military
 - Other
- Additional information
- Number of service connections: _____
- Acres irrigated: about 950 ±
- Crops: Sugar Pineapples Other (specify): NAI (Cabbage, cauliflower, lettuce)
- Non-Crop: Landscapes Golf Course Other (specify): Drainage in the valleys of Hanalei
- Method: Drip Furrow Sprinkler
- Cooling Manufacturing Mill
- Other (specify): _____
- Specify (mechanical, hydroelectric, agricultural, etc.): Waterbank

Location of Use (describe the location of water use, relative to the diversion, and indicate on location map. If water is used by others, submit a list of their names and addresses):

NAI is attached information

I declare that the contents of the above Declaration of Water Use are, to the best of my knowledge and belief, true, correct, and complete.

Water User's Signature: NAI
 Printed Name: NAI
 Firm or Title (Division Operator, etc.): State of Hawaii (ERR 6)
13.6-3

RECEIVED

SUMMARY

The Kupuna Council, Officers and members of the Keanae/Waihanalo Native Hawaiian Association have come together submitting the enclosed Application forms 8810-2 to protect the Native Hawaiian Water Rights of Keanae/Waihanalo for cultivation and harvest of taro and today's taro. The Association is requesting that the State of Hawaii provide the necessary funding to ensure the sufficiency raising livestock, ornamental foliage and flowers.

The following are the list of names that are Native Hawaiian land-owners with Water Rights from time immemorial:

HONOMANU VALLEY: (Taro patches and livestock)

Atai, Wilhelmina estate.....
 Atai, Myron..... (lessee from State)

NUA'AILUA VALLEY: (Taro patches and livestock)

Chong estate (Douglas Chong).....
 Kanoa, Issac..... (lessee from State)

KEANAE PENINSULA: (Taro patches, livestock, ornamental foliage and flower.)

Hueu Jr, James Keola estate.....
 Kanoa, Issac A./Victoria estate & leasee from State.....
 Kuluhiwa, William/Dora estate.....
 Pahukoa Jr, Harry estate and leasee.....
 Pahukoa, James estate.....
 Roback estate (William F. Roback, Jr.).....
 Young Hu, Joseph estate.....
 Fujishiro, Bernard estate.....
 Akau, Janet K. estate.....
 Makaan estate (lease to A. Aquino).....
 Kekumu, Jr., Horace estate.....
 Aquino A & Children estate.....
 Kailimoku estate (lease to Sarah Ka'uama).....
 Crozer, Chris/wife estate.....
 Rossi, Margaret estate.....
 Tau-a, Walter.....
 Ah Koi, Hansel estate.....
 Tau-a, Murphy estate.....
 Honeycutt, Madeline estate (lease to Joseph Akiu, Jr.).....

MAIANU/OHIA VALLEY: (Taro patches, ornamental foliage and flowers) watercress)

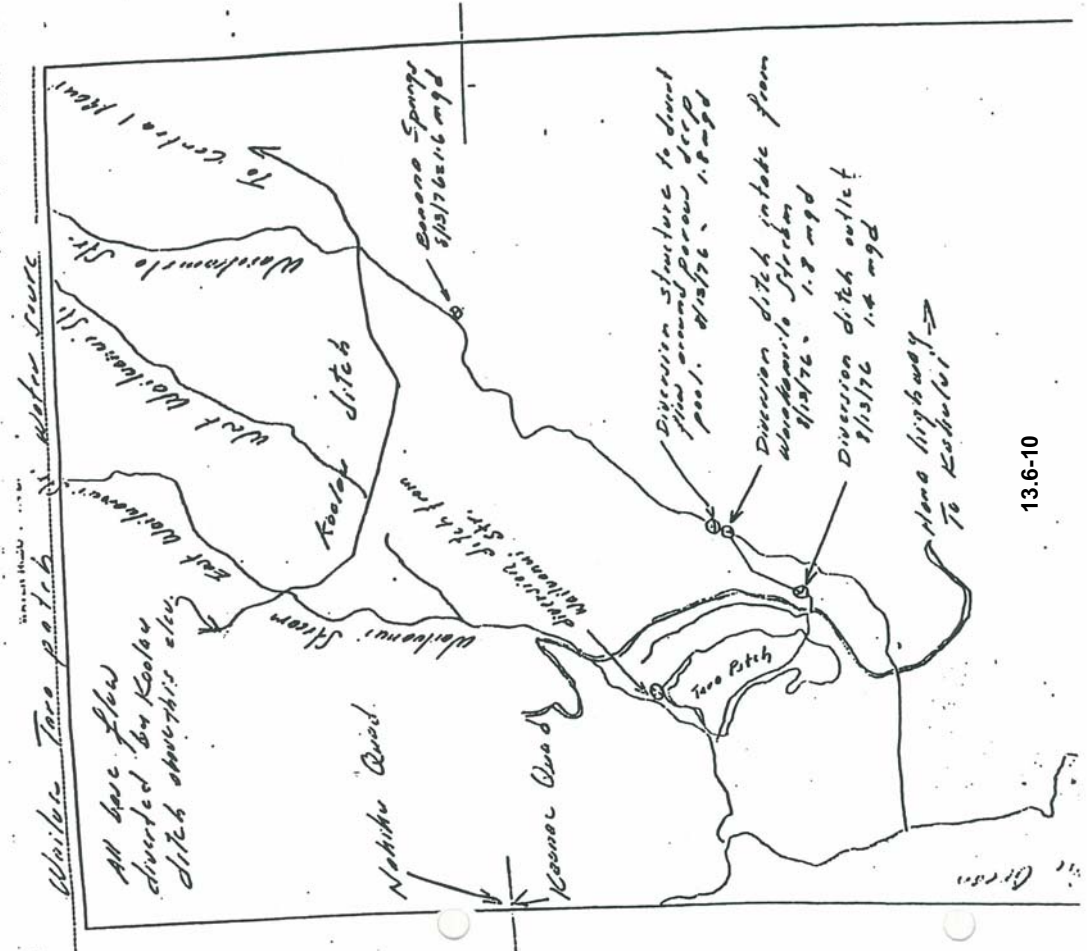
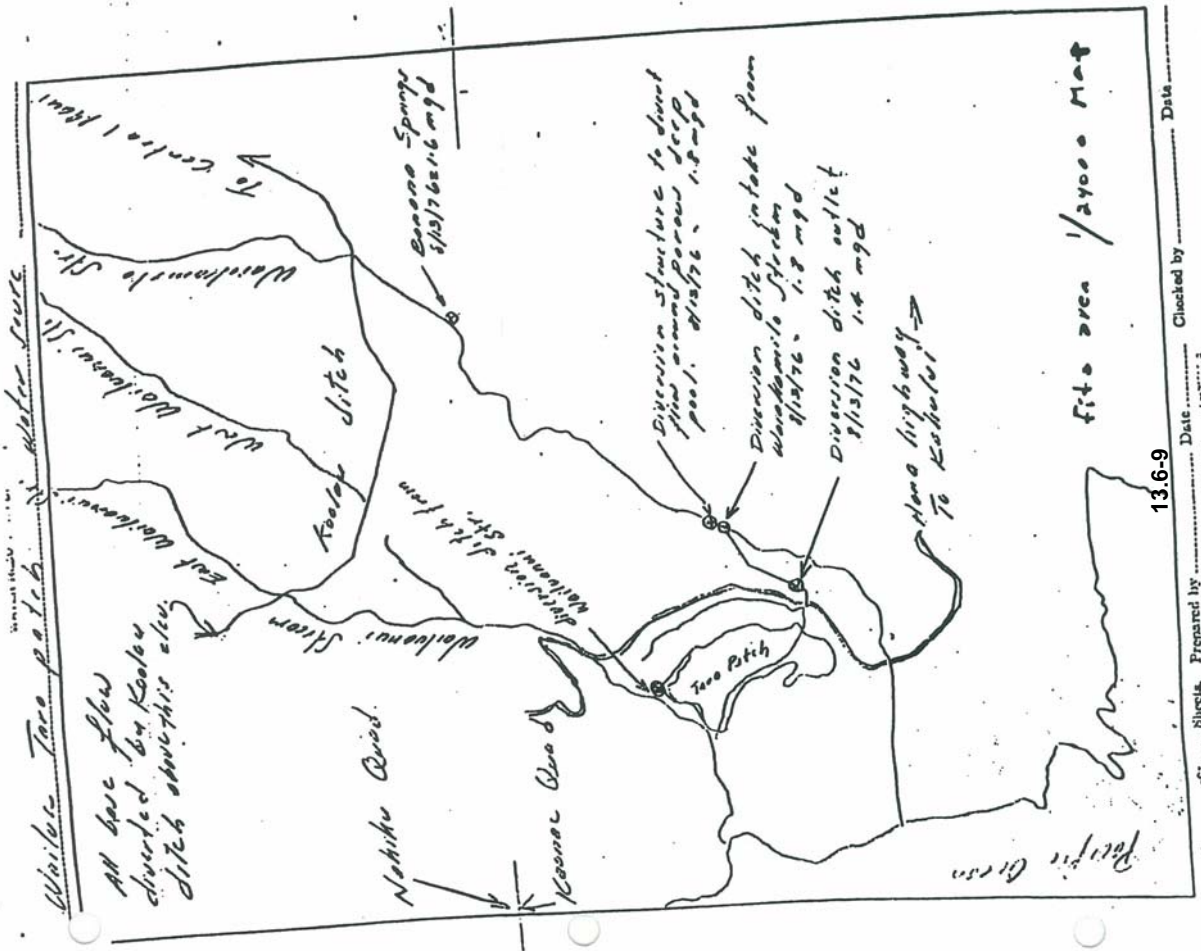
Hueu Jr, James Keola estate.....
 Akiu estate (William F. Roback).....
 Kuluhiwa, Nohaanu.....
 Ika'aka, William Kuluhiwa.....
 Ka'ahanui, James.....
 Akiuna, Louis H.....

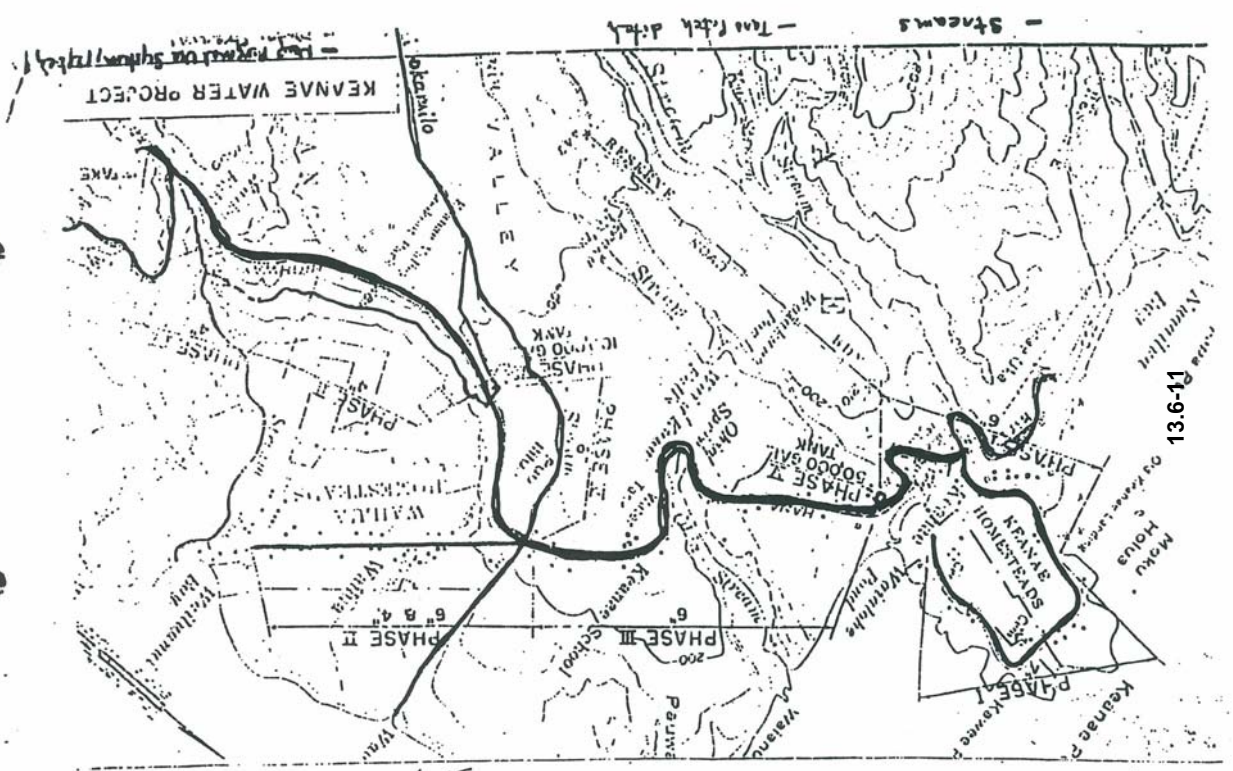
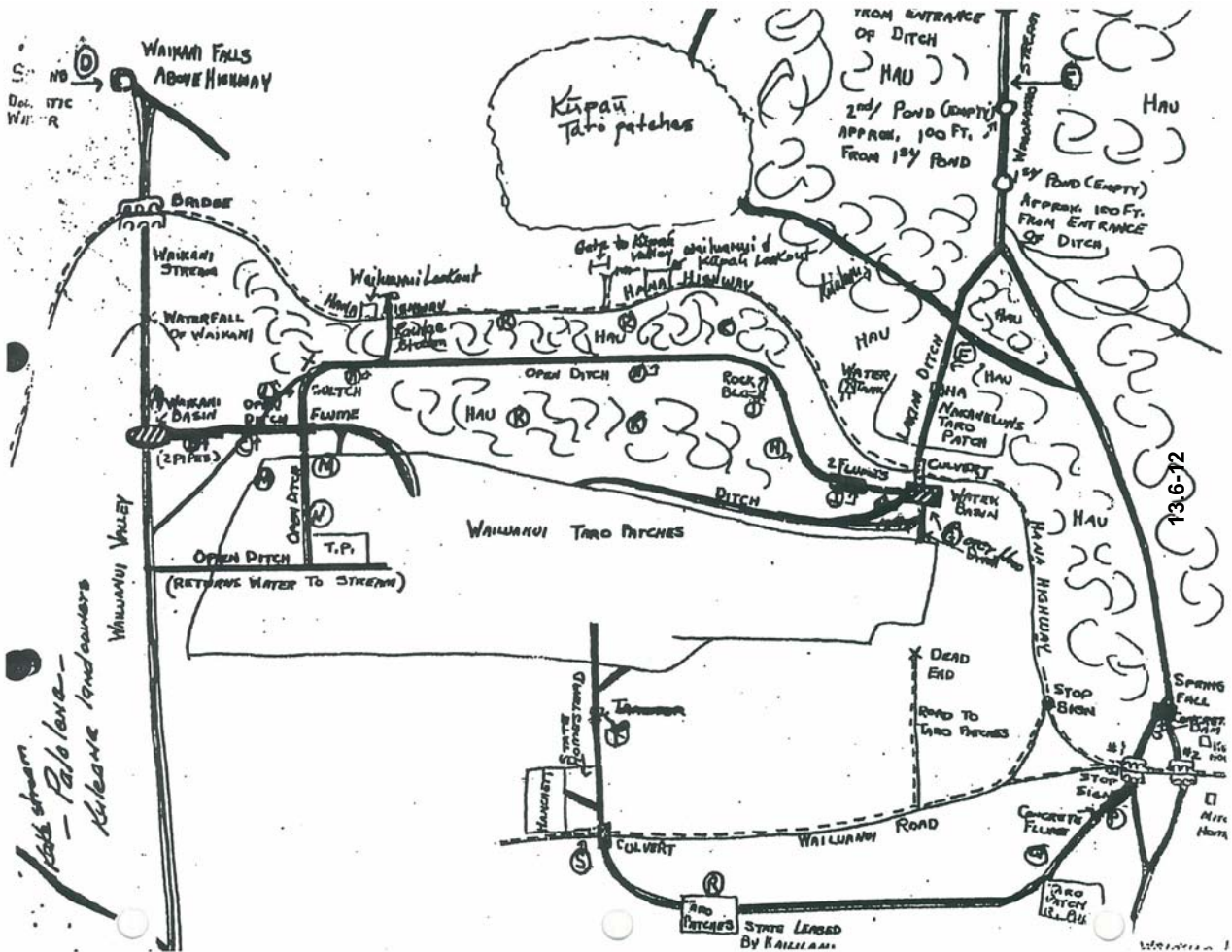
When Claus Spreckels sought a means of bringing irrigation to his sugar plantation in Central Maui, he turned to the area above Keanae/Wailuanui and built a reservoir and water irrigation system. In 1851, the Princess Regent, Liliuokalani, sent a letter to the Minister of the Interior concerning the reservoir because she was concerned that it would cut off the water supply from Keanae and Wailuanui. She requested that the people would not be deprived of water due to the reservoir. Irrigation practices still carried on in Keanae and Wailuanui today.

According to oral facts from the elders of ancient times, the Ahupua'a of Keanae and Wailuanui were protected by the four (4) major gods, Kane, the creative spirit; Kanaloa, the god of the sea; Lono, the god of agriculture; and Kūkailimoku, the god of war and power. The Ahupua'a was prized for lush agricultural lands and were never involved or destroyed by battles and wars of ancient times. The main reason was that the area always provided an abundance of food and resources. Keanae and Wailuanui supported one of the largest populations in ancient times.

All Native Hawaiian heirs of land title today, from East Maui, Nahiku on to out-stretched areas to Keanae/Wailuanui, on to out-stretched areas to Honopou, are aware of their Water rights and will always protect their rights, regardless whether they have filed the application form or not. These areas as mentioned above, are carrying a heavy burden to supply water for new developments to up-lands on Maui. These new developments must be stopped. Yes, to priority pending for water supply to up-land area for Awardees on the Hawaiian Home Land, but, not for additional developments.

Today, we need to take care of the people, farmers, and ranchers with water supply on the up-land areas. Mother Nature can only do so much. Our islands are in erosion where water disappears to the ocean. The government should look to the ocean for sprouting fresh water. There are sprouting fresh water in the ocean, near land. Words of experience and fact.





Existing Pipe

Open Ditch or Stream

Basin or Dam

Culvert

Flume

all hau - needs clearing

Proposed length of pipe needed

from rock block = 75 feet (8" - 10" dia)

Open ditch from proposed pipe = 60 ft

Proposed pipe from there to water basin (150 ft. pipe of 8" - 10" dia)

Ditch below Basin (G) = 4 ft. wide x $\frac{3}{4}$ mile of hau - needs clearing
Open ditch from Ha (F) up to where stream splits is about
500 ft. x 10 ft. - needs clearing
From above ditch entrance to above Paako (approx. 1 mi.)
needs clearing of hau.

Ditch from Waiokamilo Stream (E) to Spring Fall (O)
needs clearing of hau (1 1/2 mi)

13.6-13



Exhibit A-31

13.7-2

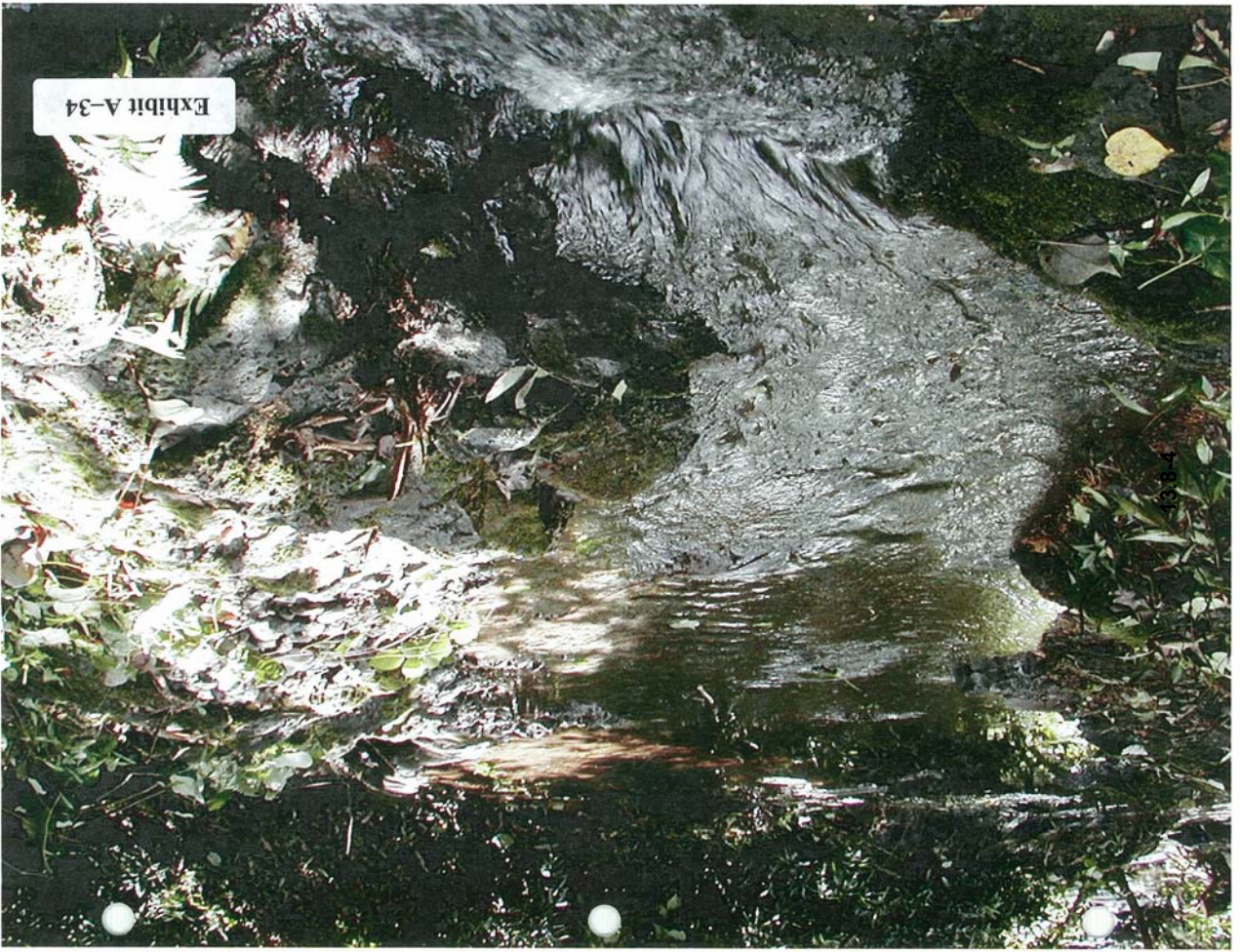
6

13.7-1



7

13.8-1



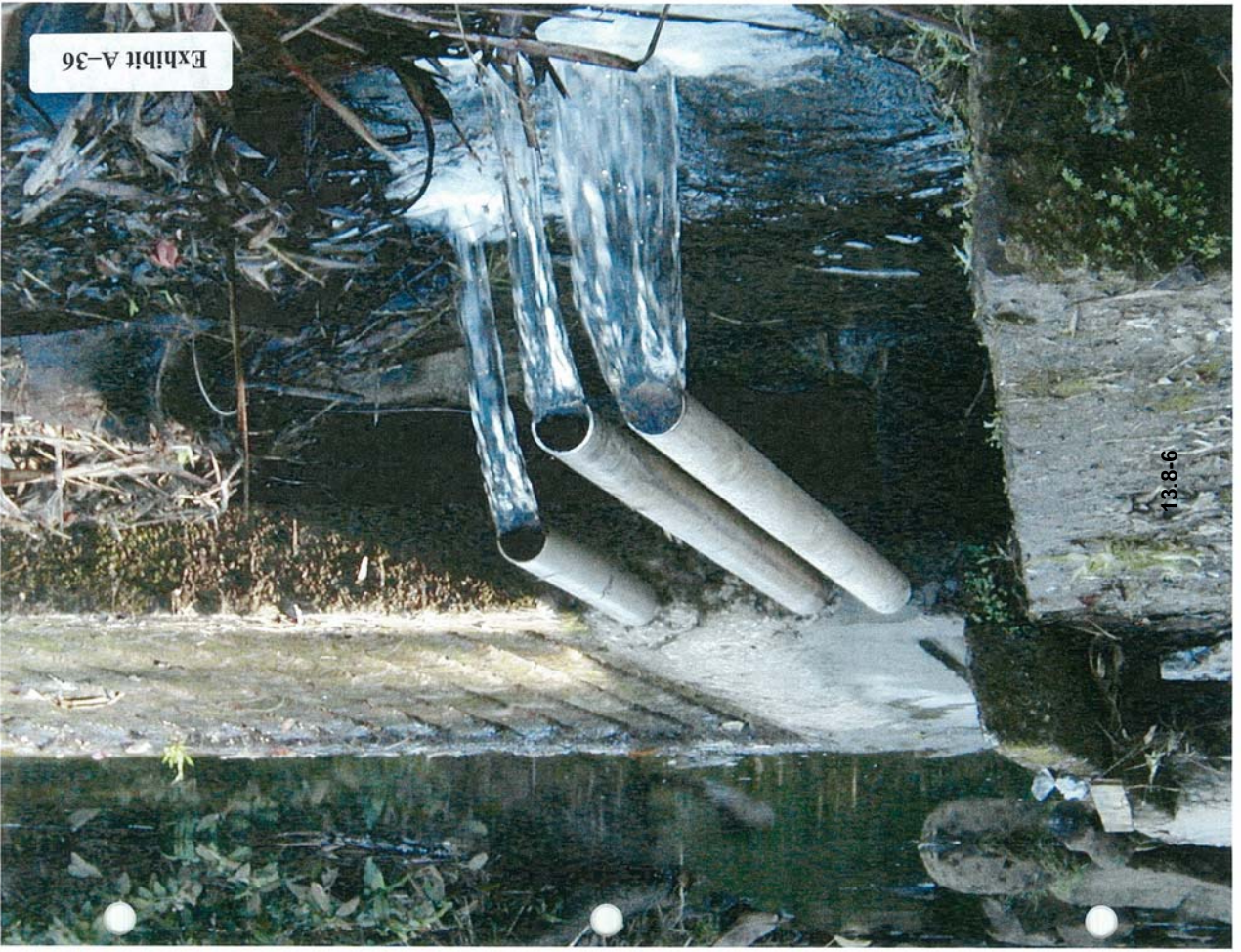


Exhibit A-36

13.8.6



Exhibit A-35

13.8.5

WAIOKAMILO STREAM MEASUREMENTS 60' ABOVE DIVERSION DAM # 2

DATE	TIME	GAUGE HEIGHT		DISCHARGE	M.G.D.	WAILOA DITCH @ MALIKO MGD	COMMENTS
		IN FEET	IN FEET				
8/5/86	---	1.44				127	8/8/86
8/5/86	11:18 AM	1.44	4.14			127	Water measurement made
8/7/86	---	---	---			113	Visit area with M. Ching, T. Tanaka, Dr. Delapena, Dr. Wang
8/8/86	12:10 PM	1.40	4.12			177	Water measurement made. Water wasting
8/8/86	---	---	---			177	Installed staff gauge & shoot level for reference marks.
8/11/86	7:18 AM	1.48	5.08			166	Water spilling over dam # 2
8/13/86	7:36 AM	1.44	4.64			169	Water piling over dam # 2
8/13/86	10:30 AM	1.42	4.43			169	Measured water
8/14/86	2:55 PM	1.76	8.90			194	Water spilling over dam # 2
8/15/86	11:37 AM	1.72	8.27			190	Measured water
8/15/86	12:25 PM	1.26	2.81			190	Measured water, flow controlled
8/18/86	7:30 AM	1.50	5.30			165	Water spilling over dam # 2
8/20/86	12:04 PM	1.43	4.56			117	Water piling over dam # 2
8/22/86	7:14 AM	1.42	4.42			97	Water spilling over dam # 2
8/25/86	7:25 AM	1.42	4.42			76	Water spilling over dam # 2
8/26/86	8:47 AM	1.41	4.31			71	Water spilling over dam # 2
8/27/86	7:20 AM	1.41	4.31			71	Water spilling over dam # 2
8/29/86	7:15 AM	1.41	4.31			131	Water spilling over dam # 2
9/2/86	7:20 AM	1.40	4.20			62	Water spilling over dam # 2
9/3/86	7:30 AM	1.40	4.20			57	Water spilling over dam # 2
9/5/86	7:15 AM	1.39	4.10			52	Water spilling over dam # 2
9/8/86	7:10 AM	1.38	4.00			50	Water spilling over dam # 2
9/10/86	7:28 AM	1.38	4.00			46	Water spilling over dam # 2
9/12/86	7:12 AM	1.38	4.00			42	Water spilling over dam # 2
9/15/86	7:17 AM	1.38	4.00			37	Water spilling over dam # 2
9/17/86	7:17 AM	1.40	4.20			36	Water spilling over dam # 2
9/19/86	1:42 PM	1.36	3.80			33	Water spilling over dam # 2
9/22/86	7:17 AM	1.39	4.10			34	Water spilling over dam # 2
9/24/86	7:15 AM	1.38	4.00			7	Water spilling over dam # 2, Wailoa controlled
9/26/86	7:20 AM	1.36	3.80			32	Water spilling over dam # 2
9/29/86	7:50 AM	1.35	3.70			35	Water spilling over dam # 2
10/1/86	6:49 AM	1.35	3.70			27	Water spilling over dam # 2
10/3/86	7:15 AM	1.32	3.40			77	Water spilling over dam # 2
10/6/86	7:20 AM	1.45	4.75			176	Water spilling over dam # 2
10/8/86	6:15 AM	1.40	4.20			125	Water spilling over dam # 2
10/10/86	8:28 AM	1.36	3.80			51	Water spilling over dam # 2
10/13/86	7:15 AM	1.40	4.20			105	Water spilling over dam # 2
10/15/86	7:20 AM	1.39	4.10			125	Water spilling over dam # 2
10/17/86	1:00 PM	1.36	3.80			175	Water spilling over dam # 2
10/20/86	7:20 AM	---	---			179	Staff gauge buried under water
10/22/86	7:20 AM	1.40	4.20			118	Water spilling over dam # 2
10/24/86	7:15 AM	1.37	3.90			75	Water spilling over dam # 2
10/27/86	7:20 AM	---	---			194	R. Puu reported top of staff gauge buried by flood water

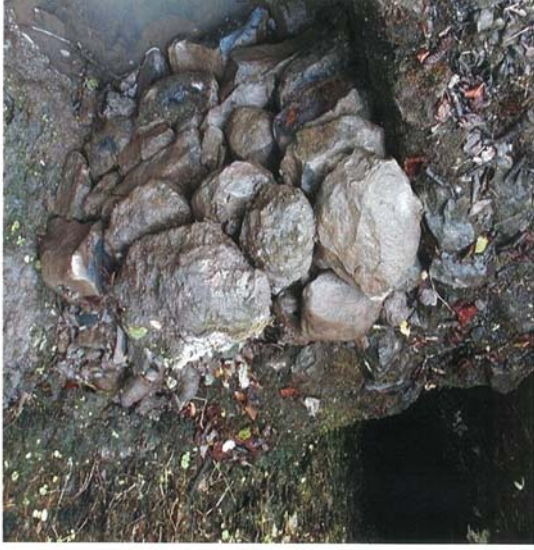
13.9-2

Exhibit A-37

13.9-1

10/29/86	7:20 AM	1.62	6.88	160	Water spilling over dam # 2
10/31/86	7:15 AM	1.45	4.75	107	Water spilling over dam # 2
7/26/05	9:12 AM	1.30	3.57	116	Water spilling over dam # 2
7/26/05	9:38 AM	1.29	3.56	116	Water spilling over dam # 2
7/26/05	10:35 AM	1.33	3.96	116	Cleared gravel upstream/Water spilling over dam # 2
7/26/05	11:02 AM	1.33	3.85	116	Cleared gravel upstream/Water spilling over dam # 3

9



Number 10 intake sealed with concrete and rocks.



Number 10 intake into the tunnel.

13.10-1

13.10-2



Number 12 intake window sealed with concrete.



Number 12 intake window.

13.10-4



Number 11 intake with board gates to let waterfall flow downstream across the roadway.



Number 11 intake to tunnel without the board gates, allowing the water to flow back into the Koolau Ditch.

13.10-3



Number 12 intake pipe with the 4-inch PVC cut away (looking upstream).



Number 12 pipe intake above the third ladder (looking downstream). This pipe leads to a 4-inch PVC pipe that flows to the Number 12 intake window.



The same 2-inch intake with the drisco line cut away.



A 2-inch drisco intake feeding the pipe leading to the Number 12 intake.

13.10-5

13.10-6

Kikokiko main ditch across the stream. The dam and the head of the PVC pipe have been removed to allow any water flowing in the ditch to be diverted back to the stream.



13.10-8

Main Kikokiko intake.



13.10-7

Main Kikokiko intake after it's sealed with rocks and concrete.





The 8-inch pipe after cap installation and dam breach.



The 8-inch pipe before dam breach.

13.10-10



Kualani intake after sealing the pipes and the grate.



Kualani intake before sealing the pipes and the grate.

13.10-9



A 4-inch pipe before cap is installed.

13.10-11



The same 4-inch pipe after cap was installed.



Another 4-inch pipe before the cap was installed.

13.10-12



The same 4-inch pipe after the cap was installed.



The same 2-inch intake with the drisco line cut away.



A 2-inch intake with a drisco line leading to a larger pipe.



10

13.11-1







Exhibit A-56.2

13.12-3

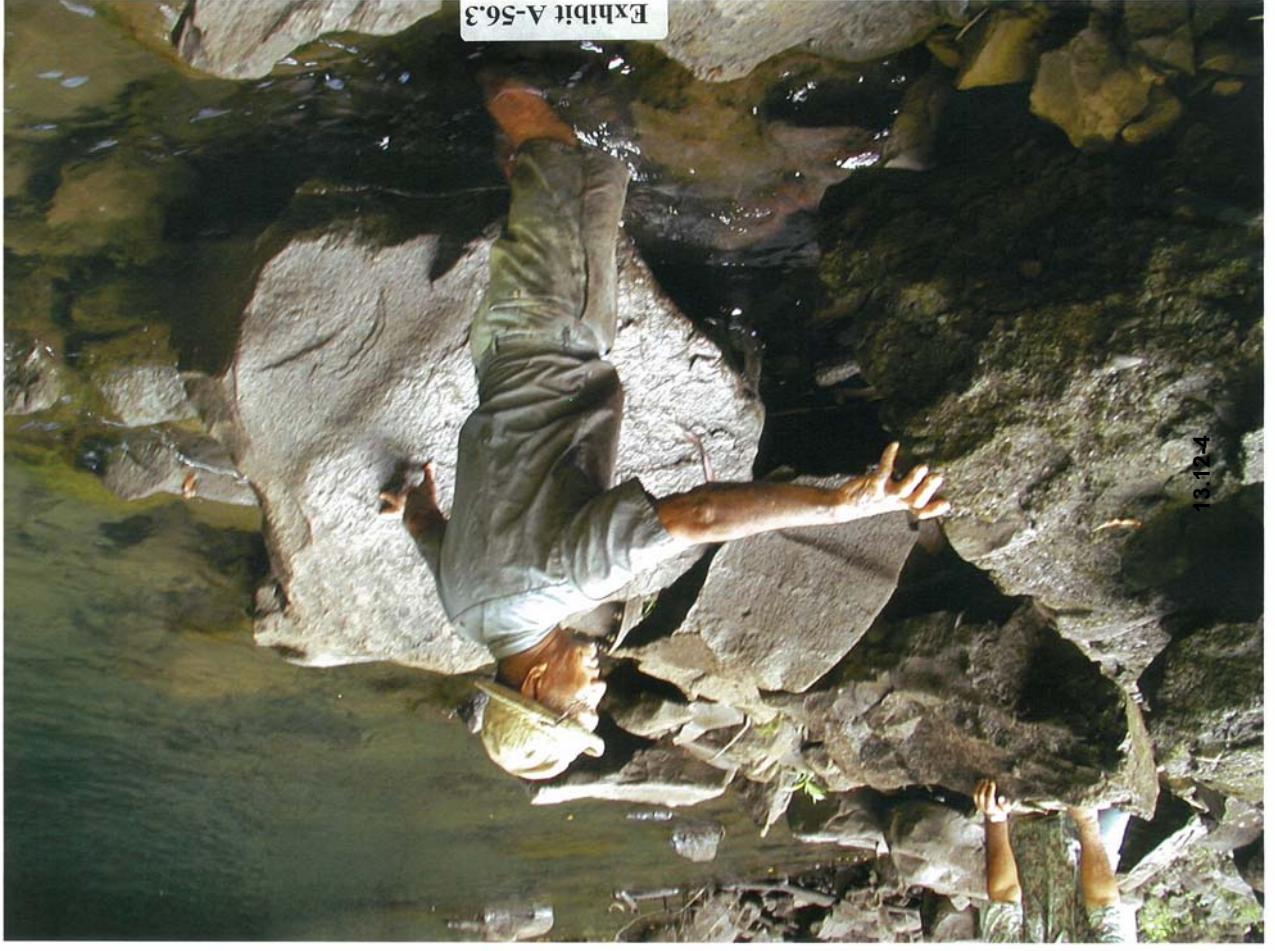


Exhibit A-56.3

13.12-4



Exhibit A-56.5

13.12-6



Exhibit A-56.4

13.12-5

DATE	TIME	GAUGE FLOW	TEMP.	COMMENTS	WAILOA	RAIN	
03/15/04	8:38 AM	0.80	235,000+	18°C	Garret, Mark, Henry, Wanda & Mrs. Kekahuna. Heavy flow past Haiku Ditch strainer. Water on spillway.	163	1.04
03/16/04	8:40 AM	0.65	235,000+	19°C	Mark, Henry, Wanda & Mrs. K. Light flow past Haiku Ditch strainer. Spillway running w/ sandbags.	163	0.05
03/17/04	8:37 AM	0.71	235,000+	20°C	Mark, Henry, Wanda & Mrs. K. No flow past Haiku Ditch strainer, only pipes. Spillway running w/ sandbags.	163	0.18
03/18/04	7:16 AM	0.72	235,000+	19°C	Mark, Henry, Wanda, Mrs. K, Garret, Dave, Nelson, Alan, Charlie, Randy, Ed Sakoda. Only pipes flowing	162	0.01
03/19/04	8:36 AM	0.72	235,000+	19°C	Mark, Henry, Wanda & Mrs. K. No flow past Haiku Ditch strainer, only pipes. Spillway running w/ sandbags.	161	0.01
03/20/04	8:34 AM	0.77	235,000+	19°C	Mark, Henry, Wanda, Mrs. K., Sanford. No flow past strainer, only pipes. Spillway running w/ sandbags.	163	1.36
03/21/04	8:32 AM	0.71	235,000+	20°C	Mark, Henry, Wanda, Mrs. K., Sanford. No flow past ditch, only pipes. Spillway running w/ sandbags.	139	0.02
03/22/04	8:30 AM	no measurement	flow too high		Major overflow of Kekahuna dam. Damage to 'auwai intake and overflow of 'auwai downstream near house	177	4.20
03/23/04	8:30 AM	no measurement	flow too high		Major flow past Haiku Ditch. Opening 'auwai would result in damage to the 'auwai.	89	5.00
03/24/04	8:38 AM	0.65	235,000+	19°C	Mark, Henry, Wanda, Mrs. K., Sanford. Flow past ditch. Heavy streamflow, gate not all the way open.	89	1.99
03/25/04	8:30 AM	no measurement	flow too high		Major flow past Haiku Ditch. Opening 'auwai would result in damage to the 'auwai.	161	0.79
03/26/04	8:36 AM	0.95	235,000+	20°C	Mark, Henry, Collette, Heavy streamflow, spill on spillway w/o bags.	160	1.89
03/27/04	8:34 AM	1.10	235,000+	20°C	Mark, Henry, Wanda. Heavy streamflow, water on spillway w/o bags	159	0.28
03/28/04	8:31 AM	0.81	235,000+	20°C	Mark, Henry, Wanda, Mrs. K. Flowing stream and water on spillway when bagged.	155	0.03
04/29/04	9:20 AM	0.62	235,000+	20°C	Mark, Henry & Mrs. K. No flow past strainer, only pipes.	179	0.01

05/28/04	7:42 AM	0.70	235,000+	22°C	Mark, Henry & Boni. Medium flow past Haiku Ditch strainer.	188	1.37
06/02/04	8:50 AM	0.66	235,000+	23°C	Mark, Henry & Boni. No flow past strainer, only pipes.	187	0.43
06/11/04	8:58 AM	0.62	235,000+	24°C	Mark, Henry & Sanford. No flow past strainer, only pipes	184	0.78
06/17/04	7:27 AM	0.53	235,000+	24°C	Mark, Henry & Eugene. No flow past strainer, only pipes. Small leak near 'auwai intake.	101	0.00
06/25/04	8:22 AM	0.55	235,000+	24°C	Mark & Henry. No flow past strainer, small leak near 'auwai. Moved rocks in front of intake.	79	0.45
06/30/04	8:45 AM	0.70	235,000+	24°C	Mark & Henry. No flow past strainer, small leak near 'auwai. Moved rocks in front of intake.	186	1.10
07/09/04	8:25 AM	0.65	235,000+	25°C	Mark & Henry. No flow past strainer, small leak near 'auwai. Moved rocks in front of intake.	98	0.24
07/16/04	8:05 AM	0.68	235,000+	25°C	Mark & Henry. No flow past strainer, small leak near 'auwai. Moved rocks in front of intake.	123	0.72
07/23/04	9:15 AM	0.72	235,000+	25°C	Mark, Henry & Boni. No flow past Haiku Ditch strainer. Moved Rocks in front of 'auwai strainer	46	0.00
07/30/04	8:10 AM	0.70	235,000+	25°C	Mark & Henry. No flow past strainer, small leak near 'auwai. Moved rocks in front of intake.	42	0.00
08/06/04	8:25 AM	0.70	235,000+	24°C	Mark, Henry & Mrs. K. No flow past Haiku Ditch strainer. Moved Rocks in front of 'auwai strainer	60	0.52
08/13/04	8:52 AM	0.74	235,000+	25°C	Mark, Henry & Boni. No flow past Haiku Ditch strainer. Haiku Ditch pipe vandalized.	53	0.17
08/20/04	8:36 AM	0.71	235,000+	25°C	Mark, Henry & Boni. No flow past Haiku Ditch strainer.	35	0.00
08/27/04	8:44 AM	0.72	235,000+		Mark only. No flow past Haiku Ditch Strainer	55	0.42
09/03/04	7:44 AM	0.65	235,000+	24°C	Mark, Henry & Sanford. No flow past strainer, only pipes	35	0.00
09/10/04	8:36 AM	0.48	219,000	25°C	Mark, Henry & Boni. No flow past Haiku Strainer. Possible pumping upstream.	28	0.01
09/17/04	8:10 AM	0.63	235,000+	25°C	Mark, Henry & Boni. No flow past Haiku Ditch strainer.	47	0.42
09/24/04	8:32 AM	0.65	235,000+	25°C	Mark & Henry. No flow past strainer.	102	0.64

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10/08/04	8:17 AM	0.52	235,000+	25°C	Mark only. No flow past Haiku Ditch Strainer	51	0.02
10/15/04	7:55 AM	0.58	235,000+	25°C	Mark & Henry. No flow past strainer.	44	0.00
10/21/04	8:12 AM	0.54	235,000+	24°C	Mark & Henry. No flow past strainer.	63	0.02
10/29/04	8:40 AM	0.58	235,000+	25°C	Mark, Henry & Boni. No flow past strainer.	52	0.02
11/05/04	9:04 AM	0.72	235,000+	25°C	Mark & Garret. No flow past strainer.	46	0.00
11/12/04	7:52 AM	0.64	235,000+	24°C	Mark & Henry. No flow past strainer.	34	0.00
11/22/04	9:02 AM	0.72	235,000+	22°C	Mark, Henry, Mrs. K & Boni. No flow past the strainer.	92	0.00
12/03/04	8:35 AM	0.72	235,000+	24°C	Mark & Henry. No flow past strainer.	146	0.22
12/10/04	8:15 AM				Did not measure due to heavy flow past strainer, and Haiku Ditch overflowing.		
12/17/04	7:36 AM	0.68	235,000+	24°C	Mark only. No flow past Haiku Ditch Strainer	74	0.00
01/07/05	8:42 AM	0.71	235,000+	22°C	Mark & Henry. No flow past strainer.	42	0.24
01/20/05	7:45 AM	0.82	235,000+	22°C	Mark & Henry. No flow past strainer.	30	0.00
01/26/05	10:35 AM	0.80	235,000+	22°C	Mark & Henry. No flow past strainer.	25	0.00
02/04/05	8:00 AM	0.79	235,000+	23°C	Henry only.	91	0.78
02/18/05	7:40 AM	0.86	235,000+	21°C	Mark & Henry. No flow past strainer	49	0.02
02/25/05	7:35 AM	0.84	235,000+	21°C	Mark & Henry. No flow past strainer	37	0.17
03/04/05	7:55 AM	0.80	235,000+	22°C	Mark & Henry. No flow past strainer	91	0.78
03/11/05	8:00 AM	no measurement	flow too high		Major flow past Haiku Ditch. Opening 'auwai would result in damage to the 'auwai.	193	4.50
04/01/05	8:00 AM	no measurement	flow too high		Major flow past Haiku Ditch. Opening 'auwai would result in damage to the 'auwai.	198	1.30

13.13-4

04/08/05	8:00 AM	no measurement	flow too high		Major flow past Haiku Ditch. Opening 'auwai would result in damage to the 'auwai.	196	0.16
04/15/05	8:00 AM	no measurement	flow too high		Major flow past Haiku Ditch. Opening 'auwai would result in damage to the 'auwai.	196	0.56
04/22/05	8:20 AM	0.81	235,000+	22*	Mark & Henry. No flow past strainer	103	0.00
05/20/05	8:00 AM	no measurement	flow too high		Full Ditch, flow past Haiku Strainer	136	1.23

***The routine for collecting water measurements usually begins by Mark Vaught and Henry Robello arriving at the Kekahuna residence and setting the Parshall Flume in place with the sandbags. While Henry levels the flume, Mark clears the strainer of leaves and debris. When Henry is ready, Mark lifts the restrictor plate to let in the maximum amount of water flow into the 'auwai and through the Modified Parshall Flume. When the water height is stabilized, Henry dips the measuring stick in the measurement compartment of the flume and reads the level. While this is being done, a thermometer is inserted into the compartment and the temperature is then read.

**The Waioa Ditch reading that is listed in the column marked "WAILOA" is the ditch flow reading taken daily at 5 AM at the Waioa Ditch at Honopou gauging station. The rainfall reading listed in the column marked "RAIN" is taken daily at the same time at a NOAA rain gauge located at the EMI Kailua Baseyard.

Department of Land and Natural Resources
COMMISSION ON WATER RESOURCE MANAGEMENT

SITE VISIT REPORT REGARDING HONOPOU, PUOLOA and HANEHOI
STREAMS, MAKAWAO, MAUI

PURPOSE OF SITE VISIT: The purpose of the field visit was to familiarize the Commission Staff on site conditions at Honopou and Hanehoi Streams on East, Maui. Information may be used evaluating petitions to amend the interim instream flow standards by water users in with water interests along these streams. The field visit was at the request of the Native Hawaiian Legal Corporation.

DATE: The field visit was on Monday, August 13, 2001, 9:00am to 4:00pm

PRESENT: Moses Haia, NHLC
Beatrice Kepani Kekahuna, Resident
Marjorie Walliet, Resident
Lyn Scott, Resident
Lehua (Elizabeth) Lapenia, Resident
Ernie Schupp, Resident
Various other Residents

Linnel Nishioka, Deputy Director CWRM
Shirley Garcia, CWRM
Charley Lee, CWRM
David Higa, CWRM

NOTES: The above persons gathered at Haiku Community Center at approximately 9:00 am. Moses Haia presented tax maps of each of the following sites in relation to the Haiku Ditch. The group proceeded to visit each of the following sites.

- Site 1 EMI intake to Haiku ditch
- Site 2 Parcel occupied by Lynn Scott
- Site 3 Parcel occupied by Beatrice Kekahuna
- Site 4 Parcel occupied by Lehua Lapenia
- Site 5 Parcel occupied by Ernie Schupp

These sites are indicated in the attached **Exhibit A**. Tax maps for these site 2, 3, 4, and 5 are attached as **Exhibits B1 and B2**. Twelve pages of captioned photos of the above sites are attached as **Exhibit C**.

The weather was clear with occasional clouds. During the visit only a brief shower was encountered.

SITE 1: Honopou Stream at EMI intake to Haiku Ditch

Photos 1 through 7 are of the intake structure.

Configuration of intake structure. The Haiku Ditch intake structure consists of a rectangular channel covered with a reinforced concrete grate spanning across the width of the stream. (See Photo 1) Diverted water which flows down through the grate is conveyed northward. The south end of the diversion structure has two 4-inch pipes embedded at the crest of the concrete weir.

At the time of the site visit, water level was at the top of the pipes. Water was not flowing over the crest the concrete weir. The discharge at the end of the two pipes are shown in photos 3 to 6.

The discharge rate from these pipes were estimated using the attached USDA nomograph (**Exhibit D**). Assuming a vertical drop of 6" and a horizontal flow of 8 inches, and a freeboard of 2 inches, the flow is estimated to be roughly 100 gallons per minute from each pipe or about 200 gallons per minute. If more precise measurement is necessary, actual flow measurements should be taken.

Using the NRCS Stream Bioassessment Protocol method, the volume of water being diverted in the flume is estimated to be roughly 384 gallons per minute. This estimate is based on the following calculations:

Discharge area = 6.82 feet (2.1m) wide x 0.35 feet (11 cm) deep = 2.3 square feet. Area x flow rate = 2.3 square feet x .046 feet/sec = 1.07 cu-ft/sec. 1.07 cu-ft/sec x 0.8 (NRCS coefficient) = 0.86 cu-ft/sec or approximately 384 gallons per minute. This is just a rough estimate.

Water temperature was taken at various locations using the Division of Aquatic Resources' (DAR) thermometer. The temperature and location are as follows:

Discharge from one of two 4" pipes	73 deg F
Bottom of pool immediately downstream of discharge	74 deg F
Bottom of pool at pipe intake	73 deg F

Skippy Hau dove into pools upstream of the intake. Skippy did not see any native fish.

The EMI Declaration of Water Use for this diversion is attached as **Exhibit E**.

2

13.14-3

SITE 2: Honopou Stream at a Parcel occupied by Lynn Scott (TMK: 2-9-01:14)

This parcel is riparian to Honopou Stream. An auwai flowed through the parcel and there were several remnant lo'i on the parcel (See photo 8) The 'auwai is identified in the Declaration of Water Use for this parcel as "Lokana 'auwai".

GPS reading at the Mauka end of the parcel along an auwai (See photo 9) was:

Latitude	North	20 deg 55 min 58.8 sec
Longitude	West	156 deg 14 min 46.6 sec
Accuracy = 1.45'		

A temperature reading of the 'auwai water was taken at Site #3. The temperature was 73deg F. (See Site 3)

* The Declaration of Water Use for this parcel is attached as **Exhibit F**.

SITE 3: Honopou Stream, Parcel Occupied by Beatrice Kekahuna (TMK: 2-9-01:16)

This site has two dry lo'i. According to Lynn Scott these lo'i were documented in Dr. David Penn's dissertation.

A GPS reading was taken along side of an existing 'auwai located at the Mauka portion of this parcel. The reading was

Latitude	North	20 deg 55 min 53.0 sec
Longitude	West	156 deg 14 min 50.2 sec
Accuracy = 38.7'		

The temperature of the water in the 'auwai was 73 deg F.

Flow in Honopou Stream at this parcel was minimal (See Photo 10). Skippy Hau observed three O'opu Nakea in one of the pools. According to Skippy the largest was approximately 7 inches long.

Based on the tax map, this parcel is riparian to Honopou Stream. The Declaration of Water Use for this parcel is attached as **Exhibit G**.

3

13.14-4

SITE 4: Hanehoi Stream, Parcel Occupied by Ms. Lehua Lapenia (TMK: 2-9-08:31)

GPS reading at approximately the center of the parcel:

Latitude: North 20deg 54min 25.4 sec
Longitude: West 156deg 13min 24.5 sec
Accuracy=44.1'

This parcel is located below the confluence of major tributaries of the Hanehoi Stream, including Puolua (Huelo) Stream. (See Exhibit I) At the date of the site visit, it appears that the water flowing along this parcel came from Puolua (Huelo) Stream because the Hanehoi Stream was dry above the EMI intake.

Stream water temperature at the mauka end of the parcel was 71 degees F. There appears to be at least eight lo'i at this parcel. These lo'i were not in cultivation at the time of the site visit. The waterflow in the stream is shown in Photo

The Declaration of Water Use for this parcel in attached as **Exhibit H**. Based on tax maps, this parcel appears to be riparian to Hanehoi stream.

SITE 5: Puolua (Huelo) Stream, Parcel Occupied by Mr. Ernie Shupp (TMK 2-9-08:14)

GPS reading at approximately at the center of field of lo'i.

Latitude North 20deg 54min 23.7sec
Longitude West 156deg 13min 40.1sec
Accuracy = ?

According to the USGS Quad map this parcel is located on the Huelo Stream which is a tributary to Hanehoi Stream. For the purpose of this document this watercourse will be referred to as Puolua (Huelo) Stream.

There were several cultivated lo'i at this site. Photo 23, shows some of the cultivated lo'i.

The temperature readings at various locations at this site were as follows:

Auwai at mauka loi 70 deg F

4

13.14-5

Intake to diversion pipe into auwai 70 deg F
Top of uppermost lo'i 72 deg F
Middle portion of auwai 71 deg F
Middle lo'i 73 deg F
Lower lo'i at exit 80 deg F

A Declaration of Water Use filed by Lehua Lapenia is attached as **Exhibit I**. The configuration of the EMI diversion intake is shown in Photos 19 and 20. At the time of the site visit no water was flowing from Puolua (Huelo) Stream into the Haiku Ditch.

SITE 6: EMI Intake to Haiku Ditch at Hanehoi Stream

This intake is located makai of the confluence of two major tributaries of Hanehoi stream. At the time of the site visit, the stream bed was dry with no flow down Hanehoi Stream nor into Haiku Ditch. (See photo 24)

5

13.14-6

ALEXANDER & BALDWIN, INC.
HONOLULU

TELEPHONE: (808) 579-9516
FACSIMILE: (808) 579-9517

EAST MAUI IRRIGATION COMPANY, LIMITED
P.O. BOX 791628, PAIA, MAUI, HAWAII 96779

March 11, 2004 Site Visit to Honopou and Puolua Streams

Present:

Ed Sakoda - CWRM
Alan Murakami, Moses Haia, Mahealani Kamau - NHLCL
Beatrice and Wanda Kekahuna, Ernie Schupp - Intervenor
Alan Oshima, Randy Ishikawa, Charlie Loomis, Mark Vaught, Henry Robello,
Garret Hew - A&B/EMI

Water Measurements: Haiku Ditch at Honopou - Three (3) 4 inch pipes, additional pipe installed on 3/9/2004.
New pipe - East side - Number of seconds to fill 1 cubic foot box: $5.86 + 5.81 + 5.64 = 17.31/3 = 5.77$. 60 seconds / 5.77 = 10.40 x 7.48 gallons per 1 cubic foot = 77.79gpm x 1440 = 112,020gpd.

Middle - Number of seconds to fill 1 cubic foot box: $4.30 + 3.96 = 8.26/2 = 4.13$. 60 seconds/4.13 = 14.53 x 7.48 gallons per 1 cubic foot = 108.67gpm x 1440 = 156,482gpd.

West - Number of seconds to fill 1 cubic foot box: $6.76 + 6.94 + 7.22 = 20.92/3 = 6.97$. 60 seconds/6.97 = 8.60 x 7.48 gallons per 1 cubic foot = 64.36gpm x 1440 = 92,678gpd.

Total for Haiku Ditch at Honopou = 361Kgpd.

Water Measurements: Puolua at Lowrie - Number of seconds to fill 1 cubic foot box: $3.65 + 3.90 + 3.83 = 11.38/3 = 3.79$. 60 seconds/3.79 = 15.82 x 7.48 gallons per 1 cubic foot = 118.31gpm x 1440 = 170Kgpd.

Water Measurements: Puolua at Haiku -

West side - Number of seconds to fill 1 cubic foot box: $4.67 + 4.80 + 4.77 = 14.24/3 = 4.75$. 60 seconds/4.75 = 12.64 x 7.48 gallons per 1 cubic foot = 94.55gpm x 1440 = 136,153gpd.

East side - Number of seconds to fill 1 cubic foot box: $5.42 + 5.02 + 5.02 = 15.46/3 = 5.15$. 60 seconds/5.15 = 11.64 x 7.48 gallons per 1 cubic foot = 87.09gpm x 1440 = 125,409gpd.

Total for Puolua at Haiku = 262Kgpd.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Waipahoehoe Ground Water Management Area High Level Source Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waiehu, Waiehu, Waiehu, Waiehu, & Waikapū Streams Contested Case Hearing) Case No. CCH-Mao6-01

TESTIMONY OF THOMAS R. PAYNE, M.S.C.

1. My name is Thomas R. Payne. I have Bachelor and Master of Science degrees in fisheries biology from Humboldt State University and been declared to be a Fisheries Scientist by the Board of Professional Certification of the American Fisheries Society. I have worked as a professional fisheries biologist for 35 years, both for the U.S. Fish and Wildlife Service (FWS) conducting aquatic habitat surveys and providing hydroelectric project licensing conditions, and in the private sector, primarily as the head of Thomas R. Payne & Associates specializing in the determination of instream flow needs for the past 25 years. My curriculum vitae and the projects and experiences of my company are attached.

2. I have had extensive training in and experience with applications of the Instream Flow Incremental Methodology (IFIM) and PHABSIM, an important component of the IFIM. As a conservative estimate, I have either conducted, supervised, critiqued, reviewed, or contested approximately two thousand PHABSIM studies and have personally used the various PHABSIM computer models at least five thousand times. I have programmed and distributed two commercial versions of the FWS PHABSIM habitat analysis software, the latest of which, RHABSIM 3.0, is the second-most popular PHABSIM program in use around the world (Payne 1994, Tharme 2002).

3. I regularly provide technical training in all aspects of the IFIM and PHABSIM to graduate-level university students, to numerous state and federal resources agencies including the FWS, the Federal Energy Regulatory Commission, and the U.S. Forest Service; and to many other private and commercial companies, both within the U.S. and abroad. I currently have two week-long seminars scheduled in Spain and Chile using the Spanish-language version of RHABSIM.

4. I have worked in Hawai'i for over 20 years conducting many of the original PHABSIM studies done on island rivers for proposed hydroelectric projects, including the Lumahai, Hanalei, and Waihua on Kauai, and the Wailuaiki and Kopihula on Maui. In preparation for this testimony, I visited all four streams of the Nā Wai 'Ehā at various locations, times, and flow levels, read the testimony of several attestants, and reviewed the study plans, controlled flow requests, and reports of the U.S. Geological Survey (USGS) for both Nā Wai 'Ehā and East Maui streams.

5. According to the testimony of Dr. Delwyn Oki in this proceeding (page 14, paragraph 35), the USGS has initiated cross-sectional stream surveys to establish relations between discharge and habitat for native stream macrofauna. The paper he cites as an example for the USGS surveys is Gingerich and Wolff (2005), which describes similar studies of East Maui streams that relied on PHABSIM. In order to conduct his PHABSIM stream surveys and to assess streamflow losses in the lower reaches of Nā Wai 'Ehā streams, Dr. Oki has proposed a schedule of controlled flow releases for the Waihe'e River and the Waichu and 'Iao streams (Table 1, page 27, paragraph 64). The duration of each flow release on each stream is proposed to be approximately 30 days, depending on measured flow loss rate stability.

6. As an active practitioner of PHABSIM studies, I do not agree that 30 days are required to collect the stream survey data needed to calibrate the PHABSIM hydraulic models. For the length of streams and number of study sites sufficient to adequately model discharge and habitat relationships in the Nā Wai 'Ehā, all necessary data could be acquired over three days of controlled flow releases, with one 24-hour day for each release. If field crews were limited to only two or three persons, it could take at most two or three days at each release for each stream.

7. Not being an expert in groundwater hydrology, I do not address the time that might be required to assess streamflow losses in these streams. Any flow gains or losses that might occur during PHABSIM data collection could be accounted for in the hydraulic models.

8. For the larger purpose of providing information suitable for revising interim instream flow standards, it is my professional opinion that PHABSIM is not the best of the available instream flow assessment methods. While PHABSIM could be a component within a larger analytical framework for recommending instream flow standards, I don't believe that such framework is currently available in Hawai'i, and therefore PHABSIM standing alone has only limited utility. The method is not simple to implement properly and it is relatively easy to

generate unreliable or even spurious results. Based on my own review of previous USGS PHABSIM studies in Hawai'i, I cannot conclude that they are sufficiently conversant with the numerous technical aspects of the method for their work to be taken on faith.

9. PHABSIM analysis is based solely on water velocity, water depth, and substrate and/or cover suitability for particular species at discrete sample points in a stream. It does not consider species interactions, food availability, recruitment, migration, predation, competition, water quality, sedimentation, aesthetics, safety, or other potential influences on aquatic species population levels. Population abundance is only indirectly inferred from PHABSIM results, without any direct quantification or prediction of individual species numbers or density, and the method as a whole remains unvalidated for Hawaiian streams and aquatic organisms. If a validation of PHABSIM were to be done in Hawai'i, it would consist of a specific study of the direct or indirect relationship between habitat variability and target species population dynamics, using methods described by Bovee et al. (1994).

10. In addition to being unvalidated in Hawai'i, PHABSIM simply generates an index of aquatic habitat suitability in relation to streamflow. One index is generated for each aquatic species at each study site on each stream, and these graphs must be reconciled and interpreted. As accurately stated in Gingerich and Wolff (2005), "no single answer results from this approach. The results are meant to show relative changes in habitat with changes in base flow. These results are intended to be used along with other biological and hydrological information in development, negotiations, or mediated settlements for instream flow requirements." In other words, considerable work remains to be done before defensible instream flow standards could be recommended from PHABSIM studies alone.

11. I have also reviewed the testimony of Dr. M. Eric Benbow prepared for this proceeding. In his testimony, Dr. Benbow argues that "the streams of Nā Wai 'Ehā need no less than 75 percent of annual median flow to maintain their overall biological and ecological integrity over the short and long term." Despite the imprecision of his terms and my personal observation that native aquatic species are present in these streams after many decades of flow diversion, I only discuss here the computational method by which he makes a recommendation. Depending on the hydrology of the target stream, Dr. Benbow's recommendation of 75% of the Q_{50} computes to values somewhere between the Q_{65} and Q_{85} . These duration values mean that 15 to 35 percent of the time streamflows will be naturally lower, even with zero flow diversion.

12. The technique of using flow quantity, and more specifically flow duration curves, to derive instream flow recommendations is well established in the scientific literature. The simplest is the Tennant Method (Tennant 1976), which has as a basis various percentages of the mean annual flow. The New England Base Flow Method (Larsen 1981) uses the median August flow to set a minimum flow value. Many others (e.g. Hoppe Method, Northern Great Plains Resource Program Method, Lyon's Method, Arkansas Method, Texas Method) select specific flow duration values (e.g. Q_{40} , Q_{80} , 40% of Q_{50} , etc.) by either season or month (Instream Flow Council 2004). None of these methods, however, specify 75% of the Q_{50} as does Dr. Benbow, nor to my knowledge has his approach ever been applied or tested on Hawaiian or any other streams. Therefore, the argument that 75% of the Q_{50} is required to accomplish his stated objectives appears to be only Dr. Benbow's personal judgment and opinion, and is unpublished and without implementation history or precedent.

13. Had I been consulted before USGS was contracted to conduct studies on streams of the Nā Wai 'Ehā, I would have recommended the well-established Demonstration Flow Assessment (DFA) method in place of PHABSIM to modify interim instream flow standards. Otherwise known as an Incremental Flow Index or the Expert Panel Assessment Method, the DFA (Acres International Corporation 1989, Tharme 1996, Railsback and Kadavy 2004, Instream Flow Council 2004) relies on direct observation of stream characteristics rather than complex computations of hydraulics and habitat suitability as in PHABSIM. Persons representing the various instream flow needs identified for assessment (e.g. fish habitat, recreation, aesthetics, native Hawaiian values, cultivation, etc.) observe and objectively evaluate conditions and develop a consensus rating of different flows through collaborative discussion.


14. A primary advantage of the DFA, besides being much cheaper to implement than PHABSIM, is that it incorporates multiple instream flow values, involves "experts" ranging from hydraulic engineers and aquatic scientists to recreationists and naturalists, and invests numerous interest groups in the process and results. While the DFA still requires interpretation, it can be subject to negotiation and vests all parties with direct knowledge of stream conditions under various flow alternatives. Even the finest PHABSIM study requires complete faith and trust that it was done correctly and has actual meaning appropriate to the situation.

15. If there are additional studies done on the streams of the Nā Wai 'Ehā, I suggest incorporating the DFA. If PHABSIM is retained, it can be done concurrently with the DFA at no

additional cost of water or time. The same study sites can be evaluated (if appropriate) with the two methods at the same flow levels over the same one-to-three day time frame. Specific details of a DFA would need to be determined, including the number and expertise of participants, the scope and method of resource value ranking, and the logistics of implementation.

I, Thomas R. Payne, do declare under penalty of law that the foregoing is true and correct.

Dated: Arcata, CA, October 15, 2007.


Thomas R. Payne

REFERENCES

- Acres International Corporation. 1989. Instream flow study, New River instream flow assessment, reservoir management study, Bonny Eagle Project Environmental Studies. Report prepared for Central Maine Power Company by Acres International Corp., Amherst, NY and Thomas R. Payne & Associates, Arcata, CA. April 1989.
- Bovee, K.D., T.J. Newcomb, and T.G. Coon. 1994. Relations between habitat variability and population dynamics of bass in the Huron River, Michigan. National Biological Survey, Biological Report 21. 63pp.
- Gingerich, S.B., and R.H. Wolff. 2005. Effects of surface-water diversions on habitat availability for native macrofauna, Northeast Maui, Hawaii. USDI, U.S. Geological Survey, Scientific Investigations Report 2005-5213. 92pp.
- Instream Flow Council (IFC). 2004. Instream flows for riverine resource stewardship, revised edition. ISBN 0-9716743-1-0. Instream Flow Council, Cheyenne, Wyoming. 268 pp.
- Larsen, H.N. 1983. New England Flow Regulation Policy. Memorandum to Area Manager, New England Area Office, from Regional Director, Region 5, U.S. Fish and Wildlife Service. 3pp.
- Payne, T.R. 1994. RHABSIM: User friendly computer model to calculate river hydraulics and aquatic habitat. Proceedings of the First International Symposium on Habitat Hydraulics, Trondheim, Norway, August 18-20, 1994. Pp. 254-260.
- Railsback, S., and Kadwany, J. 2004. Demonstration flow assessment, procedures for judgement-based instream flow studies. EPRI Final Report, March 2004. TR-1005389. 124pp.
- Tennant, D.L. 1976. Instream flow regimens for fish, wildlife, recreation and related environmental resources. Fisheries 1(4):6-10.
- Tharme, R.E. 1996. Review of international methodologies for the quantification of the instream flow requirements of rivers. Freshwater Research Unit, University of Cape Town, report commissioned by the Department of Water Affairs and Forestry. November 1996. 82pp.
- Tharme, R.E. 2002. A global perspective on environmental flow assessment: emerging trends in the development and application of environmental flow methodologies for rivers. In Proceedings of the International Conference on Environmental Flows for River Systems, incorporating the 4th International Ecohydraulics Symposium. Cape Town, South Africa. March 2002.

THOMAS R. PAYNE
CERTIFIED FISHERIES SCIENTIST
Instream flow analysis and riverine ecology

EDUCATION

- M.S. Degree in Fisheries Biology, 1972**
Thesis title: *Effect of prior residence on dominance in rainbow trout*. California State University, Humboldt, Arcata, California. Specialized course work included fish diseases, reservoir management, fish population dynamics, and genetics.
- B.S. Degree in Fisheries Biology, 1970**
Minor in Psychology, Humboldt State College, Arcata, California. Specialized course work included ichthyology, fisheries management, limnology, animal behavior, bacteriology, fish culture techniques, biometrics, freshwater ecology, technical writing, and psychobiology.
- University of California, Irvine, California, 1965-67. Course work included general biology core series, calculus, physics, inorganic and organic chemistry, and parasitology.

EXPERIENCE

Principal Associate

- 1982 - Present**
Thomas R. Payne & Associates Fisheries Consultants, Arcata, CA
Conduct studies of water resource development projects affecting aquatic systems. Specialize in the Instream Flow Incremental Methodology (IFIM) to assess the effect of streamflow alterations of hydroelectric power, irrigation, and water supply projects. Design and negotiate fishery protection provisions as part of licensing and permitting requirements. Provide biological expertise and expert witness testimony for activities affecting fishery resources, including timber harvest and stream restoration. Develop modeling software and teach workshops to public and private sector biologists. Manage business and supervise staff of professional fishery biologists.

Fish and Wildlife Biologist

- 1981 - 1982**
U.S. Fish & Wildlife Service, Olympia, WA
Performed environmental review of hydroelectric projects in Washington State, including preliminary permits, license conditions, exemption terms and conditions, and instream flows. Initiated multi-agency committee to coordinate agency and developer communication. Performed and/or reviewed hydropower-related instream flow studies conducted in the state. Functioned as technical adviser for IFIM applications to state, private, and tribal biologists.

Fisheries Management Biologist

- 1977 - 1981**
U.S. Fish & Wildlife Service, Arcata, CA
Assisted in the monitoring and management of sport, commercial and Indian salmon fisheries on the Klamath and Trinity Rivers, recovered coded-wire tags and harvest information from Indian gillnet fishery, estimated salmon populations, invented and electrofished tributary streams for habitat quality, fish utilization and access, directed stream clearance for log-jam removal and fish habitat improvement, and built and operated a fish weir, trap, and small hatchery.

Fisheries Management Biologist

U.S. Fish & Wildlife Service, Olympia, WA
 Advised Indian and other groups on siting, construction and operation of small streamside salmon hatcheries. Conducted spawning ground surveys to count spawning salmon and recover tags for estimating salmon populations. Assisted in inventory of herring spawning distribution in Puget Sound. Reviewed logging plans and wrote logging stream impact assessments.

1975 - 1977

Fisheries Biologist

Envirogenetics Systems Company, El Monte, CA
 Performed long and short-term toxicity tests on several fish species with various pesticides and toxic chemicals. Helped design and construct toxicant delivery apparatus and environmental control systems. Acquired and maintained fish stocks for laboratory testing.

1972 - 1974

Research Assistant

National Science Foundation Sea Grant Program, Humboldt State University, Arcata, CA
 Assisted with the development and construction of experimental fish ponds which used tertiary-treated sewage to supplement food sources by nutrient enrichment. Monitored water quality in ponds. Helped build laboratory and fish culture facilities.

1971 - 1972

IFIM TECHNICAL TRAINING

Instream Flow Strategies and Negotiations (1981)
 Instream Flow Field Techniques (1981)
 Instream Flow Computer Analysis (1981)
 Advanced Analytical Techniques in IFIM (1984)
 Hydraulics in PHABSIM (1985 and 1989)

ACCOMPLISHMENTS

Special Achievement Award, U.S. Fish and Wildlife Service
 Certified Fisheries Scientist, American Fisheries Society (1978, 2003)
 California Department of Fish and Game, Directors Achievement Award
 President, American Fisheries Society, Humboldt Chapter
 Associate Professor of Fisheries, Humboldt State University
 Secretary/Treasurer, Pacific Fisheries Biologists

INSTRUCTIONAL EXPERIENCE

IFIM and PHABSIM Workshops to BERC and Other Public and Private Staff
 Graduate-Level Semester Courses in IFIM at Humboldt State University
 Water Temperature Modeling Workshops
 American Fisheries Society Training in IFIM, Full and Short Courses
 PHABSIM Field Techniques to U.S. Forest Service and Other Public and Private Staff
 PHABSIM Computer Analysis Full Courses

PERTINENT PUBLICATIONS/PRESENTATIONS

Cardwell, R.D., and T.R. Payne. 1974. Acute toxicity of unknown toxicant to threespine stickleback (*Gasterosteus aculeatus microcephalus* Girard). Envirogenetics Systems Company Report. El Monte, California. 8pp.

Cardwell, R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur. 1973. Acute toxicity of selenium dioxide to freshwater fishes. Chemico Process Plants Company, Envirogenetics Systems Report. El Monte, California. 26pp.

Cardwell, R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur. 1976. Acute toxicity of selenium dioxide to freshwater fishes. Archives of Environmental Contamination and Toxicology 4:129-144.

Cardwell, R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur. 1976. Acute toxicity of selected toxicants to six species of fish. U.S. Environmental Protection Agency, Environmental Research Laboratory, Eco. Res. Series Rpt EPA-600/3-76-008. Duluth, Minnesota. 125pp.

Payne, T.R. 1975. Study on the development of the prior residence effect in rainbow trout (*Salmo gairdneri*). Bulletin of the Southern California Academy of Sciences 74:80-86.

Payne, T.R. 1976. Skokomish initial project report. U.S. Fish and Wildlife Service, Northwest Fisheries Program Special Report. Tumwater, Washington. 19pp.

Payne, T.R. 1987. One flow IFG4 - What it is and how it works. Instream Flow Chronicle, Vol. IV, No. 1. Ft. Collins, CO.

Payne, T.R. 1988. PHABSIM analytical errors and implications for IFIM. Instream Flow Chronicle, Vol. V, No. 3. Ft. Collins, CO.

Payne, T.R. 1988. A comparison of weighted usable area calculations using four variations of the IFG4 hydraulic model. Paper given to AFS Bioengineering Symposium, Portland, OR.

Payne, T.R. 1992. Stratified random selection process for the placement of Physical Habitat Simulation (PHABSIM) transects. Paper presented to AFS Western Division Meeting, July 13-16, 1992, Fort Collins, CO.

Payne, T.R. 1994. RHABSIM: User-friendly computer model to calculate river hydraulics and aquatic habitat. Proc. of the 1st International Symposium on Habitat Hydraulics, August 18-20, 1994, Trondheim, Norway.

Payne T.R. 1994. The Instream Flow Incremental Methodology and stream habitat assessment: uses and abuses. Paper presented to California's Liquid Gold Workshop, Santa Barbara, CA.

- Payne, T.R., 1995. IFIM: In Fact It's Magic. Review of The Instream Flow Incremental Methodology: A Primer for IFIM, written by National Biological Service, Bio. Rpt. 29, March 1995. *Rivers* 5(1):56-57.
- Payne, T.R., 2003. The concept of weighted usable area as relative suitability index. Paper presented to International IFIM User's Workshop, June 1-5, 2003, Ft. Collins, CO.
- Payne, T.R., 2003. A roadmap for PIER research on instream flow determinations for hydropower applications in California. Draft report prepared for California Energy Commission, PIER Environmental Area, October 15, 2003.
- Payne, T.R., 2007. Alternative conceptualization of the IFIM/PHABSIM habitat index. Paper presented to Sixth International Symposium on Ecohydraulics, Christchurch, New Zealand, February 19-23, 2007.
- Payne, T.R., and D.J. Bremm. 2003. The influence of multiple velocity calibration sets on the PHABSIM habitat index. Paper presented to International IFIM User's Workshop, June 1-5, 2003, Ft. Collins, CO.
- Payne, T.R., S.D. Eggers, and D.B. Parkinson. 2005. The number of transects required to compute a robust PHABSIM habitat index. *Hydrocol. Appl.* Tome 14 Vol. 1, pp. 27-33.
- EXPERT WITNESS PARTICIPATION**
- 1983 – Winchester Dam Hydroelectric Project, North Umpqua River, Oregon. Testified before county and state regulatory agencies in Roseburg on impacts of a small hydroelectric project on salmon and steelhead. Client – Elektra Power Company. Attorney – Steven Jamk, Portland, OR
- 1984 – Roaring Creek Hydroelectric Project, Roaring Creek, California. Prepared affidavit for submittal to Federal Energy Regulatory Commission on the impacts of a small hydroelectric project on resident trout. Client – Mega Hydro, Inc. Attorney – Gary Bachman, Wash., D.C.
- 1985 – Sayles Flat Hydroelectric Project, South Fork American River, California. Prepared statements and affidavits on the impacts of a small hydroelectric project on resident trout. Client – Sayles Hydro Associates. Attorneys – Stuart Somach, Virginia Cahill (McDonough, Holland & Allen), Sacramento, California.
- 1986 – Rock Creek Hydroelectric Project, Sacramento, California. Testified before State Water Resources Control Board on the impact of a small hydroelectric project on resident trout and warmwater fish species. Client – Rock Creek Limited Partnership. Attorney – Louis Touton (Jones, Day, Reavis & Pogue), Los Angeles, California.
- 1986 – American River Litigation, Sacramento, California. Prepared data on impact of flow alteration in the lower American River. Client – City of Sacramento. Attorney – Stuart Somach (McDonough, Holland & Allen), Sacramento, California.

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- 1987 – Flathead Irrigation Project, Montana. Testified in Federal Court in Helena on the impact of drought relief flow regulations on irrigators in the Flathead Valley. Client – Confederated Salish and Kootenay Tribes. Attorney – Patrick Smith (C.S.K.T.), Pablo, Montana.
- 1987 – Rock Creek Hydroelectric Project, Washington, D.C. Testified before Federal Energy Regulatory Commission administrative law judge on the potential impact of a small hydroelectric project on resident trout and warmwater fish species. Client – Rock Creek Limited Partnership. Attorney – Louis Touton (Jones, Day, Reavis & Pogue), Los Angeles, California.
- 1990 – Ox Mountain Landfill Expansion, Oakland, California. Testified before Regional Water Quality Control Board on fisheries impacts and mitigation for a solid waste disposal project. Client – Browning-Ferris Industries. Attorney – Edgar Washburn (Washburn, Briscoe & McCarthy), San Francisco, California.
- 1990 – Santa Ynez River Hearings, Sacramento, California. Prepared testimony on fisheries impacts of groundwater infiltration project near Lompoc, California. Assisted with hearing before State Water Resources Control Board. Client – Santa Ynez River Water Conservation District. Attorneys – Stanley Hatch, Scott Slater (Hatch & Parent), Santa Barbara, California.
- 1992 – Yuba River Hearings, Sacramento, California. Presented testimony to the State Water Resources Control Board on instream flow and water temperature modeling studies. Client – California Department of Fish and Game. Attorney – Dennis Smaage, California State Attorney General's Office, Sacramento, California.
- 1992 – Lagunitas Creek Hearings, Sacramento, California. Presented testimony to the State Water Resources Control Board on instream flow studies. Client – California Department of Fish and Game. Attorney – William Cunningham, California State Attorney General's Office, Sacramento, California.
- 1993 – Bear Creek Hearings, San Bernardino, California. Prepared testimony for the State Water Resources Control Board on instream flow studies. Client – Big Bear Municipal Water District. Attorney – Kevin O'Brien (Downey, Brand, Seymour & Rohwer), Sacramento, California.
- 1993 – Mono Basin Hearings, Sacramento, California. Presented testimony to the State Water Resources Control Board on instream flow studies on tributaries to Mono Lake. Client – California Department of Fish and Game. Attorney – Harold Thomas, California State Attorney General's Office, Sacramento, California.
- 1994 – Yakima Basin Water Rights Adjudication, Yakima, Washington. Prepared affidavit on habitat use of Yakima River by anadromous fish. Client – Yakima Basin Defense Coalition. Attorney – Charles Flower (Flower & Andreatti), Yakima, Washington.
- 1996 – Puiuh Creek Water Rights Adjudication, Vacaville, California. Presented testimony on instream flow issues for warm and coldwater fish species. Client – Solano County Water Agency. Attorney – Tim O'Laughlin (Minasian, Minasian, Minasian, Spruance, Baber, Meith & Soares), Oroville, California.

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THOMAS R. PAYNE

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1996 - Platte River Water Rights Adjudication, Lexington, Nebraska. Presented testimony on instream flow studies and associated issues. Client - Nebraska Water Conservation Cooperative. Attorney - James Doyle (Cook, Wightman & Doyle), Lexington, Nebraska.

1996 - River Kennet Public Inquiry, Newbury, England. Reviewed and reanalyzed instream flow study performed for the Environment Agency and provided proof of evidence on study interpretation and impact analysis. Client - Thames Water Utilities, Ltd. Queen's Counsel - Anthony Anderson (2MBC), London, England.

2002 - Tongariro River Consent Process, Turangi, New Zealand. Prepared direct testimony on instream flow analysis of the Tongariro Power Development in association with National Institute of Water and Atmospheric Research. Client - Genesis Power, Ltd. Counsel - Paul Majurey (Russell McVeagh), Auckland, New Zealand.

2003 - Santa Ynez River Water Rights Hearings, Sacramento, California. Reviewed direct testimony and presented rebuttal testimony on effects of Bradbury Dam and Cachuma Lake on fishery resources of the Santa Ynez River. Client - Santa Ynez River Water Conservation District. Attorney - Ernest Conant (Young Wooldridge), Bakersfield, California.

2004 - Chelan River Pollution Control Hearings, Seattle, Washington. Prepared direct and rebuttal testimony on the effects of instream flow on water temperature in the Chelan River. Client - Chelan Public Utilities District. Attorney - Fred Burnside (Davis Wright Tremaine LLP), Seattle, Washington.

2006 - Klamath River Hydroelectric Project Hearings, Sacramento, California. Prepared direct and rebuttal testimony on the use of the Tennant Method versus the IFIM for use in establishing instream flow recommendations. Client - PacifiCorp, Inc., Portland, Oregon. Attorney - Mike Swiger (Van Ness Feldman P.C.), Washington, D.C.)

2006 - Alberta Energy and Utilities Board Hearings, Ft. McMurray, Alberta, Canada. Presented direct and cross-examination testimony of the effects of Imperial Oil Resources Ventures, Ltd., for oil sands extraction and effects on the Athabasca River. Client - Athabasca Chipawyan First Nations. Attorney - Karin Buss (Ackroyd LLP, Barristers & Solicitors), Edmonton, Alberta.

REFERENCES

Available on request.



*Thomas R. Payne & Associates
Fisheries Consultants
P.O. Box 4678
Arcata, California 95518-4678
(707) 822-8478
trpa@northcoast.com*

COMPANY QUALIFICATIONS

Thomas R. Payne & Associates is a fisheries consulting firm with extensive experience in the analysis of instream flow needs and the impacts of water resource project development on fishery resources. Over the past twenty-four years, TRPA has worked on well over 300 separate projects, conducting instream flow studies, modeling instream water temperatures, evaluating fish habitat and populations, developing fish habitat use criteria curves, designing and constructing fish habitat enhancement structures, conducting watershed cumulative impact analyses, negotiating fishery resource protection provisions, preparing licensing documents, and completing environmental impact reviews and assessments. Projects on which TRPA has participated range in scope from backyard fish rearing ponds to billion dollar destination resort complexes, located on intermittent high mountain creeks to major navigable rivers with average annual flow of 32,000 cubic feet per second.

TRPA, located in Arcata on the Redwood Coast of northern California, has performed fisheries research throughout the Pacific Northwest and Rocky Mountain states, New England and the East Coast, Hawaii and Guam, and Newfoundland, with an emphasis on northern and central California. Humboldt State University and its nationally-known School of Natural Resources and Sciences provides TRPA with assistance from eminent professors, experienced and dedicated graduate student labor, and the resources of an extensive fisheries library. The experience and depth of TRPA has allowed the small, independent company to generate an average business volume of nearly \$1,000,000 per year.

The types of services performed by TRPA include:

Instream Flow Analysis - TRPA has been involved in all phases of applying and reviewing Instream Flow Incremental Methodology studies, from project impact scoping, assessment method selection, and flow study performance, to computer analysis using PHABSIM, results negotiation and interpretation, and final project mitigation design. TRPA staff has extensive experience designing and conducting habitat suitability criteria studies for a wide variety of aquatic species.

TRPA also offers training, workshops, and University classes in the application of PHABSIM with microcomputer software developed by TRPA. TRPA's software, called RHABSIM (Riverine HABITAT SIMulation), is a fully integrated program for river hydraulics and aquatic habitat modeling using the Instream Flow Incremental Methodology. Running in Microsoft Windows and DOS, it is an extensive version of the PHABSIM hydraulic and habitat simulation system developed by the U. S. Fish and Wildlife Service.

Water Temperature Modeling - TRPA has experience applying the Stream Network Temperature Model in mainframe and microcomputer versions, from project scoping, data collection and temperature study performance, to computer analysis, calibration, simulation, gaming and results interpretation and negotiation. TRPA is currently marketing its own stream temperature modeling software. The software, called StreamTemp: A Network Stream Temperature Model for Windows, is a stream temperature model for predicting changes in water temperature from upstream modifications in flow. Running in Microsoft Windows, it is an full extension of the SNTTEMP, SSSOLAR, SSSHADDE and SSTEMP models developed by the U. S. Fish and Wildlife Service. StreamTemp is public domain software.

Fishery Evaluations - Fish habitat quality and utilization surveys, fish population estimates, spawning ground surveys, migration barrier analyses, creel survey studies, fish age and growth studies, and project impact analyses have all been conducted by TRPA to evaluate potential impacts of existing and proposed development projects.

Aquatic Invertebrate Investigations - TRPA has conducted a variety of aquatic invertebrate abundance and diversity studies in both freshwater and marine environments. TRPA staff has been trained in the current rapid bioassessment techniques, including the California Aquatic Bioassessment Methodology.

Hydrologic and Sediment Analysis - In addition to routinely incorporating hydrologic analyses into instream flow studies and habitat studies, TRPA has evaluated sediment transport and deposition both within stream systems and on deltas formed at the confluence of small tributaries and major rivers.

Licensing Document Preparation - Fisheries sections of licensing and re-licensing documents such as environmental impact assessments, applications to FERC, and special use permits have been prepared by TRPA to satisfy regulatory requirements.

Project Review and Expert Testimony - TRPA has been retained on numerous occasions to review previously conducted instream flow studies and project designs, provide an independent evaluation, and participate in State and Federal proceedings as an expert witness involving disputes over study conduct, the potential for project impacts, and required mitigation.

INSTREAM FLOW STUDY EXPERIENCE

Thomas R. Payne & Associates has acquired extensive experience with instream flow studies by using the Instream Flow Incremental Methodology (IFIM) on numerous instances over the past eighteen years. Tom Payne, Principal Associate, is a Certified Fisheries Scientist trained by the U.S. Fish & Wildlife Service in all phases of the IFIM, including field techniques, computer analysis, advanced interpretation, and negotiations. He frequently teaches graduate level university classes in IFIM analysis and has developed commercial microcomputer versions of IFIM hydraulic and habitat programs and water temperature models. TRPA has performed or been involved with over one hundred and fifty IFIM studies for various hydroelectric and other water development projects around the country and Pacific Islands. Fish habitat evaluations and monitoring studies have also been conducted by TRPA on over fifty additional projects, utilizing electrofishing and direct observation stream survey techniques.

Thomas R. Payne & Associates has also recently released a new version of its computer software package (RHABSIM 2.1) for the assessment of riverine hydraulics and aquatic habitat. This program expands on the software TRPA previously developed for use with the Instream Flow Incremental Methodology. RHABSIM is a user-friendly program that includes an enhanced graphic capability for easier interpretation of model output and includes times series module for habitat duration analysis. The program combines all the primary functions of the original U.S. Fish and Wildlife Service PHABSIM system into a single integrated package.

The recently released water temperature model software (StreamTemp for Windows) is based upon the SSSOLAR, SSSHADDE and SSTEMP programs by John Bartholow of the U.S. Fish and Wildlife Service. StreamTemp for Windows includes many additional features, including synthesis of up to three reaches ("Y-node Network"), up to 31 daily input values for stream hydrology and weather data, and detailed reports and graphs of program results and calibration purposes. The program calculates the heat flux components for stream segments and then transports that heat downstream. The maximum daily water temperature is calculated by following a water column from solar noon to the end of the reach, allowing it to heat up towards the maximum equilibrium temperature. The program will predict the minimum, mean, and maximum daily water temperature for the set of parameters you provide. Other output includes the mean daily heat flux components, and a full set of validation statistics for best-fit modeling.

Complete IFIM Instream Flow Studies

Alkins Creek, CA	Angels Creek, CA	Alkins Creek, CA	Battle Creek, CA
Bear Creek, CA	Big Bear Creek, CA	Boulder Creek, CA	Bucks Creek, CA
Canyon Creek, CA	Conemaugh River, PA	Cosumnes River, CA	Digger Creek, CA
EF Boulder Cr, CA	Eliapoun Creek, CA	E&W Waiuaki, HI	Feather River, CA
Freshwater Cr, CA	Grizzly Creek, CA	Hanaiei River, HI	Hatchet Creek, CA
Kennebec River, ME	Klamath R., CA/OR	Kopihuhia Stream, HI	Lake Creek, OR
Little Walker R., CA	Lost Creek, OR	Lumahaai River, HI	Maagas River, Guam
Malheo Stream, HI	Manengon River, Guam	MF Stamislaus R. CA	Milk Ranch Cr., CA
NF Battle Cr., CA	NF Feather River, CA	NF Mad R. CA	NF Stamislaus R., CA
NF Yuba River, CA	Old Cow Cr., CA	Pearch Creek, CA	Pinchot Brk, NFLD
Pine Creek, CA	Price Creek, CA	Roaring Creek, CA	Rosnoke River, VA
Saco River, ME	San Luis Creek, CA	Sebasticook R., ME	Shasta River, CA
Silver Creek I, CA	Silver Creek II, CA	So Cow Creek, CA	SF American R., CA
SF Battle Cr., CA	SF Payette River, ID	WF Boulder Creek, CA	W Salmon R., NFLD
Willits Creek, CA	Wolf Creek, CA	Yakima River, WA	Yuba River, CA

Computer Analysis and/or Field Work

Allegheny River, PA	American River, CA	Bailey Creek, CA	Barclay Creek, WA
Bear Cr., CA	Bear River, CA	Big Creek, CA	Big Grizzly Cr., CA
Big Kimshew Cr., CA	Bishop Creek, CA	Bumping River, WA	Butter Creek, CA
Camp Creek, CA	Cold Creek, CA	Connoquenessing C, PA	Cottonwood Cr, CA
Cow Cr., CA	Deadwood Creek, CA	Deer Creek, CA	Ditch Creek, ID
Eel River, CA	Flathead R., MT	Fisher Creek, ID	French Creek, CA
Grizzly Creek, CA	Hatchet Creek, CA	Horse Creek, CA	Jocko River, MT
Kootenai River, MT	Lagunitas Creek, CA	Lewis Fork Creek, CA	Lit. Boulder Cr., CA

THOMAS R. PAYNE & ASSOCIATES INSTREAM FLOW STUDY EXPERIENCE
Computer Analysis and/or Field Work (continued)

Lit. Kimshew Cr., CA Logan River, UT Mission Creek, MT Mono Creek, CA
Naches River, WA Nelder Creek, CA Nelson Creek, CA NF Stevenson Cr., CA
N. Valley Creek, CA Oak Creek, CA Old Cow Cr., CA Pine Creek, CA
Portneuf River, ID Post Creek, MT Riordan Creek, ID Rock Creek, CA
San Joaquin R., CA SF San Joaquin R., CA SF Snoqualmie R., WA Slate Creek, CA
Snake River, ID St. Joseph River, IN Squaw Creek, CA Stevenson Cr., CA
Stuart Fork Cr., CA Sulphur Creek, CA Susquehanna R., PA Thorn Run Cr., PA
Tieton River, WA Tokul Creek, WA Trapper Creek, ID Wallace Cyn Cr., WA
Weaver Creek, CA W. Br. Feather R., CA Yakima River, WA

IFIM Reviews

Clavey River, CA Tongariro River, NZ Stanislaus River, CA Thames River, UK
Platte River, NB Snake River, ID

Site Selection and Preparation

Big Sulfur Creek, CA EF Smart Fk Cr., CA Goldsborough Cr., WA Haypress Creek, CA
Jacobey Creek, CA Ladies Cyn Creek, CA Long Cyn Creek, CA Morse Creek, WA
Squaw Creek, CA Squirrel Creek, CA Wailuku River, HI

Stream Temperature Models

Battle Creek, CA Butt Creek, CA Caples Creek, CA Chelan River, WA
Columbia River, WA Cosumnes River, CA Hamilton Branch, CA Kern River, CA
Lake Entiat, WA NF Battle Creek, CA NF Feather River, CA (Beldin Reach)
NF Feather River, CA (Cresta Reach) NF Feather River, CA (Rock Cr Reach)
NF Feather River, CA (Seneca Reach) SF Feather River, CA SF American R., CA
SF Battle Creek, CA Yakima R., WA (Chandler Project) Yakima R., WA
(Kennewick Pump Exchange)

Licensing Documents, Fisheries Sections

Boulder Creek, CA Canyon Creek, CA Hatchet Creek, CA Kern River, CA
NF Battle Creek, CA Old Cow Creek, CA Pine Creek, CA Roaring Creek, CA
Saco River, ME SF Battle Creek, CA Susquehanna River, PA Umatilla River, OR
Yakima River, WA

Habitat Assessment and/or Project Participation

Angel Creek, CA Apanolio Creek, CA Barker Slough, CA Battle Creek, CA
Big Quillcene R., WA Big River, CA Blue Creek, CA Boulder Creek, WA
Calleguas Creek, CA Calaveras R., CA Camp Creek, CA Cedar Flat Creek, CA
Conejo Creek, CA Digger Creek, CA Dosewallips R., WA Ganzner Creek, CA
Glacier Creek, WA Green Valley Cr., CA Hamilton Branch, CA Hat Creek, CA

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THOMAS R. PAYNE & ASSOCIATES INSTREAM FLOW STUDY EXPERIENCE
Habitat Assessment and/or Project Participation (continued)

Hayfork Creek, CA Kekawaka Creek, CA Klamath River, CA Ledgewood Cr., CA
Lost Creek, CA Maple Creek, CA Matilija Cr., CA Mono Creek, CA
N. Canyon Creek, CA N. Umpqua River, OR NF Skykomish R., WA Pinu Creek, CA
Proctor Creek, WA Putah Creek, CA Quartz Creek, WA Rock Creek, CA
Ruth Creek, WA Sacramento River, CA San Antonio Cr., CA San Lorenzo Cr., CA
Santa Ynez R., CA Sheridan Creek, CA Suisun Creek, CA Stanislaus R., CA
Star City Creek, CA Swamp Creek, WA Taylor Creek, CA Ulatits Cr., CA
Umatilla River, OR Ventura R., CA Wailua River, HI Ward Creek, CA
Wells Creek, WA West Cady Creek, WA WF San Gabriel, CA

Partial List of Clients and Contractors

Acres International American Electric Power Aquatic Systems Research
Beak Consultants Big Bear Water District BioSystems Analysis
Borcalli, Ensign & Buckley Brooktrails Township C.S.D. Browning-Ferris Industries
Bureau of Indian Affairs Bureau of Reclamation Calif. Dept. Fish & Game
Calif. Dept. Water Resources California Trout Chelan County NRD
Chelan PUD No. 1, WA City of Arcata, CA City of Eureka, CA
City of Harrisburg, PA City of Lake Elsinore, CA City of Idaho Falls, ID
City of San Luis Obispo, CA City of Santa Clara, CA City of Thousand Oaks, CA
Central Maine Power CH2M Hill Conemaugh Hydropower
Conserve Energy Systems Consolidated Pump Storage Dames and Moore
EIP Associates Elektra Power Corp. Entrix, Inc.
Envirohydro ERC, Inc. ESA/Madrone
Federal Energy Reg. Comm. Forward Brothers Prop. Flathead Indian Tribe
Frontier Land & Power Garratt-Callahan Co. Harding-Lawson Associates
Harza Engineering Co. Hazard Development HDR Engineering
Henwood Associates Highland Hydro HT Harvey Associates
Hoopa Indian Tribe Hosey & Associates Eng. State of Idaho Atty General's Office
Intermountain Power Jaques Whitford Environ. Jefferson County P.U.D.
Jordan/Riewerts Karuk Indian Tribe Keating Associates
Kennewick Irrigation Dist LACO Associates Los Angeles Co. Pub. Wks
Louisiana Pacific Corp. Mega Renewables Montgomery Harza Watson
Montana Fish, Wildl & Parks Mountain Energy Mutual Energy
Nat. Institute of Water & Atmospheric Research, Ltd. Natural Heritage Inst.
Edward Navicks No. Calif. Power Agency Oscar Larson & Assoc.
Orleans C.S.D. PacifiCorp/Sootish Power Ott Water Engineers
Pacific Gas & Electric Co. Penns.-American Water Co. Planning Associates
Polytech Associates Resighini Indian Rancheria Resource Insights
RDW Power & Development Rising Sun Enterprises Roseburg Lumber Company
RTD Hydro R.W. Beck & Associates Santa Ynez Water Cons. Dist.
Seattle City Light Sierra County, CA Sierra Energy Company
Sierra-Pacific Corp. Sithe Energy Company Solano County Water Agency
Solar Research Corporation Southern Calif. Edison Co. Stockton East Water Dist.
Surface Water Res. Inc. Sunnyside Valley Irrig. Dist. STT Group of Guam

13.16-18

THOMAS R. PAYNE & ASSOCIATES INSTREAM FLOW STUDY EXPERIENCE

Partial List of Clients and Contractors (continued)

Synergis Energy Development Tehama County, CA Tudor Engineering
U.S. Forest Service U.S. Fish & Wildlife Service Ventura County Public Works
Western Hydroelectric Western Power Weyerhaeuser Corporation
Winzler & Kelly

body, then if you develop a well and start pumping, and if you in fact lower the water level significantly due to pumping, you very well may draw the baseflow down as result.

There are locations where that happens, and there's certainly a lot of locations where that doesn't happen.

Q Thank you.

HEARINGS OFFICER MIKE: HC&S?

MR. SCHULMEISTER: I have no further questions.

HEARINGS OFFICER MIKE: That's enough.

Let's take a break. Everyone done with Mr. Nance? Because Mr. Oki will be coming back most likely. I would have asked Mr. Nance some hydrologically-related questions, but since Mr. Oki is coming back, I'll wait.

Let's take a break, five minutes. Then we can get started finally next witness Tom Payne.

(Recess taken.)

THOMAS R. PAYNE, M.S.C.

was called as a witness by and on behalf of HC&S was sworn to tell the truth, was examined and testified as follows:

DIRECT EXAMINATION

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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

'Iao Ground Water Management) CASE NO. CCH-MA06-01

Area High Level Source Water)

Use Permit Applications and)

Petition to Amend Interim)

Instream Flow Standards of) VOLUME VI

Waihe'e, Waiehu, 'Iao & Waikapu)

Streams Contested Case Hearing)

CONTESTED CASE HEARING

Held on December 11, 2007, at MOE, Wailuku, Maui, Classroom 1, commencing at 9:00 a.m.

BEFORE: Jean Marie McManus, CSR #156

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1 BY MR. SCHULMEISTER:

2 Q Please state your name.

3 A My name is Thomas R. Payne.

4 Q Mr. Payne, you've been observing some of
5 these proceedings, so you're familiar with this
6 process of first going through qualifications and
7 offering you as an expert.

8 I know we have submitted your written
9 testimony. Do you have a copy of that with you?

10 A Yes, I do.

11 Q Also your CV and your, I guess, a list of
12 publications, presentations, expert witness
13 participation, and company qualifications as well?

14 A Yes, all of those things.

15 Q I'm not going to belabor this, but could
16 you give a brief thumbnail summary of what you do and
17 what your professional qualifications are?

18 A Professionally I have a bachelor's and a
19 master's degree in fisheries biology from Humboldt
20 State.

21 I've been certified as a fishery scientist
22 by the Certification Board of the American Fishery
23 Society. And my work professionally as a fisheries
24 biologist since about 1970, more if you count my
25 seasonal aid experience with Cal Fish and Game from

1 1968.

2 I formed my own company after about eight
3 years with the U.S. Fish and Wildlife Service. And I
4 have had my own independent consulting business,
5 located out of Arcata in Northern California, since
6 1982. And my primary specialty has been the
7 implementation of applied instream flow studies
8 utilizing both the IFIM, or instream flow incremental
9 methodology, and its optional component model called
10 PHABSIM, which stands for physical habitat
11 simulation.

12 Q So in terms of describing your expertise,
13 are you an aquatic biologist?

14 A Yes, I am an aquatic biologist, but
15 specializing in fisheries. I've had some courses in
16 aquatic plants and bugs, but I tend to try to avoid
17 those because they're hard to remember and I have
18 enough trouble with fish.

19 Q And in addition to being the aquatic
20 biology component, is there some aspect of hydraulics
21 involved in terms of these instream flow methods and
22 studies?

23 A Hydraulics and hydrology are very important
24 components of instream flow analysis. Both of them,
25 particularly with the PHABSIM, but also with several

1 other of the instream flow models that are available.
2 Some research papers recently have put that number at
3 around 200 different types of methods. And after
4 hearing Dr. Benbow, I think I should probably say
5 201.

6 Q Could you describe what your experience in
7 Hawaii particular has been?

8 A My experience in Hawaiian streams started
9 in 1985 on a vacation visit, which I conveniently
10 tied in with a meeting in Honolulu with John Ford,
11 who was then with the U.S. Fish and Wildlife Service.
12 We just met and socialized for awhile.
13 Then I came to Maui and drove around the island
14 observing streams, observing diversion structures,
15 and the like.

16 That brief experience then led to some
17 calls, particularly from one engineering company who
18 had a proposed hydroelectric project and wanted to
19 know, A, if I knew some of the agency people in
20 Hawaii and B, if I had seen some of the streams.

21 I said, yes, and so I got the job and
22 started doing instream flow analysis using PHABSIM on
23 the Lumahai River in Kauai.

24 Subsequently, I've done similar studies on
25 the Hanalei, on the Waialua, and here on Maui on the

east and west Wailuaiki, and on the Kopiluia. And I
did some review of some other studies that were done
over on the Big Island.

Q I notice that in your written testimony,
and I think also in the supporting sheets, your CV
and history, you talk about actually doing some
instruction and writing some manuals for others to
use in doing these type of studies?

A Yes, I have done that frequently. The
original group that John Ford referenced called the
Instream Flow Group was originally a
multi-disciplinary, multi-agency group formed in Fort
Collins, Colorado about 1978. And they developed the
capability of implementing computer models to
evaluate fish habitat.

For many years they taught classes. And I
attended almost all of the classes that they offered,
including a few in advanced hydraulics and hydraulic
analysis.

But their direction changed after years,
and they were no longer then tasked with providing
instruction. So from time to time, I have put on,
either customized one-day classes, two-day classes,
week-long classes, and in various places and for
various federal, state, private and tribal agencies.

1 MR. SCHULMEISTER: At this time I would
2 like to offer Mr. Payne as an expert in aquatic
3 biology and instream flow analysis, and instream flow
4 standard methods.

5 HEARINGS OFFICER MIKE: Now is the
6 appropriate time to raise issues about
7 qualifications.

8 MS. SPROAT: I have some voir dire.
9 VOIR DIRE EXAMINATION.

10 BY MS. SPROAT:

11 Q So, Mr. Payne, your CV describes, and your
12 discussion earlier today classifies your work as a
13 certified fisheries scientist. I'm not familiar with
14 the term. Could you explain what that means?

15 A Which part, the certification process?

16 Q Yes.

17 A The American Fishery Society, a number of
18 years ago, ran into the issue of who could call
19 themselves a fisheries biologist or a fishery
20 scientist. So they developed an official
21 professional certification program that was -- and I
22 don't remember the exact wording -- but there were
23 several reasons, one of which was to provide guidance
24 to the hearings officers and judges and
25 administrators that would have to determine expert

1 witness qualifications.

2 And so that certification process was
3 designed to assist with that evaluation. So you have
4 to meet certain educational and experience
5 qualifications in order to be certified. And I have
6 been certified and recertified by that process.

7 Q And is that certification by state?

8 A No, that's actually worldwide.

9 Q And, I'm sorry, when were you certified?

10 A I believe the first time was in 1972. And
11 the latest time -- they changed the program to have
12 it be revised every certain number of years, and so
13 you had to have continuing professional
14 qualifications, either by participating in
15 conferences, or they give you a few points or even
16 showing up at the conferences. But also for
17 publishing papers and books and various reasons.

18 I don't remember exactly the last time, but
19 I think it was around 2000 that I was last certified.

20 Q And let's see, other than the work that's
21 identified in paragraph four in the oral testimony
22 that you provided this afternoon, is there any other
23 work that you've done in Hawaii regarding streams or
24 aquatic biology issues?

25 A I have done some fish population sampling

1 independently of a PHABSIM instream flow study. I
 2 did some electro-fishing in the Waialua in an area
 3 where there were small-mouth bass, and interactions
 4 between the native 'opae and introduced small mouth.
 5 I also participated in the initial phases
 6 of the review of the East Maui instream flow studies.
 7 And then just most recently visited the Na Wai 'Eha
 8 streams to become more familiar with those specific
 9 streams.

10 Q And I'm sorry I didn't clarify earlier.
 11 For each of those could you just describe who you
 12 were retained by and what year the work was done in?

13 A Now starting --

14 Q With the fish population sampling.

15 A Now, you're pushing my memory. As I
 16 recall, the fish population work was done for a
 17 company called Bingham Engineering out of Salt Lake,
 18 Utah. And the year would probably have been
 19 somewhere around 1989, 1990.

20 Q What island was that on?

21 A That was on Kauai.

22 Q And how about the -- and was that the same
 23 as the electro-fishing in Waialua?

24 A Yes.

25 Q And then how about the 'opae and

small-mouth bass?

A That was the electro-fishing on Waialua.

Q Okay, because that's all the same -- so the
 fish population sampling, electro-fishing in Waialua,
 and the studies of the 'opae and small-mouth bass was
 in 1989?

A That's correct, yes.

Q And then how about the initial phases for
 the instream flow standards for East Maui streams?

A I wouldn't characterize it, it was for the
 instream flow standards. I merely knew at the time
 that USGS was going to be implementing some instream
 flow studies. And as I understood, it was going to
 be with PHABSIM.

I first heard about that from a phone call
 from Anne Brasher of the USGS, and she told me that
 USGS was going to be implementing some studies. And
 she requested copies of several of my previous
 reports. And I provided those, copies of the
 reports, and just a broad letter of comment, just to
 try to provide some technical assistance to the USGS.
 And that was unsolicited.

Q And so that work you were doing was for the
 USGS?

A That was not work I was doing for anybody.

1 I was just pro bono offering information.

2 Q And did you do work for anyone else on
3 issues related to the instream flow studies for the
4 East Maui streams?

5 A Subsequently, I was retained through SWCA,
6 as I understand, even though I was not directly
7 contracted to, it was for the East Maui Irrigation
8 District.

9 And at that time I came over and started
10 visiting some of the streams. And then had a
11 biologist crew of people that worked for me that
12 stayed for a period of several days. I don't recall
13 now, possibly up to ten days or two weeks. And they
14 did some habitat suitability criteria of curve work,
15 and also did an inventory of all of the many
16 diversions as they could. And did some
17 quantifications of checks of species in the vicinity
18 of the diversions.

19 Q And what was the approximate timetable for
20 that one?

21 A I'm much better at remembering where I've
22 been as opposed to when I've been. It was within the
23 last four years.

24 Q That's fine.
25 Looking over your CV, it doesn't include

1 any publications or presentations on actually Na Wai
2 'Eha streams or Maui streams. I was just wondering
3 if there was anything else that you had done that
4 wasn't included in your CV?

5 A As I mentioned, most of my work has been
6 applied, and being applied, the work is either done
7 for a licensing process, in which case you prepare a
8 report and they're submitted to regulatory agencies.

9 And so they become public documents. They
10 go through an adversarial process very frequently,
11 simply because that's the nature of a lot of
12 licensing processes.

13 But to do actual publications, unless I am
14 paid to do that, I then have to take my own time away
15 from my work and my management of my own business,
16 and trying to have a life. And so I have not
17 peer-reviewed published very many papers.

18 Q And dabbling part-time in academia, I can
19 relate to your issue of having part-time published.

20 Your CV also notes that you participated as
21 an expert witness in at least 22 different
22 proceedings. Is that correct?

23 A Thank you for counting them. That sounds
24 about right, yes.

25 Q Were all of those based on the continental

1 United States?
 2 A No. The majority were, but several were
 3 overseas. I've been an expert witness in the United
 4 Kingdom, in Canada. Most recently on the Athabasca
 5 River, and the Tongariro contested case hearing in
 6 New Zealand.

7 Q Has all of that work been on behalf of
 8 individuals or entities wanting to divert water?
 9 A To the greater extent, yes. But also I
 10 have done much testimony on behalf of others that
 11 want to restore water or prevent additional
 12 diversions. The work in the Athabasca was for the
 13 First Nations. And they live there in the oil sands
 14 area, and they were not really happy about more water
 15 being taken out of the Athabasca.

16 I've also worked on behalf of the
 17 California Department of Fish and Game on several
 18 occasions.
 19 But generally, because I've specialized in
 20 hydroelectrical development, that it has been those
 21 individuals retaining me.

22 Q And have you ever been qualified as an
 23 expert in Hawaii?
 24 A No, I have not.
 25 Q We have no objection.

1 HEARINGS OFFICER MIIKE: Anyone else? Mr.
 2 Van Dyke.

VOIR DIRE EXAMINATION

BY MR. VAN DYKE:

3
 4 Q Good afternoon. I'm John Van Dyke, Special
 5 Deputy Corporation Counsel for the County of Maui,
 6 Department of Water Supply. Just a couple of
 7 additional questions, Mr. Payne.

8 On your CV, page two, you list as
 9 accomplishments, Associate Professor of Fisheries,
 10 Humboldt State University.

Are you currently a member of the faculty?

11 A I was never a member of the faculty. I was
 12 an adjunct professor, and I'm still on their website,
 13 as I recall. I taught several graduate level
 14 classes, semester-long classes in the IFIM and
 15 PHABSIM at Humboldt State, but a number of years ago
 16 budget cutbacks kicked in, and the faculty didn't
 17 like invited lecturers. They were concerned about
 18 being replaced.

19 And so I have not taught actively at
 20 Humboldt for probably six or seven years.

21 Q So what were the years when you were an
 22 Associate Professor of Fisheries?

23 A I was never an Associate Professor, I was

1 an Adjunct Professor. If it says "associate", I
2 think that's probably incorrect.

3 Q So this is incorrect, this listing that you
4 were Associate Professor?

5 A I would have to confirm the exact title.
6 It was one or the other. As far as the years, I
7 think I first taught a graduate level class for one
8 of the professors at the Cooperative Fisheries Unit,
9 and that was probably around 1986 in exchange for a
10 case of beer.

11 Q Thank you.

12 On the last page, you have a long list of
13 locations where you've done some work. And you have
14 a category called Site Selection and Preparation, and
15 you list Wailuku River, Hawaii under that category.

16 Can you tell us about what that involved
17 and what your role was?

18 A There was a proposed hydroelectric project
19 on the Wailuku. And as I recall, I was invited by a
20 developer to start initiating some studies. So I
21 started looking at the maps, developing an idea of
22 the scope of the river. I don't recall if I
23 specifically developed a study plan. But we started
24 all the initial phases of an implementation of a flow
25 study.

1 And then as I understand it, the developer
2 then did not get his preliminary permit and the
3 hydroelectric project was then gone onto be developed
4 by a competitor of his.

5 Q What island was this?

6 A The Big Island, Hawaii.

7 Q Do you recall who the developer was?

8 A I believe it was Keating Associates.

9 Q Now, Mr. Ford has listed you as part of his
10 research team involving the research that he's been
11 talking about over the last two days. Is that
12 correct?

13 A Yes.

14 Q Have you been going with him by helicopter
15 and snorkeling in the streams?

16 A I went with him in the first week. The
17 initiation -- might not have been the first work, I
18 don't believe it was. He had been a few times, and I
19 came over in October to start familiarizing myself
20 with the Na Wai 'Eha streams, as I mentioned, and
21 went to several of the diversions, and looked at
22 several road crossings.

23 As he mentioned, the weather was quite bad.
24 And he and Bob Kenzie went for the helicopter ride.
25 I would have been a marine biologist, if my stomach

1 would have handled it, and so I begged off the
2 helicopter trip.

3 But we did do a visit to the upper Waikapu,
4 and did some habitat mapping in the upper reaches of
5 the Waikapu. And John and Bob Kinzie did some
6 snorkel observations in the vicinity of the diversion
7 while I was present.

8 Q You didn't snorkel yourself though?

9 A No, I didn't.

10 Q Just one final question.

11 In your listing of company qualifications,
12 you emphasize that you company offers training,
13 workshops and classes in the application of PHABSIM.
14 But then in your testimony, you tell us that this
15 procedure is not simple to implement properly, and
16 easy to generate unreliable or even spurious results.

17 So am I to understand that you're teaching
18 people to do something that you don't feel is a
19 reliable technique?

20 MR. SCHULMEISTER: I'm going to object.
21 This goes beyond voir dire.

22 HEARINGS OFFICER MIKE: Sustained.

23 MR. VAN DYKE: I apologize, I wasn't quite
24 clear what the line you were drawing when you wanted
25 us to find out about his background. If we can ask

it, later that's fine. No further questions.

MR. SCHULMEISTER: Is he recognized? I
take it that Mr. Payne is accepted as an expert in
this proceeding?

HEARINGS OFFICER MIKE: Yes.

DIRECT EXAMINATION CONTINUED

BY MR. SCHULMEISTER:

Q Perhaps this would be a good time, Mr.
Payne, if you could give a short version of a lecture
I know you've repeated many times on what PHABSIM is?

A Yes. We discussed that, in my listening in
the room here in the past couple of days, as is quite
common, terms get used where people might not
understand them, and I think it's quite useful to
have a brief discussion of what it is we're actually
talking, about rather hand just having a name or an
acronym.

So briefly, if I can utilize this board
here to draw little sketches and you can choose to
make them exhibits as you wish. Then I'll try to
speak loud enough so people can hear me while I'm
doing this.

As I mentioned, PHABSIM is an acronym that
stands for physical habitat simulation. The original
techniques have been around since the early '70s, but

1 the instream flow group out of Fort Collins, as I
 2 mentioned, first brought this together with the
 3 capability of a hydraulic engineer and the new
 4 computer tools that were available at that time. And
 5 they wrote a suite of computer programs to actually
 6 enhance these earlier tools.

7 And what PHABSIM primarily consists of is
 8 two components. The first one is hydraulic data
 9 along stream cross sections, along which there are
 10 several vertical measurements made of depth and
 11 velocity and substrate and cover characteristics at
 12 the location of all these data points.

13 They are often surveyed into reference
 14 points or pins on either side of the stream, with a
 15 vertical control component to measure in relation to
 16 a benchmark the elevations of the water surface and
 17 the bottom profile.

18 And these are then input into various
 19 hydraulic models with different levels of calibration
 20 data to be able to then simulate depths and
 21 velocities over a broad range of discharges.

22 This is then linked with a second
 23 component, which are called habitat suitability
 24 criteria, and --

25 HEARINGS OFFICER MIKE: Let me interrupt.

1 On the first one, do I understand you to say that you
 2 do measurements over several different conditions
 3 that you can then impute to all conditions?

4 THE WITNESS: Not to all conditions, but to
 5 a broader range of conditions depending on the
 6 calculation.

7 As a general rule, the three levels of flow
 8 are separated by a log cycle, in other words, twice.
 9 The middle flow is twice the low flow, and the high
 10 flow is twice the middle flow. It gives you a spread
 11 of data. Then you can use some parameters of the
 12 hydraulic model then to test the accuracy of the
 13 model and then make predictions.

14 You can then generally then extrapolate
 15 down to about 40 percent of the low flow, and about
 16 250 percent of the high flow, and you can interpolate
 17 within those three flows as well.

18 So depending on what level of calibration
 19 data you have, and the quality of the calibration,
 20 you can then extrapolate it. So that becomes the
 21 range of conditions over which you can do the
 22 hydraulic model.

23 The habitat suitability criteria are
 24 typically three primary variables: Velocity, depth
 25 and substrate or cover, and that can be and/or cover,

1 depending on how that one is particularly defined.
 2 These curves are made several different
 3 ways. The best way is to go out with a very
 4 rigorously designed sampling program and acquire a
 5 series of observations of your target organisms, and
 6 then do a frequency analysis of your observations,
 7 and then plot these frequencies.

8 And this being velocity, and say you can
 9 have this be number, and then you can fit a function
 10 to that, and then that number then goes to a
 11 suitability between a zero and a one. As to where
 12 the you saw the most observations would be a full
 13 suitability, or a one; and where you saw the least or
 14 none, it would then be a zero suitability.

15 HEARINGS OFFICER MIKE: Give an example if
 16 what the number refers to.

17 THE WITNESS: The number is just a
 18 dimensionless -- it was originally called a
 19 probability, but in the technical sense, it's not
 20 really a probability.

21 HEARINGS OFFICER MIKE: What is it being
 22 applied to?

23 THE WITNESS: Well, I'll get to that.
 24 So for each of these three variables, you
 25 then have a suitability function. And, again, it's

1 zero to one for all three. And then you might have a
 2 coding system where you're describing a whole range
 3 of substrates and covers and different combinations.

4 And then depending on the coding system,
 5 you can have either a bar chart, where in between
 6 they're not allowable, because they don't match as
 7 combinations.

8 So you have these three variables. And
 9 these are preferentially generated by observations of
 10 the species in the stream that you're applying these
 11 studies to.

12 Q (By Mr. Schulmeister): You say
 13 preferentially generated. Can you expand on that a
 14 little bit?

15 A I say preferentially, because there are
 16 many circumstances where you can't do it. You either
 17 don't have the money or the time, or the species are
 18 not present.

19 And so you can generate curves from the
 20 literature. The original publications to implement
 21 the method, researched all of the available fisheries
 22 literature on habitat use. And they created some
 23 curves for, I think, around a hundred plus different
 24 species in life stages.

25 So you can use book curves. But when I say

1 preferentially, if you're using book curves, there's
2 a hierarchy of what you would really like to have.

3 Q So when you say preferentially is this
4 context, would that be like ideally?

5 A It would be roughly equivalent to, yes,
6 ideally.

7 Q You weren't talking about species
8 preference?

9 A No. These have been called preference
10 curves, but I minored in animal behavior at Humboldt
11 State, and I have a real problem with somebody trying
12 to describe what a fish prefers. I think all they
13 can do is, by existing, they can then illustrate
14 whether that habitat is suitable or not. Because if
15 it's not suitable, it won't take very long before
16 they're not there.

17 Short-term, of course, you could have super
18 populations, higher than the stream or the area can
19 carry. So I prefer -- that's why I'm using the term
20 "habitat suitability criteria".

21 Just as you can confuse PHABSIM with IFIM,
22 which is a broader decision-making process, you can
23 confuse habitat suitability criteria with the word
24 "preference". I tend to be a stickler about the
25 terminology, and others know what they mean, so they

1 just keep using them, but I think it's quite
2 confusing for many people, as we have already seen
3 the difference between John -- and he's fessed up to
4 the mistake way take back in the eighties by using
5 IFIM interchangeably. So I think it does make a
6 difference.

7 But your point is that you can call these
8 preference curves, because they can be generated by
9 different means. There's four or five different ways
10 of generating these.

11 I will add one more point, because it
12 applies to the way that USGS has done the studies on
13 East Maui, and how as I understand they're proposing
14 to do them here, in that there is an option within
15 the newest versions of PHABSIM to combine the
16 observations of depth and velocity to calculate what
17 is called the froude number.

18 And it generally relates the velocity --
19 well, I can give the exact formula if I can recall
20 it.

21 The froude number is equal to the velocity
22 divided by the square root of the depth times the
23 acceleration of gravity, 32 feet per second per
24 second.

25 Anyway, you have this interactive term of

1 the observed depth and velocity to the froude number,
2 and then you will generate another function between a
3 zero and a one for the froude number.

4 These are the two major components of
5 PHABSIM. And what they do together, is when you're
6 simulating all of your data points for however many
7 cross sections you have -- and there is a debate
8 about how many cross sections you should have, which
9 has not been resolved on an international basis
10 yet -- but if you have a series of these cross
11 sections, and you have all of these data points, you
12 have somewhere between 300 to 600 or so actual data
13 points where you have data, depth and velocity and
14 substrate.

15 The computer program for each one of those
16 data points, they know the depth and the velocity and
17 the substrate, and they link to the suitability to
18 find out where on the range they might fall. And you
19 will then have a suitability for each one of those
20 points. And they're typically multiplied together as
21 a composite suitability. And then they are
22 multiplied by the area that each one of these sample
23 points represents.

24 And then every one of those 200, 600 or
25 more data points are added up to a function which is

13.17-25

McMANUS COURT REPORTERS 239-6148

1 typically called weighted usable area, or relative
2 suitability index. And those who have been around
3 know here about WUA. That's the most common term and
4 it relates this index to discharge or Q. In other
5 words, at a certain range of flow the index is low,
6 because the hydraulics don't match up with the
7 suitability criteria very well. At a certain range
8 they match up, and outside that range, they start to
9 fall.

10 So this is the typical product of a PHABSIM
11 analysis. And this is not the be-all, end-all. This
12 does require a lot of interpretation, but it gets
13 pretty elaborate about what you do with that.

14 HEARINGS OFFICER MIIKE: I'm still not
15 clear on your suitability probability from zero to
16 one. I know that one is some velocity depth and
17 habitat or whatever.

18 THE WITNESS: Substrate.

19 HEARINGS OFFICER MIIKE: What is it being
20 applied to? How do you get your probability numbers?

21 THE WITNESS: The intermediate step is to
22 go out and observe a whole bunch of fish, hihiwai,
23 'opae, different species.

24 HEARINGS OFFICER MIIKE: That's what I'm
25 asking. You develop one of these for every species

13.17-26

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1 that you're --

2 THE WITNESS: Every species and every life

3 stage that you choose. The most common is to have a

4 fry, juvenile, adult and a spawning life stage.

5 Typically these are done on size classes of

6 fish, because each size class of fish will use a

7 different range of depths, velocities and substrates.

8 So, yes, for every species and life stage

9 that you want to calculate the habitat index for, you

10 need to have the suitability criteria.

11 HEARINGS OFFICER MIIKE: And that bottom

12 one is related to flow?

13 THE WITNESS: Yes. This is the physical

14 habitat index function in relation to flow.

15 HEARINGS OFFICER MIIKE: And that's Q, as I

16 understand Q to be.

17 THE WITNESS: Q means Q. That's a

18 universal terminology.

19 HEARINGS OFFICER MIIKE: Not the

20 interchangeable one that I thought Dr. Benbow was

21 using?

22 THE WITNESS: I want to touch on that. You

23 said you wanted some more on that so, yeah, the Q is

24 the same one, that's the discharge that can be

25 measured in cubic meters per second, million gallons

1 a day, cubic feet per second. However, you want to

2 quantify it. That's the instantaneous flow rate.

3 Q (By Mr. Schulmeister): Could you comment

4 on the concept of validation? In other words, this

5 is a model to simulates something. What does

6 validation mean in reference to a model like this?

7 A Validation of a PHABSIM study means getting

8 back to the root of the assumption that's behind this

9 index. The assumption behind this index is that as

10 the index changes with flow, that over time the

11 biomass of the species that's the target will change

12 in response to that function at higher and lower

13 levels. So this is a correlation to biomass over

14 time.

15 When this method was first developed, it

16 was utilized for trout in the Rocky Mountains. And

17 several studies relating biomass to flow were

18 evaluated in relation to a computed habitat index for

19 those streams. And they found that about 70 percent

20 of the population variation of the biomass variation

21 was accounted for by these three variables.

22 HEARINGS OFFICER MIIKE: One other

23 question. Is the curve you drew on the bottom, is

24 that a typical shape? In other words, more water

25 doesn't mean better habitat forever? There is a rate

1 of diminishing return?

2 THE WITNESS: That is correct.

3 That after you start getting to a certain
4 flow level, typically you're on the downward limb of
5 your suitability for one of your variables. And when
6 you're computing depths and velocities that have a
7 suitability on that downward limb, then that reduces
8 the --

9 HEARINGS OFFICER MIKE: For example, if
10 you have a lower reach stream animal, if they're up
11 in higher elevations where the flow might be too
12 high, then that might be unsuitable, but that
13 doesn't -- do you see what I mean?

14 Because this is done for each species at
15 each stage, so it doesn't necessarily mean a bad
16 thing, it just means that there are some stretch of
17 the stream that they're not suitable for.

18 THE WITNESS: Right. And there are many
19 areas of the stream that are not suitable for them.
20 Because all the areas of the stream that, in this
21 particular instance, that might have a low velocity
22 that's down near a zero feet per second, that's
23 unsuitable.

24 Because when you looked at all of your
25 observations of individuals and had, say, a bar chart

1 diagram that you base this function on, you did not
2 observe any of those organisms there. In other
3 words, they did not occupy the habitat that is shown
4 as unsuitable.

5 So a goodly portion of most streams have
6 areas within them that are unsuitable. It could be
7 that the depth is too high, or the velocity is too
8 high or too low. So all of the areas of the stream
9 you'll then find certain areas that are suitable, and
10 certain areas that are unsuitable.

11 And per your example, a species that
12 prefers lower velocities will typically not be found
13 in higher gradient streams where there is a greater
14 percentage of very high velocities.

15 So that's what PHABSIM is. And I'm sure we
16 will get back to that a little bit.

17 Q (By Mr. Schulmeister): In paragraph eight
18 of your written testimony, you make the comment that:
19 For the larger purpose of providing information
20 suitable for revising interim instream flow
21 standards, it is my professional opinion that PHABSIM
22 is not the best of the available instream flow
23 assessment methods. While PHABSIM could be a
24 component within a larger analytical framework for
25 recommending instream flow standards, I don't believe

1 that such framework is currently available in Hawaii,
2 and therefore PHABSIM standing alone has only limited
3 utility.

4 Could you expand on that?

5 A In my experience PHABSIM has been used for
6 a very broad range of circumstances. It was
7 originally designed to evaluate large scale water
8 projects. In other words, major changes in
9 hydrology. So then you could calculate index
10 suitability for different flows over time.

11 And if you were trying to develop
12 mitigation for a hydroelectric project, you could
13 then evaluate different flow releases and see if you
14 could create a habitat index over time that would
15 then protect the habitat index with and without the
16 altered hydrology.

17 So you would have a habitat index over time
18 that would be at one level, and when you altered the
19 flow, you would try to achieve that same level. And
20 by using that information, then you could make a
21 determination along with the agencies as to whether a
22 project was feasible or not.

23 Q When you say -- the project was already
24 built or it was contemplated being built?

25 A Generally for contemplating being built,

because these are predictive models when you really
can't -- the project doesn't exist, so you can't test
different flows. So you have to use a predictive
model. And this is really why PHABSIM was developed,
so that you can forecast or look into the future with
altered hydrology and then compare your projects.

But this whole method has had a very
powerful attraction, especially to the peak of the
curve. Because there's been a lot of arguments that
said, oh, well, you do this type of a study, and then
the best absolute flow is the peak.

It drives the instream flow group crazy.
That was not the way this was developed. It was
developed as a component of the IFIM, which was
supposed to be for trade-offs. And yet because of
the broad acceptance of the method, and because it
has this peak function, it started to be used also
for water rights cases.

There have been many instances of water
rights claims that have been based on PHABSIM. And
they become very weakly founded in the actual science
for many reasons. But there has been an attraction
due to that.

Generally those are not really suitable,
because this method is not a threshold type of

1 analysis.

2 Q When you say threshold type of analysis,

3 what do you mean?

4 A Threshold means that at this point you will

5 then not allow any more water diversion. Because you

6 have a curve like that which has to be interpreted in

7 the context of the available water, this is another

8 layer which gets into what is called a habitat time

9 series.

10 But there is no cut-off point on this sort

11 of a function that says at some lower point on this

12 curve is the point where I absolutely have to have

13 that water and you can't divert any more, or you've

14 taken so much out before, that you have to put this

15 much back.

16 If you're somewhere on the slope of that

17 curve, there is no point on that curve that says

18 that's what the flow really ought to be. There have

19 been several attempts to do that, most commonly the

20 FERC has said 80 percent of the peak.

21 Well, that doesn't really work if you have

22 ten or 15 or 20 different species in life stages all

23 with different shape functions, all of which can

24 compete. You can't really figure out how to do what

25 John Ford mentioned is standard setting.

1 Standard setting means that you have a

2 method that gives you one answer, and it's not

3 negotiable. It just sets a standard. There are

4 several methods that are like that. This is what is

5 called an incremental method. In other words, you

6 could incrementally test the effect of different flow

7 changes.

8 And so as a general rule, PHABSIM is

9 incompatible with water rights processes. And in

10 this particular instance, if you're looking at a

11 restoration, it doesn't really tell you where you are

12 on that curve. There is no way of saying that this

13 is what the flow regime really should be, if you're

14 trying to do a restoration.

15 Which is why I support what Mr. Ford said

16 about, if you're going to try to test the effect of

17 restoration flows, you start putting some flows in

18 with certain criteria. PHABSIM doesn't give you that

19 much information to inform that type of a decision.

20 If you're looking at the entire hydrograph,

21 yes, PHABSIM is valuable. But when you're looking at

22 a system that already has an existing usage and

23 infrastructure, you can certainly put that usage and

24 infrastructure on the table, but my understanding of

25 this proceeding is that we're trying to reach an

1 accommodation between balancing interests.

2 Q I believe what you said is if you had the
3 entire hydrograph available, it might be a different
4 situation. Can you explain what you mean by that?

5 A That gets back to a proposed project where
6 you might not have a vested interest in the project
7 and the infrastructure with jobs or hydroelectric
8 power being generated from them. And so then you're
9 looking at the entire range of available flows. And
10 you're trying to then craft a flow regime that, if
11 you can do it, would be entirely protective of the
12 unimpaired condition.

13 That's very difficult to do given all the
14 species and variability that's out there, but
15 generally, management species are selected, and you
16 try to target for those species and craft an index
17 with the project that would be nearly the same as
18 without it.

19 You can also use this -- and I am currently
20 using it on several relicensings of the existing
21 hydroelectric projects. And in that case they're
22 trying to craft a flow regime within the constraints
23 of the existing project. And those constraints
24 really vary by the project, whether it's a major
25 storage reservoir or whether it's an existing small

1 hydroelectric project.

2 And regulatory agencies typically request a
3 PHABSIM study to be able to evaluate those types of
4 trade-offs. And then you're looking at the entire
5 spectrum of potential mitigation.

6 In the case of a stream restoration
7 project, you're trying to then, in normal instances,
8 balance the benefits to resources that may have been
9 impaired or lost, against the other competing uses
10 for that water.

11 Q And as I understand what you're saying, is
12 for that particular process, you find PHABSIM less,
13 useful?

14 A PHABSIM can be utilized to look in the
15 abstract of all possibilities, but in terms of
16 implementing a flow restoration, the results from
17 PHABSIM are less informative.

18 Because, again, it is just an abstract
19 correlation between the physical variables and
20 discharge, and that's supposed to relate back to the
21 biomass.

22 And we touched on the validation earlier.
23 PHABSIM has really only been validated for a few
24 species, including brown trout, rainbow trout and
25 small-mouth bass where they have, in fact,

1 established a correlation between biomass and this
 2 habitat index. That has not happened for Hawaiian
 3 streams. It would be quite difficult to do, because
 4 of the flashy hydrology. The background variability
 5 in Hawaiian streams is quite high.

6 Q What about -- now, has it been validated
 7 for any amphidromous species?

8 A No, it hasn't.

9 Q And does PHABSIM -- is there anything about
 10 PHABSIM that includes variable or factor or any way
 11 whatsoever, any consideration of whether a particular
 12 species is amphidromous or not?

13 A No. It just considers the physical --
 14 their physical occupation of space within a stream.

15 Q Brown trout, rainbow trout and small-mouth
 16 bass, are those amphidromous?

17 A No. Rainbow and brown can be anadromous,
 18 meaning that they rear in freshwater -- rear in
 19 saltwater and then spawn in freshwater, but they're
 20 not amphidromous, no.

21 Q So those species, would actually reproduce
 22 within the stream itself?

23 A Yes, they do.

24 Q Without having to leave the stream and come
 25 back?

A The resident forms do not leave the stream
 and come back, that's correct.

Q Now, paragraph nine of your testimony. I
 guess there's a middle sentence starts, population
 abundance.

Population abundance is only indirectly
 inferred from PHABSIM results, without any direct
 quantification or prediction of individual species
 numbers or density, and the method as a whole remains
 unvalidated for Hawaiian streams and aquatic
 organisms. Do you see that?

A Yes, I do.

Q Aquatic organisms, that would include the
 amphidromous species?

A Whatever is the target of your particular
 PHABSIM study, yes.

Q The next sentence says: If a validation of
 PHABSIM were to be done in Hawaii, it would consist
 of a specific study of direct or indirect
 relationship between habitat variability and target
 species population dynamics, using methods described
 by Bovee, et al, 1994.

What would be entailed in doing such a
 specific study so as to validate PHABSIM for one or
 more of the species that we've been talking about in

1 this proceeding?

2 A As I mentioned, it would be very difficult
3 to do in Hawaiian streams because of the variability.
4 When you have a series of freshets coming through,
5 and you're trying to establish a correlation between
6 a habitat index and a certain flow level, the
7 persistence of that flow level, being what you're
8 trying to test, if it's not a constant or near a
9 constant, then if you do any population estimates of
10 the -- or the density or biomass of those organisms,
11 and the flow is highly variable, you can't really
12 develop a relationship here.

13 You have to have a flow that's there long
14 enough for the species to adapt, to grow into, or to
15 have their populations shrink or gain, so that then
16 the population characteristics are reflective of the
17 index. That's quite difficult to do under a highly
18 variable hydrograph.

19 You could make the attempt. Then you would
20 have to have a combination of probably many years and
21 a fairly extensive effort at determining population
22 or biomass, and then correlating that back to your
23 habitat index in the area where you're doing your
24 sampling.

25 I'm not saying it can't be done, but in

Hawaiian streams it's much more difficult. And so
what that leaves us with is the abstract concept that
this is probably valid.

And as you might gather, I'm a big believer
in PHABSIM. Most of my career has been spent in
implementing it. And many, many times I have
personally seen a correlation that is observational
based on the physical characteristics of this habitat
index relationship, and what I see as fisheries
biologist is suitable habitat within a stream.

So when it's a high index, and I'm looking
at the stream and knowing about the species that are
occupying it, that looks pretty good. And when it's
a higher or lower flow, and it doesn't look very
good, then that's more an intuitive abstract way of
doing a validation.

It's by no means rigorous, but I have not
seen -- except when studies are done incorrectly -- I
have not seen spurious results come out of these
types of studies when they're implemented properly.

Q You mentioned that you became aware a
number of years ago, before the USGS actually began
to implement an instream flow study for East Maui,
you became aware that they were contemplating
possibly doing PHABSIM for East Maui streams; is that

1 right?

2 A I had been following -- virtually all my
3 information has gone through John Ford being my
4 primary contact here on the islands. So he made me
5 aware of the East Maui studies. And he mentioned
6 that there was going to be a similar effort on the
7 Central Maui study -- on the Central Maui streams.
8 And I just treated that as informational. I don't
9 recall exactly when I learned that, within the last
10 year-and-a-half, two years.

11 Q You mention that you were contacted by
12 someone and asked for some of the prior studies
13 you've done?

14 A Yes.

15 Q When was that?

16 A Getting back to my weakness with dates, I
17 believe it was about four years ago. It was at the
18 first time that USGS was contracted to do the East
19 Maui studies, and Anne Brasher, who was involved more
20 intimately at that time, called me and wanted to
21 discuss my experience with PHABSIM in the islands.

22 And so I sent her copies of all the reports
23 that I had prepared that were available, and provided
24 some rough guidance about how I thought the study
25 should be implemented.

1 It was sometime after that that I heard
2 from John Ford that there was interest in possibly
3 keeping closer track on those studies.

4 Q Now, you yourself had done some PHABSIM
5 work in Hawaii prior to that, right?

6 A Yes.

7 Q So can you explain -- I mean, explain why
8 it's not inconsistent for you to say that it's not
9 validated in Hawaii and it has limited utility, yet
10 you yourself actually use it?

11 A When I applied it, it was for hydroelectric
12 projects, and so you were looking at whether to build
13 a project or not. And that is precisely what PHABSIM
14 was developed to do.

15 At the time I heard from Anne Brasher of
16 the USGS about these studies, I didn't really know
17 what the purpose was. So I assumed that she was
18 going to do a PHABSIM study, which I support in the
19 broad sense, that I would try to provide her with the
20 information and the experience that I had acquired
21 from my previous work.

22 Q Paragraph 11 of your written testimony.

23 You state you reviewed the testimony -- this is
24 written testimony of Dr. Eric Benbow, and you respond
25 hereto his statement that, quote: The streams of Na

1 Wai 'Eha need no less than 75 percent of annual
2 median flow to maintain their overall biological and
3 ecological integrity over the short and long term.

4 Then you go onto comment on that,
5 specifically the computational method by which he
6 makes the recommendation.

7 Now we're getting into the whole Q₅₀ median,
8 mean discussion, that I believe you were present for
9 a good part of. Now, you've also heard Dr. Benbow's
10 testimony.

11 Could you comment on what he has
12 recommended with regard to the 75 percent of annual
13 median flow?

14 A Yes. I detected some level of confusion
15 over what he was trying to say. I believe I
16 understood what he was trying to calculate, and I can
17 draw another picture up here, and Tom Nance, as a
18 professional hydrologist, can correct me if I get
19 descriptions wrong.

20 Q Before we do that, maybe we should figure
21 out how we're going to mark this first one.

22 HEARINGS OFFICER MIKE: Put a 1 in a
23 circle on the top and then enter -- do you know what
24 your next exhibit number is? We'll start off with
25 the last number.

MR. SCHULMEISTER: We'll describe it -- in
a description of the exhibit we'll say chart marked
one during Payne testimony. Then we'll give it a
number.

A First of all, a brief description of what a
habitats exceedence curve is, because that's where
these Q values are derived from.

Q Habitat exceedence curve?

A Did I say habitat?

Q Yes.

A I apologize. No, it's a flow exceedence.
You can link the hydrology to the habitat index to
become a habitat exceedence curve, but that's another
whole -- I don't want to go there. I apologize.

HEARINGS OFFICER MIKE: Put a 2 up on the
top right corner before you run out of space.

THE WITNESS: This will probably only take
two pictures. The first one, up on the top here, is
typically what is called a daily hydrograph. And
what you have over here is the Q, which is the same Q
that we were talking about, or flow. And then down
here we have time.

And generally to develop a flow exceedence
curve, you should have somewhere on the order of 20
to years worth of daily data points, so that you have

1 a large enough sample size of water year types, storm
2 events, drought events. You're trying to generate
3 the characteristics of streamflow over time.

4 And so this graph has spikes in it and low
5 periods and individual, maybe multiple spikes. It
6 varies quite a lot. And this is actually quite a
7 simplification of Hawaiian hydrograph. But that's
8 basically what a chart looks like.

9 You have peak flows or spates, freshets,
10 whatever you want to call them, floods, depending on
11 the magnitude. Then you have low level flows. And
12 here we have the discussion of baseflows or
13 recession flows from floods. I'm not going to
14 touch the baseflow issue.

15 But to generate a flow exceedence curve
16 from this, you take all of these daily values, and it
17 could be 6,000 or more for 20 years of daily data.
18 And you sort them on the basis of the magnitude,
19 regardless of when they occurred, you have all of
20 these magnitudes. And then you windup plotting that
21 data. For a large portion of the time you'll have
22 low flows, and then you'll have shorter periods of
23 time with very high flows. So this is still time and
24 this is still Q.

25 Is that okay?

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MR. NANCE: That's fine.

THE WITNESS: And so this is the same data.

3 All of this is just merely sorted in this graph by
4 magnitude. And this being time, you can calculate a
5 percentage of time. And so 50 percent of the time,
6 right here, is the Q_{50} , meaning, as we have defined it
7 and discussed it several times, that 50 percent of
8 the time over this whole period of record the flow is
9 either equal or greater than that level. That's the
10 Q_{50} .

11 As you start going out on this limb where
12 you start getting out towards 100 percent of the
13 time, then you respectively will have the Q_{60} and the
14 Q_{70} and the Q_{75} , and the Q_{80} , and the Q_{90} . And these are
15 all statistical quantifications of the amount of time
16 that a certain flow or greater is present in a
17 stream. Which is then different than the median -- I
18 mean that is the median. I'm sorry. Right?

19 Thank you. Keep me straight here.

20 The Q_{50} is by definition the median, the
21 flow that is there half of the time. If you're after
22 the mean, then you have to calculate the volume of
23 all of these, and then somewhere, because these are
24 very high, they tend to more than over balance the
25 whole period of very low. And so if you're

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1 calculating the mean and you're looking at this area
2 under this curve --

3 HEARINGS OFFICER MIKE: One second. You
4 said it is by definition the median, which is there
5 50 percent of the time. But he was -- the reason I
6 got confused' was he said it was the average. And an
7 average to me means you take all the measurements and
8 you divide the total by the total number of
9 measurements, and that's your average. That's where
10 I was having problems.

11 THE WITNESS: You're exactly right. The
12 mean is typically somewhere out in here, where this
13 amount of flow is balanced by this amount of flow.
14 So in other words, all of your flows are then divided
15 by your numbers of sample sizes.

16 HEARINGS OFFICER MIKE: You know, all I
17 want is make sure we're talking about the same thing.

18 THE WITNESS: Now I'm ready to talk about
19 what he recommended.

20 As I understand it -- and I can be willing
21 to be corrected by anybody -- is that Dr. Benbow was
22 recommending that you provide a flow that is equal to
23 75 percent of the median flow, which is the Q₅₀.

24 Dr. Benbow's method has a flow recommendation is to
25 provide 75 percent of the Q₅₀. That's what he has

defined as his recommendation. If he said the
average or the mean, then he, like I, have already
probably misspoke.

But in his written testimony this is what
he has said as his flow recommendation. And I had
some comments on that, because depending on the shape
of this recession curve, 75 percent of this flow
right here can fall in quite a range here. And so he
could actually be recommending anywhere from the Q₆₅
to about the Q₈₅ or so depending on the hydrograph of
the stream.

HEARINGS OFFICER MIKE: It would be
different for each stream?

THE WITNESS: Yes, depending on the
hydrology for each stream. The Na Wai 'Eha streams
don't have that long of a period of record, and so
they would have to be synthetic hydrology based on
some correlations from adjacent watersheds where
there are gauge records.

But that would be how you would implement
his recommendation. And from Dr. Oki's testimony I
did some rough calculations on the numbers, and it
came out in between the Q₆₅ and about, I believe, the
Q₈₅, somewhere in that range.

HEARINGS OFFICER MIKE: So if we look at

1 Oki's and Benbow's testimony, basically Benbow is
 2 saying that for a margin of safety, he would
 3 recommend putting in what Oki now calls your
 4 baseflow, modified baseflow of Q₇₀.

5 THE WITNESS: It would be fairly close,
 6 yes. But depending on the actual hydrology, they
 7 might calculate out somewhat differently.

8 HEARINGS OFFICER MIKE: But as a general
 9 target, because this is a general target, 75 percent
 10 of Q₅₀ is a general target, because he's not saying a
 11 specific number. He's saying a proportion of a
 12 number for each.

13 THE WITNESS: Yeah, the actual result of
 14 this depends on the slope of this curve.

15 If you have a very low baseflow, and a very
 16 long recession of this limb, in other words, there's
 17 a lot more of this localized bank storage that takes
 18 awhile to drain out before you get to baseflow.

19 HEARINGS OFFICER MIKE: My last comment
 20 was that, I believe I asked Dr. Benbow specifically
 21 if his recommendation was based on really what --
 22 because they were very similar to what Oki's modified
 23 baseflow was. And he said, no, that had not
 24 influenced his decision at all.

25 But empirically they come fairly close,

right? The Q₇₀ and 75 percent of the Q₅₀ are within
 the same range.

THE WITNESS: It's my understanding, yes.
 HEARINGS OFFICER MIKE: We'll go for about
 another seven minutes.

Q (By Mr. Schulmeister): You were here when
 Dr. Benbow testified and he commented on his margin
 of safety that you thought he was including. Did you
 understand what he was saying, or can you comment on
 that?

A As I understood, the general gist of his
 testimony was that he was recommending a flow -- and
 I could probably look up his exact words -- that was
 nearly completely protective of the natural
 populations and population dynamics. That was his
 objective. If I could find the exact wording, but
 that's probably it.

There is some uncertainty with that. And
 he was trying to then, with that as an objective, he
 wasn't comfortable going lower than his computation
 of the 75 percent of the Q₅₀. And so to accomplish his
 objective and account for his uncertainty, then he
 didn't recommend, say, 50 percent of the Q₅₀ or
 anything lower than that. So that's where his margin
 of safety came in, from what I understood of his

1 testimony.

2 Q Do you recall him saying that one of the
3 reasons for the margin of safety was to provide some
4 sort of buffer in the event of periods of drought?

5 A That I did not understand at all. Because
6 the way these curves work, is that -- can't hardly
7 read that -- say your Q comes out to be the Q₇₀. That
8 means that 30 percent of the time flows are naturally
9 less than that value. All of your drought flows will
10 fall into that level.

11 On his examination, he did say, well, he
12 wanted to have some space moving through that would
13 then mitigate the effects of the drought. And that
14 testimony is not really very clear, because you will
15 often have spates, but you might not break the
16 drought, so the fish are still living in the very low
17 level, even though a spate came through.

18 So you're still in a drought, because you
19 haven't recharged the local groundwater, the surface
20 water. The plants are drinking up the water pretty
21 rapidly. So that to me didn't make direct sense, how
22 he would link a margin of safety with the drought.
23 Because by his recommendation, 30 percent of the time
24 there is no diversion whatsoever from a stream, and
25 that's when you have the drought conditions.

HEARINGS OFFICER MIKE: I'm sorry to keep
interjecting. I might as well ask my questions when
you're at the relevant point.

I initially interpreted him to say, when he
said 75 percent of the Q₅₀ flow, to mean that he would
put that in at all times. But then he did make that
comment about drought situations. And it seems to me
that under drought situations, you wouldn't need Q₇₀
if you're going to put the water in all the time.

So he may have meant what you say, which is
a Q₇₀ that mimics the actual situations. I don't know
how we would implement it where 15 to 30 percent of
the time there is no water or less than that amount.
So now I'm faced with not really quite
understanding how you would implement his
recommendation.

THE WITNESS: The way it would be
implemented would be that you would devise a bypass
at the diversions, which would only allow diversion
of any water above his threshold level, of say the
Q₇₀. So if you want to throw some numbers out there,
which I don't want to get into trouble with anybody,
but it means that if the Q₇₀ is, say, 20 cfs, that
means you can only allow diversion when the natural
flow of the stream is greater than 20 cfs.

1 So you can't put any more water back in,
2 there's no water to put in, it just means that the
3 diversion is restricted to any flows that are above
4 the 20 cfs.

5 HEARINGS OFFICER MIKE: But would that
6 take care of what is reflected in that number,
7 periods of time when there are less in the stream?

8 THE WITNESS: Yes. When there is less than
9 20 in the stream, there is no diversion. And so
10 whatever nature is going to do, nature will do when
11 it's less than 20.

12 HEARINGS OFFICER MIKE: Okay. In those
13 situations there is no diversion, yet the stream has
14 less than Q₇₀?

15 THE WITNESS: That's correct.

16 Q (By Mr. Schulmeister): And that would be
17 the case during a drought?

18 A Droughts are low flows, and the percentage
19 of time that very low flows persist is what generates
20 the hydrograph and a flow exceedence curve.

21 Q So having the minimum flow standards set at
22 a higher number than you would have in a drought,
23 doesn't mean there is going to be any more water in a
24 drought?

25 A You can't make water with these types of

projects. No, there is no storage capacity.

HEARINGS OFFICER MIKE: You can ask half a
question.

MR. SCHULMEISTER: Can I hold the half a
question.

HEARINGS OFFICER MIKE: Yes. I think we
for today.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

'Iao Ground Water Management) CASE NO. CCH-MA06-01

Area High Level Source Water)

Use Permit Applications and)

Petition to Amend Interim)

Instream Flow Standards of) VOLUME VII

Waihe'e, Waiehu, 'Iao & Waikapu)

Streams Contested Case Hearing)

_____)

CONTESTED CASE HEARING

Held on December 12, 2007, at Cameron Center,
Auditorium, Wailuku, Maui, commencing at 9:00 a.m.

BEFORE: Jean Marie McManus, CSR #156

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1 HEARINGS OFFICER MIKE: We will get back
2 on the record with the continuance of direct with Mr.
3 Payne.

4 THOMAS R. PAYNE

5 was previously called as a witness by and on behalf
6 of HC&S, was sworn to tell the truth, was examined
7 and testified as follows:

8 DIRECT EXAMINATION CONTINUED

9 BY MR. MR. SCHULMEISTER:

10 Q Good morning Mr. Payne.

11 A Good morning.

12 Q What I would like to pick up with you is
13 where we left off yesterday on the recommendation
14 that Dr. Benbow had made regarding restoring
15 75 percent of median flow in all of the Na Wai 'Eha
16 streams.

17 A Okay.

18 Q What I would like to ask you -- we already
19 had some discussion about it yesterday -- in order to
20 get a better idea of how much water we're talking
21 about for each stream for what period of year.

22 Have you made an exercise of going through
23 and trying to at least roughly calculate how that
24 75 percent of median flow would translate into
25 absolute flows for each stream?

A I have done that. Much of the information
that's required, to at least approximate the
recommendation, is contained in Dr. Oki's direct
testimony.

Q Why don't we start with Waihe'e Stream.
Could you explain the extent to which you've
estimated the 75 percent recommended by Dr. Oki would
translate into for Waihe'e Stream.

A If you look on page eight, paragraph 23,
Dr. Oki's direct testimony, he shows the calculation
of three of the values of flow exceedence.

In the second to last sentence for the
period of record of 1984 to 2005, which is about
21 years, he states there that the Q₅₀, the Q₇₀ and the
Q₉₀ are 34, 29 and 24 MGD respectively.

So if you apply Dr. Benbow's 75 percent of
the 50 percent, it would be 75 percent of 34 MGD
which is about 25 MGD. And that is equivalent to
approximately 38 cubic feet per second.

So that means his recommendation would be
that there would be no flow diversion below 38 cubic
feet per second in the Waihe'e River.

Q And in terms of the percentage of time that
would be -- I'm sorry, go ahead.

A Trying to put that 25 in the context, it

1 looks like it's fairly close to the Q₅₀. It's closer
2 to the Q₉₀ than the Q₇₀. So just roughly that would be
3 around Q₈₀, Q₈₅.

4 Q So somewhere between ten and 15 percent of
5 the time no diversions would be allowed at all under
6 his recommendation?

7 A That would be 15 to 20 percent of the time
8 there would be no diversions at all.

9 Q 15 to 20 percent of the time. And to your
10 understanding that would include diversion for any
11 purpose, or would be some purposes that would be
12 diversion allowed?

13 A It depends on where you establish the
14 actual control point. These numbers were calculated
15 at the gage. They might be different in some area
16 further downstream, but my understanding is that his
17 recommendation, if it was based on these numbers,
18 that would be at the point of the gage. And unless
19 there was some other source of water coming in down
20 below the gage, then there would be no allowable
21 diversion at all.

22 Q So somewhere between 30 and 90 days of the
23 year there would be no diversions allowed; is that
24 close?

25 A Yes.

Q And that would -- if, for example, the
people are irrigating taro below the point where this
is measured, then they couldn't take water for taro
either then, right?

A According to the recommendation he says no
diversions below that level.

Q What about north Waihehu Stream?

A Looking at the numbers for north Waihehu,
those are on paragraph 24, page nine of Dr. Oki's
testimony, and there he's less certain about what the
values are, so he provides a range for that same
period of record, the 21 years, and the range for the
Q₅₀ is 3.1 to 3.6 MGD. The Q₇₀ is 2.3 to 2.7 MGD. And
the Q₉₀ is 1.4 to 2.7 MGD.

Doing the same exercise, and say just
approximately using the mid point of his range, let's
say it's 3.3 times 75 percent, that means just under
3 MGD would be his recommendation.

Q So, again, trying to understand what that
would mean in terms of what portion of the year this
would mean no diversions at all, what would that
amount to?

A The actual calculation in the mid point for
the 3.3 is 2.47 or say two-and-a-half. And that's
about the mid point of the Q₇₀ range. And so

1 approximately 30 percent of the time in the north
 2 Waiehu there would be no diversion at all.
 3 Q So more than three months of the year there
 4 would be no diversion allowed at all?
 5 A It would be, yeah, about 90 days no
 6 diversion in the north Waiehu.
 7 Q 90 days would be 25 percent, right?
 8 A I do have a calculator here.
 9 Q Sorry.
 10 A About 110 days.
 11 Q So more than three months, like
 12 three-and-a-half months?
 13 A Yes.
 14 Q And, again, if there was taro lo'i growing
 15 below -- to follow his recommendation, no water for
 16 taro for a hundred days of the year at least?
 17 A If you followed his recommendation
 18 strictly, that would be correct.
 19 Q What about south Waiehu Stream?
 20 A South Waiehu the data is in paragraph 25 on
 21 page nine. And here Dr. Oki provides a Q₅₀ of 2.4 to
 22 4.2 mgd, a Q₇₀ of 1.9 to 2.8, and a Q₉₀ of 1.3 to 2.0.
 23 Deriving the mid point of the Q₅₀, would be,
 24 again, about 3.3 MGD, and 75 percent of that would
 25 again be about two-and-a-half MGD. Given that these

are fairly wide ranges, it's a little bit more
 difficult to say exactly, but that's also
 approximately the mid point of the Q₇₀. So the results
 would be the same for the south Waiehu, about the
 percentages of time that there would be no diversion
 allowable.
 Q How about on 'Iao Stream?
 A In the 'Iao Stream the Q₅₀, Q₇₀ and Q₉₀ are
 respectively as shown on page ten in paragraph 26,
 would be 25, 18 and 13 MGD. And 75 percent of 25 MGD
 is right around 19 MGD, which is, again, just
 about -- it's a little bit over the Q₇₀. By over, I
 mean it's closer to the Q 65.
 So, again, the number of days with no
 allowable discharge would be about three months.
 Q So actually closer to four months, if Q₆₅?
 A If it were 65. But the data is not really
 specific enough to calculate that.
 Q At least three months?
 A At least three months, yes.
 Q So, for example, if the County of Maui
 wanted -- I well, guess the County of Maui -- that's
 Waihe'e Stream.
 In any event, anybody who wanted to divert
 water from 'Iao would not be able to do it under

1 Dr. Benbow's recommendation for at least three months
2 of the year?

3 A Unless he provided some exemptions from
4 what he stated in his direct testimony, then, no. No
5 diversion whatsoever for those periods of time.

6 Q And what about Waikapu Stream?

7 A In Waikapu -- this is on page 11, and the
8 end of paragraph 27. Dr. Oki provides the
9 information of the Q₅₀ for, again, that same 21-year
10 period of record to be between 4.8 and 6.3 MGD.

11 The Q₇₀ is 3.9 to 5.2, and the Q₉₀, 3.3 to
12 4.6. And taking the mid point of 4.8 to 6.3 is
13 around five-and-a-half MGD. Five-and-a-half MGD is a
14 higher flow than is outside of the range of the Q₇₀, so
15 again, that would put it closer to Q₆₅ or possibly
16 even the Q₆₀.

17 So that would mean at least the same number
18 of days per year there would be no diversions allowed
19 in the Waikapu.

20 HEARINGS OFFICER MIKE: You didn't
21 multiply by the point 75.

22 THE WITNESS: I didn't, I'm sorry. It's a
23 little over four, that's why it didn't come out the
24 same. Thank you.

25 HEARINGS OFFICER MIKE: That was about a

Q₇₀, you said? No, it would be different.

THE WITNESS: Yes, it's at the lower end of
the range of a Q₇₀, that's correct.

Q (By Mr. Schulmeister): Now, in your
experience advising various agencies and other groups
regarding setting of instream flow standards to take
into account biological impacts, in general, when
water is limited in availability, should water
resource managers be selective about where and how
much water they should restore to streams?

A You're going to need to be more specific
with that question.

Q Let me try to make it more concrete.
Where you have a limited amount of water
availability because of high offstream demands, but
there is a concern about restoring flow to streams to
the extent possible, feasible, reasonable to provide
a biological benefit for the aquatic communities,
should water resource managers be selective about how
much and where they return the flow in terms of the
potential or expected biological benefit they're
trying to achieve?

A If by selective you mean trying to be the
most efficient and get the greatest ecological
benefit out of the amount of water, then, yes, they

1 should be selective about how that's accomplished.
2 You wouldn't want to provide a
3 recommendation for flows in areas where you might not
4 achieve your ecological objectives.

5 Q Now, just to look at -- take an example,
6 'Iao Stream, and the amount that Dr. Benbow has
7 recommended be set as the instream flow standard
8 under 75 percent of median amounts to about 19 MGD;
9 is that right?

10 A I don't have the numbers directly in front
11 of me, but yes, that's approximately correct.

12 Q So that would provide 19 million gallons
13 per day for a good part of the year, although I guess
14 when flows are less than 19, it's going to be a
15 little bit less than that, and that would be going
16 down the concrete channel of 'Iao Stream?

17 A It would be flowing from the point of the
18 gaging where you set the standard as far as it could
19 go. That volume of water, according to the
20 infiltration calculations of Dr. Oki, would pass
21 through the concrete channelized area of the 'Iao and
22 reach the ocean most likely.

23 Q Is that concrete -- wetting that concrete
24 channel enhance that concrete channel for habitat?

25 A If it were wetted continuously, it would

enhance the channel for migration, whether
immigration or out-migration of the various life
stages of the species.

As rearing habitat itself, concrete
channels are extremely poor. There's very little
area for fish or the shrimp to have suitable rearing
areas. There is no variability. It's very shallow,
very fast water over the concrete channel. It would
be very poor aquatic habitat.

Q And with regard to Waikapu Stream, what did
we end up with four --

A A little over 4 MGD.

Q Have you taken a look trying to estimate
whether, based on the loss rates that Dr. Oki
mentioned in his testimony, that 4 MGD, whether that
would actually likely even reach the ocean for
Waikapu Stream?

A Dr. Oki didn't actually recommend any flows
or go through the analysis of the Waikapu as he did
the other three streams, so there's no direct
infiltration data there.

But if you took approximately the
infiltration rate from the other three streams, it's
about 1 MGD per mile, more or less. And the distance
from the town of Waikapu to the Kealia ponds is a

1 little over four miles. And so you would expect that
2 that water to entirely disappear before it achieved
3 continuity.

4 Q So if that water would be to continuously
5 released below the diversion, but then just
6 essentially sinking into the ground, would that be
7 enhancing habitat below the diversions?

8 A It would enhance the rearing habitat
9 available to the different species below the
10 diversions, but it wouldn't achieve the continuity
11 aspect of Dr. Benbow's recommendation. You would
12 still have very limited ability to allow for
13 recruitment or out-migration of the species that
14 might then be residing in Waikapu.

15 Q And you would still have dry stretches
16 during low flow?

17 A During low flows, at least 30 percent of
18 the time that water would entirely infiltrate and not
19 even come close to the Kealia ponds.

20 Q Now, I believe you were present during Mr.
21 Ford's testimony.

22 A Yes, I was.

23 Q Do you recall his testimony about believing
24 that, if what you wanted to do with limited amount of
25 available water was to get the biggest bang for your

buck with regard to potential restoration, in his
opinion you get your biggest bang for the buck in
Waihe'e Stream, and to a lesser extent Waiehu because
it's a smaller stream. Do you agree with that?

A From what I know and what I've seen of
those streams with the respective habitat
characteristics of the channel, the distance to the
ocean, and the volume of water that's generally
available, I would agree with that, that Waihe'e
Stream would be a really good location to start with
some restoration. You would very likely achieve the
greatest benefit in that stream.

Q And I guess there's two different
biological benefits discussed, one is actually
increasing the available habitat or wetted habitat
below the diversions; and the other is enhancing the
area below the diversion as a migratory path for the
amphidromous species. Did I get that right?

A Yes. It doesn't take very much water to
fill a channel, to a large extent. There's a --
mostly a logarithmic relationship between wetted area
and discharge in that at low flows, a change in low
flow, gives you the greatest change in the wetted
area, and at higher flows there's generally very
little change in the wetted area.

1 Q Let me stop you right here. Would it be
2 helpful to illustrate that point if you had your
3 curve that you drew yesterday up on the board?

4 A No. That's a characteristic of the profile
5 of the stream channel. The one that I drew up there
6 as an example was on the core side. We could
7 probably use that.

8 Q Would you rather draw a -- is there another
9 graph that would be more appropriate to illustrate
10 the point, the shape of the curve in terms of the
11 benefits you get as you add water?

12 A I could do that, yes.

13 Q Would that be helpful, do you think?

14 A I think so.

15 MS. SPROAT: Actually, Dr. Miike, I want to
16 object to this line of questioning in Mr. Payne's
17 testimony. He says specifically in paragraph seven,
18 that because he's not an expert in groundwater
19 hydrology, he's not capable of addressing certain
20 issues, including the time that might be required to
21 assess recharge in the Na Wai 'Eha streams.

22 HEARINGS OFFICER MIIKE: I'm sorry, say
23 that again.

24 MS. SPROAT: If you look at paragraph seven
25 of his testimony, it says specifically that he's not

an expert, quote -- because he's not, quote, an
expert in groundwater hydrology, end quote. He won't
be addressing, quote, the time that might be required
to assess recharge in the Na Wai 'Eha streams. So
just -- You know, we've let the other questions go
because it's looking specifically at habitat, but to
the degree that this is looking at -- this is a
hydrology issue.

HEARINGS OFFICER MIIKE: I don't think the
question was about recharge. It was a question about
just sort of graphically show what he just said about
wetted habitat and the relationship between low flow
and high flow.

MS. SPROAT: But it's based on assumption
of wetted area.

HEARINGS OFFICER MIIKE: Which he's an
expert on. I think you were talking about -- if you
had objected about the infiltration rates and the
Waikapu Stream, I probably would have said, yeah.
Well, anyway, I think if you want to try to
illustrate in graph what you just said in words,
that's fine.

THE WITNESS: Drawing an approximate stream
channel like I did yesterday with the three levels of
flow in it. The relationship between a water surface

1 elevation and discharge and the wetted area has a
2 generalized characteristic that looks somewhat like
3 this. In other words, this is wetted area on the Y
4 axis, and this is discharge on the X axis.

5 And this is demonstrated over and over
6 again in instream flow studies, when you plot the
7 total wetted area against the discharge, at low
8 flows, an increase gives you a broad increase in the
9 wetted area, and at higher and higher flows, because
10 of the steepness of the banks, you get a lesser
11 increase in the wetted area.

12 So low flows very quickly give you a large
13 benefit in the wetted area potential habitat of a
14 stream.

15 HEARINGS OFFICER MIKE: And a Q₇₀ is in a
16 low flow area, they're flowing from essentially no
17 low to Q₇₀. So the high flow, you're talking about
18 like Q₁₀, Q₅?

19 THE WITNESS: The Q₁₀ and the Q₅ might even
20 be over bank, where you get out into the vegetation
21 and whatever might be happening.

22 HEARINGS OFFICER MIKE: I was just trying
23 to understand why Ms. Sproat was objecting. Because
24 it seems to support their argument, that their
25 recommendation that they made, would result in

significant changes because we're starting from
basically zero to Q₇₀.

THE WITNESS: Yes, in that range of flow
from -- I mean, obviously zero is pretty bad.

HEARINGS OFFICER MIKE: So anything you
add you're going to see --

THE WITNESS: Anything you add, you would
see the most rapid increase in habitat. At then at
the higher flow levels -- and it depends on the shape
of the channel whether that decrease --
approximately, if I wanted to give some numbers
generally, the Q₁₀ would be probably somewhere in the
very low end of this curve. And you might get up
into this area where it starts to really flatten out
at around the Q₅₀, just very, very broadly.

HEARINGS OFFICER MIKE: Wait, wait. Don't
you have that reversed? You have the greatest
changes as you go from Q₉₀ to Q₈₀ to Q₇₀, because Q₁₀ is
way up in high flow areas, right?

THE WITNESS: Yes. And this is one of the
difficulties of one of these, the flow exceedence of
the flow duration, you can look at it either way.

Yes, you're correct, I had it backwards.
The Q₉₀ is down in this range and the Q₁₀ would be way
up in here, yes.

1 HEARINGS OFFICER MIKE: Also we're talking
 2 about water that would be added, and you say maybe
 3 about 30 percent of the time at Q_{70} you wouldn't be
 4 diverting any water. But that still means that --
 5 well, any water that is coming down a stream would
 6 have to be left in the stream, correct?

7 THE WITNESS: That's correct.

8 HEARINGS OFFICER MIKE: Then anything
 9 above that, it's not that only X amount -- say,
 10 you're at a Q_{60} flow, actual flow, and you're leaving
 11 Q_{70} in. It's not necessarily that you only have that
 12 difference in there, because you're going to have
 13 precipitation and rainfall. Because the Q numbers
 14 are just minimal, anything that and above, right?

15 THE WITNESS: Yes. And I can draw -- add
 16 to this to illustrate that fairly quickly with the
 17 amount of water that is typically taken out overlaid
 18 on a flow exceedence chart.

19 As I drew yesterday, this is typically the
 20 shape of a flow exceedence curve. These are the Q_{10s} ,
 21 and you get out into the Q_{90s} , low flow drought period.

22 If you impose a diversion on this system
 23 with a minimum, you would then allow a diversion to
 24 take water out until it reached the capacity of the
 25 diversion, and then any flows above the capacity of

diversion would bypass.

So this dotted line that I drew on the
 bottom chart here would be then the new flow
 exceedence curve, so that the difference between the
 dotted line and the solid line would be the amount of
 water that would be taken out.

At the low end, there would be no diversion
 and on the higher end, there would be bypass from
 freshets.

HEARINGS OFFICER MIKE: And would
 converging at the top, because the amount of water
 you would be taking out, in terms of absolute
 numbers, is not really changing that much?

THE WITNESS: It's a lower and lower
 percentage, and at some point you might even shutdown
 the diversion because of damage to your facilities.

HEARINGS OFFICER MIKE: But also with rain
 on those higher levels, you might not be diverting --
 no need for diverting any at all, if the fields or
 wherever you're diverting the water to, are
 getting -- just like the taro patches, where it's
 raining, although it might be inconvenient to shut
 off the diversion to a taro patch when it's raining,
 but it doesn't really need that water if it's raining
 directly on the taro patch.

1 I don't know what the practice are of the
2 agricultural operation. But I'm just hypothetically,
3 if it's raining, there may not be need for the amount
4 of water that normally would be diverted there. But
5 anyway.

6 MS. SPROAT: Can we label this chart so we
7 keep it in order and label each of the diagrams?

8 HEARINGS OFFICER MIKE: This would be
9 number three. So I think the bottom one is still the
10 same thing -- no, I'm sorry, that's your Q curve on
11 the bottom. I think what he wanted was -- the bottom
12 one is not wetted area on the left, right?

13 THE WITNESS: No. I should label these.

14 The last one would be flow on the Y axis and percent
15 of time on the X axis.

16 HEARINGS OFFICER MIKE: Could you put a
17 little label indicating what the dotted line is,
18 that's what's modified by the diversions, right?

19 THE WITNESS: I'll label those respectively
20 natural for the black line, and impaired by whatever
21 mechanism for the dotted line.

22 HEARINGS OFFICER MIKE: I don't think your
23 client would like that word.

24 THE WITNESS: Do you have a better one?

25 HEARINGS OFFICER MIKE: No, I'm supposed

1 to be neutral.

2 Q (By Mr. Schulmeister): Mr. Payne, as you
3 understand Dr. Benbow's recommendation of 75 percent
4 of median flow for all of the streams, does that have
5 any selectivity in it in terms of trying to be as
6 efficient as possible, given the conditions of each
7 stream.

8 A It was a fairly blanket recommendation,
9 which would achieve different levels of flow in the
10 different streams, depending on their respective
11 hydrologies. His objective, again, paraphrasing, was
12 the complete protection of instream resources with a
13 margin of error.

14 Q Given that was his objective, I don't know
15 whether you would call that selective or efficient,
16 but that was the objective.

17 Q One of the other features of his
18 recommendation as it was explained during his
19 testimony is that it would change over time. In
20 other words, the 75 percent of median would
21 potentially be adjusted every six months. Do you
22 have any comments on that?

23 A As I understood it, and I may be wrong, but
24 what he said was that he would do either a six-month
25 or a one-year recomputation of what the Q₅₀ might be,

1 and then his 75 percent of the Q₅₀ would change. And
2 therefore, he would change the flow requirement that
3 he would impose on the stream that he would study for
4 that five years.

5 That approach is entirely inconsistent with
6 trying to do a controlled scientific experiment. The
7 purpose of the six years would be to try to isolate
8 variables to try to determine whether your specific
9 management action had an effect.

10 And so there is a lot of background
11 variability. There is going to be high flows, low
12 flows, recruitment issues, storms in the ocean.
13 There's a lot of background variability which might
14 affect the actual populations in the river.

15 And the last thing you want to do is vary
16 your control flow, which is what you're trying to
17 test for. Because if you vary that, then at the end
18 of the six years or five years, you would have no
19 idea what your management flow had actually
20 accomplished.

21 Because in comparison to that, and I say a
22 controlled stream, you would not have isolated your
23 test variable. So that's not a good controlled study
24 design at all to vary your test.

25 Q I think you mentioned in your written

testimony that, based on all of your years of
experience and review of various studies and instream
flow methods and study methods, you've never seen
anyone propose what Dr. Benbow has proposed; is that
correct?

A You're talking about his flow level or his
monitoring?

Q I guess it's the flow level you were
addressing.

A I was addressing the flow level. And my
experience is that his recommendation is unique.
Generally, when you're using a hydrograph to set a
flow, you'll pick a point off of the hydrograph and
say it will be the Q₇₀ or Q₉₀ or whatever it will be,
and it will not be a variable percentage of a
percentage.

Q Now, we talked a little bit about the fact
that you're going to get the most benefit at the
lower flows as you add flows in terms of wetted
habitat, and that's in terms of increasing the wetted
area below the diversions for the fish to actually
occupy and potentially reproduce in?

A That's correct. You have to be careful of
other circumstances. There may be some pollution
loading that would cause water quality degradation at

1 those levels. There could be temperature effects.
2 Given the distances in these streams that the flow
3 would be traversing, and to my knowledge of pollution
4 loading, that would probably not be a concern.

5 So, in general, yes. Flow would be
6 suitable habitat from the point of release to the
7 ocean.

8 Q But so that's the habitat objective or
9 potential benefit of restoring.

10 With regard to the migration benefit, do
11 you have any comments on how much water, how much
12 flow would need to be put back to enhance migration?

13 A That would get into the area of the
14 infiltration rates, which would have to be determined
15 by some means or approximated fairly accurately.

16 If you were trying to get the most
17 efficient use of the water to accomplish both of the
18 objectives of the rearing habitat within the channel,
19 and to allow for continuous immigration and
20 out-migration, then you would want to have that
21 wetted area extend right to the ocean with, likely
22 some additional flow that would go in.

23 I don't know enough about the biology, to
24 know whether that would serve as a attraction flow at
25 that time, because it would be a fairly low volume.

Others can address that more effectively.

But once they were in the channel, then
whether they came in at the low flow or during a
freshet, then you would have continuity for them to
migrate from the ocean into wherever they chose to
rear, including the headwaters, if that was their
destination.

Q Now, you were here when I asked Dr. Benbow
about whether he had any idea of what the cost of
doing all the follow-up studies that he thought would
be desirable to monitor the results of his 75 percent
restoration of all four streams, and what the cost
would be or what that would entail.

Do you have any idea?

A I could try to ballpark that. It was
unspecific about how many and what types of studies
would be required, but Dr. Benbow indicated that he
would be interested in the amphidromous species and
with the invertebrate species.

You have differences in all the streams at
above and below the diversion, down at low elevations
near the ocean, versus the high elevation, so you
would have to sample probably on the order of a
minimum three sites above and below the diversions.
If you have multiple diversions, then up might have

1 to add study sites there.
2 He suggested controlled streams to try to
3 evaluate background variation, as well as when he
4 might achieve the objectives of his recommendation.
5 He talked about the loading of debris and nutrients
6 into the nearshore marine habitat.

7 There's probably more, but my very rough
8 estimation that would require a full-time staff of at
9 least ten biologists composed of field crew and data
10 analyzers and reporters. And roughly calculating the
11 overhead versus the direct salaries, it's at least
12 twice the direct salary. If you paid someone in the
13 neighborhood of 40 to \$50,000 to maintain the
14 infrastructure of buildings and cars and equipment,
15 you would at least double that.

16 So a crew of ten, at a least \$100,000 a
17 year, would be in the neighborhood of a million
18 dollars a year, and over five years would be
19 \$5 million.

20 Q And in order for all of these studies to
21 have value, would you have had to establish what the
22 baseline conditions were before flow started to be
23 released?

24 A To understand in the greatest detail, yes,
25 you would. The question that Dr. Benbow has raised

1 is that the reaches above the diversion are impaired
2 by the lack of continuity, so you would have to have
3 baseline data on the existing reaches above the
4 diversions. And given the background variability and
5 the difficulty in sampling to get something that is
6 statistically valid, you would have to sample that
7 for at least five years to try to account for what
8 might be going on besides just the impairment of the
9 recruitment.

10 If you're into an area that is consistently
11 dry, that's pretty easy, you don't need to do much
12 sampling there. So you would not have to sample the
13 dry areas even though they are inconsistently wetted,
14 and species that occur in the dry areas, they can
15 actually survive down within the substrate. The term
16 is called hyporheic.

17 So there would be some species that would
18 survive even in a dry channel in those circumstances
19 and re-emerge when it was intermittently wetted.
20 That could even include some of the gobies if the
21 substrate is course enough.

22 But ideally you would have to sample to get
23 some baseline. If you're really trying to find out
24 what the effect is of a stream restoration, you need
25 baseline, you need to account for the variability in

1 that baseline, otherwise you would do many years of
2 very expensive studies and windup with inconclusive
3 results.

4 Q And are there populations below the
5 diversions currently, based on your observation, at
6 least in some of the stream?

7 A I've seen species below the diversions. I
8 have seen the amphidromous species below the
9 diversions, but I have not done extensive surveys.
10 That was just merely my spot observations when I was
11 trying to become more familiar with those streams.

12 Q Are there any other comments you would like
13 to make on Dr. Benbow's recommendation?

14 A I think anything else is in my direct
15 testimony.

16 Q Now, could you look at paragraph eight of
17 your written direct. This is where you stated your
18 opinion that: For the larger purpose of providing
19 information suitable for revising interim instream
20 flow standards, it's you're professional opinion that
21 PHABSIM is not the best of the available instream
22 flow assessment methods. And we have already had
23 some testimony from you about that yesterday.

24 The last sentence -- not last sentence --
25 starts on that page, says: The method is not simple

1 to implement properly and is relatively easy to
2 generate unreliable or even spurious results.

3 The last sentence: Based on my own review
4 of previous USGS PHABSIM studies in Hawaii, I cannot
5 conclude that they are sufficiently conversant with
6 the numerous technical aspects of the method for
7 their work to be taken on faith.

8 Do you see that?

9 A Yes.

10 Q When you say your own review of previous
11 USGS PHABSIM studies in Hawaii, is that a reference
12 the report, the Gingerich an Wolfe report for the
13 East Maui streams?

14 A Yes, that's correct.

15 Q Now, there was some testimony from Mr. Ford
16 about a technical review and written comments that
17 ultimately were provided to USGS in September by Mr.
18 Ford.

19 Do you recall that testimony?

20 A Yes, I do.

21 Q And did you supply the technical aspects of
22 the comments to Mr. Ford?

23 A I contributed to the technical aspects of
24 that report, and virtually all of the comments
25 dealing with PHABSIM are mine.

1 Q And can you explain what you mean when you
2 say you cannot conclude that they are sufficiently
3 conversant with the numerous technical aspects of the
4 method of their work to be taken on faith?

5 A I am concerned, from what I can derive from
6 having looked at the raw data and the calculations
7 that are provided in this report and the resulting
8 PHABSIM habitat index functions, that there are very
9 strong indications that there are serious problems
10 with that.

11 Q And those concerns were the ones that were
12 identified and provided to Mr. Ford to provide to
13 USGS?

14 A That letter was written to try to assist
15 the improvement of instream flow studies conducted by
16 USGS, as we understood their implementation.

17 MR. VAN DYKE: Excuse me, what letter?

18 MR. SCHULMEISTER: There's a letter that
19 Ms. Bunn referred to in her questioning of Mr. Ford.

20 Q Is that the letter you understand I was
21 referring to?

22 A Yes. I believe it was entered as an
23 exhibit, was it not?

24 MR. SCHULMEISTER: I don't think it has
25 been.

MS. BUNN: It was not.

1 Q (By Mr. Schulmeister): I understand from
2 our earlier conversation today that you would rather
3 not testify about the detailed examples that are
4 identified in that letter, is that correct?

5 A That's correct. It may be that I
6 misunderstand what they did. It may be that they had
7 done something that was incorrect. And I do not
8 believe that a public forum like this, given the
9 collegial aspects and continued relationships that
10 are required here in Hawaii between the respective
11 biologists, that this is not the forum to air those
12 differences.

13 Q Particularly because their report for West
14 Maui hasn't even been published yet, correct?

15 A The comment letter dealt strictly with East
16 Maui.

17 Q So it's possible that they will have taken
18 your criticisms to heart, and maybe not make those
19 same mistakes in West Maui, correct?

20 A As Mr. Ford testified yesterday, there has
21 been, to his knowledge and consequently my knowledge,
22 there has been no response to that comment letter to
23 date.

24 Q Anything more you want to say about that
25

1 now?

2 A No.

3 Q I have no further questions.

4 HEARINGS OFFICER MIKE: Just a follow up
5 on that. If we take paragraph eight and nine, then
6 you have two issues on PHABSIM. One is whether the
7 PHABSIM methodology is being applied up to the
8 standards that you would set for yourself, that's
9 one.

10 And the other is that it is an incomplete
11 analysis, which I think also Dr. Benbow had said that
12 you need to take that in conjunction with biological
13 studies of the actual species that are there. So you
14 have habitat and then you can relate habitat to
15 species present. And PHABSIM only looks at the
16 first?

17 THE WITNESS: That's correct, both of those
18 statements are correct. I'm concerned about the
19 standards of accuracy. As I mentioned, I have
20 personally applied PHABSIM to Hawaiian streams and
21 have been very satisfied with the consistency of
22 their results with my personal observations.

23 But USGS has said it and Dr. Benbow has
24 said it and I fully agree that by itself PHABSIM is
25 not the tool that you would use to derive instream

1 flow recommendations for habitat.

2 HEARINGS OFFICER MIKE: For enhanced
3 biological quality and quantity in streams?

4 THE WITNESS: That's correct.
5 (Recess taken.)

6 HEARINGS OFFICER MIKE: Why don't we take
7 a short break, five minutes.

8 CROSS-EXAMINATION

9 BY MS. SPROAT:

10 Q Good morning, Mr. Payne.

11 A Good morning.

12 Q I'm Kapua Sproat, an attorney with
13 Earthjustice. We're the attorneys for Hui Na Wai
14 'Eha and Maui Tomorrow Foundation in this case.

15 Thanks for coming all the way out here and helping to
16 explain PHABSIM to us.

17 I'm going to need a little bit of remedial
18 tutoring at the beginning to make sure I have things
19 straight from yesterday.

20 A As you were describing -- actually do we
21 have the exhibits from yesterday?

22 HEARINGS OFFICER MIKE: Yeah.

23 Q (By Ms. Sproat): So just to make sure that
24 I'm understanding things correctly, when you refer to
25 micro habitat as part of PHABSIM, what are you

1 flow recommendations for habitat.

2 HEARINGS OFFICER MIKE: For enhanced

3 biological quality and quantity in streams?

4 THE WITNESS: That's correct.

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18 tutoring at the beginning to make sure I have things
19 straight from yesterday.

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21 have the exhibits from yesterday?

22 HEARINGS OFFICER MIKE: Yeah.

23 Q (By Ms. Sproat): So just to make sure that
24 I'm understanding things correctly, when you refer to
25 micro habitat as part of PHABSIM, what are you

referring to?

A Micro habitat is the specific location
where the individual species are, the exact location
where they are present in terms of the variables of
depth, velocity and substrate recover at that point.

Q And are those variables, depth, velocity
and substrate, are those kind of the other three
micro habitat characteristics that you would use in
PHABSIM, or are there other ones?

A Those are the only ones if PHABSIM, those
three, depth, velocity and substrate recover. The
method can be expanded beyond a microhabitat into the
macrohabitat, where you bring in water quality
parameters.

We didn't really discuss that, but that
gets into the larger concept of the IFIM, or the
entire overall methodology.

Q Maybe that's what I was thinking about.
Yesterday when you described PHABSIM, you outlined
sort of a two step process.

My understanding was that the first step
included collecting hydraulic data along the stream
in the cross sections; is that correct?

A That's correct, yes.

Q And what do you mean by hydraulic data?

1 What are you collecting in those cross sections?

2 A You're collecting the contours of the
3 bottom, the bottom profile. And then at the points
4 of data collection, you're gathering velocities. And
5 then you're gathering your water surface elevations
6 across your cross section.

7 You can, from the bottom profile on the
8 water surface, you can calculate the depth. You can
9 also get the depth directly when you're measuring the
10 velocities off of the raw that you're using to
11 acquire the velocities.

12 Q So in that first stage you're measuring all
13 of those things or calculating them based on what you
14 measure, and then you mention that the measurements
15 were made at three levels of flow, separated by a log
16 cycle. Is that correct?

17 A Yes. I was describing more or less the
18 ideal approach to try to get the best range of
19 simulations over discharge. Various PHABSIM studies
20 are targeted for various purposes. Some of them just
21 look at the low flow range. Others try to look at
22 the entire spectrum of potential flows.

23 Obviously, at the very high flows, all bets
24 are off, because the species are going to be not
25 occupying their normal habitat, they're going to be

into escape and recovery habitat.

2 So generally you don't incorporate that,
3 because the behavior of the organism changes.

4 Q Can you explain the log cycle and the
5 significance of that?

6 A The log cycle has to do with calibrating
7 what is called the stage discharge relationships.
8 How rapidly the water surface or the depth changes
9 with discharge.

10 Each cross-section will have a stage
11 discharge relationship. And to calculate the PHABSIM
12 models, you need to acquire the data for that.

13 And as a general rule, depending on the
14 type of hydraulic model that you're using, you can
15 acquire calibration data at flows that are separated
16 by a factor of two. And as I gave the example,
17 whatever it is, five, ten and 20, to then have a
18 broad range of flows.

19 Q So just so that I'm clear, you're
20 calibrating the model at those different flow levels?

21 A You're developing the hydraulic
22 relationships at those flow levels, yes. And then,
23 given the quality of that calibration, then you could
24 use it to extrapolate and interpolate other flow
25 levels.

1 Q When you talk about those flow levels, if
 2 looking at the Na Wai 'Eha flow streams, we don't
 3 have those different flow levels currently, would
 4 that be achieved by releases of water?
 5 A You can do it either through controlled
 6 releases of water, that would be the leisurely way to
 7 do it. But it could be done, albeit with more
 8 difficulty, under freshet conditions. You can do
 9 it -- I have done it below diversions, your
 10 opportunities are less.

11 Q I take it, Mr. Payne, you weren't here last
 12 week, you didn't see our freshet conditions in Na Wai
 13 'Eha. They're pretty scary.

14 A I have no doubt. I have seen freshet
 15 conditions. Some of my field trips have been
 16 curtailed because of those freshets conditions.

17 But specifically on the recession limb of
 18 those freshets would be the opportunity to acquire
 19 that calibration data, but you do have to move very
 20 quickly.

21 Q So you would either do it then or through
 22 controlled releases?

23 A Yes.

24 Q And in the second stage, you mention that
 25 you come up with a habitat suitability criteria for

each of the species, at each life stage, is that
 correct?

A That is correct, yes.

Q Thanks for bearing with me here. I just
 want to make sure we are all on the same page.

And that's where you come up with the
 curves for the amount of habitat over the different
 flow levels?

A When you link the habitat suitability
 criteria with the hydraulics, then you get that
 physical habitat index that varies with discharge,
 yes.

Q And those are the curves that you drew
 yesterday?

A That was the bottom, last curve that I drew
 yesterday. I believe that one exhibit you're
 referring to there was the cross-section on the top,
 and then the criteria in the middle, and then the
 habitat index on the bottom.

Q Could we see that, again, please? And I
 know that everyone is as curious as I am about how
 this really works, so everyone appreciates this.

So referring to that bottom curve, that's
 what shows the habitat over the different flow
 levels; is that right?

1 A This is an index to physical habitat. This
 2 is not necessarily what you would define as habitat,
 3 because as we just discussed, there could be other
 4 factors that comprise habitat. Time is one, water
 5 quality is another. This is potentially habitat
 6 given other circumstances.

7 Q And will the shape of that curve vary
 8 depending on the species or, for example, or the life
 9 stage?

10 A Absolutely it will, yes.

11 Q And would the shape also vary depending on,
 12 I guess, the rate of flow or the length of time, you
 13 know, whether you're looking up to the Q_{99} or the Q_{50} ,
 14 for example?

15 A No. This is fixed and continuous. This is
 16 instantaneous flow. And so wherever long your X axis
 17 goes, those Q_{50} or Q_{99} s lie, then that would be the
 18 index relationship.

19 Q Just to clarify, the shape itself wouldn't
 20 change, but depending on where you were on the
 21 axis -- I mean at the Q_{50} you would be at a different
 22 point in the curve than then Q_{99} . So where the peak of
 23 the curve was would vary upon where you were along
 24 that line?

25 A It's fixed. And so if you had a value on

the X axis that was the Q_{50} , then that would be where
 it would be on that curve.

Q So just help me out here. So could you
 draw on that the Q_{50} and the Q_{99} , just as an example.

A If I did it, it would be entirely
 hypothetical.

HEARINGS OFFICER MIKE: Could you just
 point to two possible places in relation to each
 other, Q_{50} and Q_{99} ?

MS. SPROAT: What did you say?

HEARINGS OFFICER MIKE: Instead of
 drawing, he could just sort of point to relative
 places. That would satisfy you?

MS. SPROAT: Yeah.

Q I guess what I'm just trying to understand
 is that it's basically a range, depending on -- the
 value is going to differ depending on where you are
 with flow, right?

A Yes. Whatever the flow is, then the value
 will be different. And as a general rule, the less,
 the lower flows are less frequent. Out into the Q_{90}
 would be tending towards the left-hand side, and the
 higher flows, the Q_{10} s, the Q_{20} s would be on the higher
 end.

But if I were to draw them on here, it

1 could be entirely hypothetical, because depending on
 2 the specific characteristics of the channel and the
 3 habitat suitability criteria, you could windup with
 4 the Q_{99} out here, because, say for example, there's
 5 very strong -- I've seen a stream where it's a
 6 collapsed lava tube, and there's way too much water
 7 all of the time naturally.

8 If you were to take water out, then the
 9 best habitat would be lower flows that occurred
 10 naturally. But there's exceptions to that.

11 But in the broadest sense, the lower flows,
 12 the Q_{90s} , Q_{99s} are to the left of this, and the Q_{10s} and
 13 Q_{20s} are to the right.

14 Q Now I'm confused. I was assuming that on
 15 that particular drawing you would start on the left
 16 with Q values. Actually, could he please draw it on
 17 there? Because I was assuming that that was Q
 18 starting with one on the left and going all the way
 19 out to a hundred on the right.

20 HEARINGS OFFICER MIKE: I think --
 21 remember the Q values are inversely related to not
 22 the flow that is actually flowing.

23 MS. SPROAT: I understand that.

24 HEARINGS OFFICER MIKE: I'm not testifying
 25 for you, but if we start off at Q_{90} and just assume

that habitat or whatever the left axis is, increases
 with increasing flow, but at a point it starts to
 decrease because it's too fast.

So what he's saying is generally the Q_{99s}
 and the Q_{90s} would be off on the left side, and the
 Q_{10s} and Q_{20s} are off on the left side.

There is a point of diminishing --

MS. SPROAT: Sure.

Q No, I thought you were talk about the
 particular axis. That's what was confusing to me?

A What Dr. Miike said is generally correct,
 but this flow, this Q here is independent of the
 availability of water. It's entirely independent.

And so like I said, the Q_{50} could be
 anywhere on here once you incorporate the
 availability of the water. That's the problem with
 picking something off of this shape as a
 recommendation, because you don't know what the
 availability is.

One of the common problems I've dealt with
 over the years has been small hydroelectric projects,
 and adult rainbow trout, and the peak of the curve
 might only be the Q_{50} , and so if your recommendation is
 the Q_{50} , then 50 percent of the time there is less flow
 than that. And so the populations will not be

1 adapted to the Q_{50} , they will be adapted to something
2 much less than that.

3 So they cannot occupy that habitat because
4 they can't grow or immigrate fast enough to occupy
5 that. So that would be empty habitat for adult
6 rainbow trout.

7 So that's why it's really critically
8 important as another step in PHABSIM analysis to
9 incorporate the hydrology. Because the Q percentages
10 are not on here, on this X axis.

11 Q And that's -- I guess I should stop asking
12 questions, I'm getting more confused.

13 On the availability issue. I mean, that's
14 really what the available habitat is going to be like
15 is independent of whether or not there is water
16 currently available for that particular -- well,
17 under natural flow conditions, assuming it's not a
18 drought or what have you?

19 A Now I'm confused.

20 Q Can you restate your position on the
21 availability? Because when the availability issue
22 comes up, to me it seems that's more of an issue of
23 allocation or of the water as opposed to -- my
24 understanding was that this was to show habitat
25 availability for the specific species?

A This is habitat availability independent of
the availability of water.

Q And that's -- I just wanted to be clear on
that.

A Okay.

Q Both this morning as well as in your
written testimony that you submitted with the

Commission, you made comments about PHABSIM not being
sort of the best available instream flow assessment
method for Hawaii streams. Is that fair?

A Qualified by the purpose of the study. As
I testified, I believe that PHABSIM is fully
appropriate for evaluating hydroelectric projects,
where you're trying to maintain a level of habitat
given a proposed project.

It's less suitable when you're trying to
use it to establish restoration, recovery or
threshold levels in dealing with water rights,
because this is an incremental method, it's not a
standard setting methods. It's to evaluate
alternatives. It's not to specify a particular flow.

When it's used to specify a particular
flow, then you're on very thin ice as far as
ecological principles and the reliability of this
data.

1 Q But it would be appropriate to evaluate
 2 what the potential alternatives were?
 3 A Yes, it would, given the full range of
 4 alternatives.

5 Q And it's also my understanding that both in
 6 your written testimony and then in your oral
 7 testimony yesterday you mentioned that PHABSIM hasn't
 8 been validated in Hawaii, is that correct?

9 A That is correct, yes.

10 Q And so I'm confused again. Yesterday you
 11 testified you're a big believer in PHABSIM and you
 12 thought that it was a good thing, but I'm unclear on
 13 how that can be if it hasn't been validated
 14 especially here in Hawaii.

15 Does that mean that PHABSIM studies in
 16 Hawaii are worthless?

17 A No. What it means is that you can't put a
 18 whole lot of really precise faith into PHABSIM
 19 results. As an ecological guiding principle, when
 20 PHABSIM was first developed in late 1970s, it quickly
 21 caught on with popularity. Because, putting it
 22 roughly, there's a lot of there, there.

23 That doesn't mean that it's really a
 24 precise tool. And it has only really been validated
 25 for limited species. But in terms of actual

applicability to other species, it is used for a
 great many species for which it has not been
 validated, and the PHABSIM in conjunction with the
 IFIM, is the single most popular tool worldwide to
 establish instream flow recommendations.

So a lot of people believe in it. There
 are a lot of people that don't believe in it. You
 will find all sides.

I have worked with it intimately, and when
 done properly I believe it's a very valuable tool for
 the right purposes.

Q Thank you.

And while we are on the validation issue,
 in order to validate PHABSIM, I believe it was your
 testimony yesterday that one would have to see
 whether biomass changed over time.

So in the most simplistic terms, would that
 mean you jump in the stream with your snorkel and
 sort of check to see if the fish showed up?

A No. It has to be a highly quantitative
 sampling method.

It has to be at a time when you can
 actually correlate a particular place, a particular
 flow value with the response to the actual biomass.
 And so you have to have the physical conditions

1 persist long enough for that flow to be able to have
2 the species adapt to that flow in terms of their
3 biomass. And then you would have to go out and very
4 rigorously statistically sample quantitatively.

5 I'm saying this is very difficult to do.
6 It takes a lot of effort to do. You can go out
7 snorkel and around, that doesn't necessarily mean
8 anything more than some are there and some are not.

9 Distribution of these species, to my
10 understanding, they are similar to many other
11 species, the distribution is highly variable within a
12 stream. You will find a lot of them in some areas,
13 and yet a little distance away, you will not, when
14 the conditions could be actually the same.

15 So you have to sample a fairly large area
16 to be able to come up with something that is
17 statistically rigorous.

18 Q Perhaps I oversimplified, but the bottom
19 line is you would go and check your cross-sections
20 and the flow and the depth to see whether or not the
21 species, as you had, I guess, modeled, were in those
22 particular areas; is that right?

23 A Well, you would already have the hydraulic
24 model. The theory would be that you would create
25 hydraulic model with your habitat suitability

criteria and have a habitat index.

The validation aspect would be to go out at
these flows at different levels of flow and see
whether the response of your organisms' corresponded
to your physical index.

Q And so you mentioned a bit ago that PHABSIM
has been validated, I guess, for several species, but
it's used for -- it's used to predict habitat for
other species that the model hasn't been validated
for; is that correct?

A That is correct, yes.

Q And actually how many commercial versions
of the PHABSIM software are currently in use around
the world? You mentioned this is the most popular
model.

A PHABSIM and IFIM is the most popular model.
The versions that are available in different forms,
there is probably about roughly eight or ten.
There's Diversion that is put out by the instream
flow group, U.S. Fish & Wildlife Service.

There's my version called RHABSIM. There's
another version put out by Utah State. There is
another aversion that's used in South Africa, New
Zealand and Australia that's called RYHABSIM, or
River Hydraulics Habitat Simulation.

1 And there's several other versions. The
 2 French have developed one, the Norwegians have.
 3 They're all based on similar ecological principles
 4 with slightly different software and languages.

5 Q And, Mr. Payne, you've testified that you
 6 yourself have used the model thousands of times?

7 A I lost track, yes.

8 Q And that you've actually applied it here in
 9 Hawaii?

10 A Yes, I have.

11 Q Can you explain where you applied it?

12 A I applied it in the Lumahai. I applied it
 13 to the Hanalei, to the upper Waialua on Kauai. And
 14 here on Maui I've applied it to the east and west
 15 Waialuaiki and to the Kopilula.

16 Q And for the Waialuaiki, that was for a
 17 proposed hydro plant?

18 A That's correct. It was above the
 19 irrigation ditches.

20 Q And what did you use PHABSIM for, for that
 21 particular project?

22 A What did I use it for?

23 Q Yeah. What was the objective of using
 24 PHABSIM in that particular instance?

25 A The objective there was to see if I could

provide a flow based on PHABSIM that would be
 protective of the existing habitat. This was
 implemented in conjunction with U.S. Fish and
 Wildlife Service and the DAR as part of hydroelectric
 licensing procedures at the time.

Q And did you use the model to come up with
 the actual weighted usable area index, for the WUA;
 is that correct?

A Yes. WUA is not as bad as amphidromous.

Q And what particular species was that for?

A That, in the east and west Waialuaiki was
 for the mountain shrimp, the 'opae.

Q I believe I have a copy here of the report
 that was done, that particular report, that
 particular PHABSIM exercise.

So you testified earlier that you were able
 to, I guess, accurately predict the level of flow
 restoration -- actually, let me --

So just so I'm understanding, you were able
 to come up with a number both for the restoration, as
 well as the weighted area habitat based on the
 application of this particular model; is that right?

A There was no restoration involved in that.
 It was an unimpaired hydrograph, and I was trying to
 make a flow recommendation that worked within my

1 understanding of the hydrology, the PHABSIM results,
2 and the aquatic biota, which was principally the
3 'opae.

4 Q I stand corrected. It wasn't a
5 restoration, per se, but the amount of water that
6 needed to stay in the stream for the 'opae habitat?

7 A In my opinion, yes.

8 Q So even though PHABSIM hasn't been
9 validated in Hawaii, you were able to come up with
10 that number for what amount of water had to stay in
11 the stream for the 'opae habitat?

12 A Yes. That was one of those streams where,
13 after having collected all of the data, including the
14 habitat suitability criteria for the 'opae, that I
15 was comfortable with the fact that my habitat
16 simulations reflected what I saw in the stream at
17 flows that appeared physically suitable for the
18 'opae.

19 Q And after, I guess, you made your
20 recommendation, did you ever go back and check to see
21 whether the 'opae were there?

22 A None of the projects that I ever worked on
23 in Hawaii were ever constructed, and so there has
24 been no opportunity to validate any of that.

25 Q And you mentioned also that in addition to

the work that you did on the Wailluaiki Stream, that
you also did a study of a proposal for a hydro plant
on Kopilua Stream as well; is that correct?

A Yes. The hydroelectric scheme was proposed
to go to high elevation with diversions on the east
and west of Wailluaiki, and a tributary of, I believe
of the West Wailluaiki. And then the consideration
was to extend the diversion over to the Kopilua, so
at a later time I added the study on the Kopilua.

Q For Kopilua you applied PHABSIM again?

A Yes.

Q Do you recall whether for that particular
study you used the same species criteria curves that
you developed for the other one, for the East
Wailluaiki Stream?

A Yes.

Q And were you for Kopilua able to use
PHABSIM, again, to calculate the weighted usable area
index of habitat for the 'opae?

A Yes.

Q I would like to switch topics now to talk a
little bit more about the DFA, the demonstration flow
assessment that you mentioned yesterday. And you
mentioned it yesterday, and you also provided --
discussed some of it in your written testimony.

1 Given your recommendation, I take it that
2 you're familiar with the DFA?

3 A Yes. I've applied it in several instances.

4 Q And yesterday you also mentioned that in
5 your opinion DFA, or demonstrated flow assessment
6 model, would be more appropriate for Na Wai 'Eha
7 streams then PHABSIM?

8 A For the purposes of restoration, for
9 covering a broader range of resource values, and for
10 involving a broader range of expertise and personnel,
11 then, yes, I believe it would be.

12 The DFA let's everybody actually see what
13 the stream looks like at different flows, rather than
14 looking at some abstract line that was generated from
15 hydraulic model. As I believe I mentioned in my
16 direct testimony, you could use both.

17 If you want to use the PHABSIM, you could
18 use that in conjunction with the DFA. I have not
19 testified that PHABSIM should not be done, just
20 testified that it has limited utility, in my opinion,
21 and that the DFA would address -- depending, of
22 course, on how it was designed -- it would address
23 more of the resource values that are in the Hawaii
24 Water Code.

25 Q And as I understand it, one of your main

issues is PHABSIM kind of standing alone, but as kind
of a larger part of additional studies and that sort
of thing, it has helpful information?

A Yes, I agree.

Q And so I'm not familiar with the DFA. How
would that work?

A DFAs are basically designed by the
participants that are concerned with the flow
alteration, flow restoration. There is a reference
that I cited in my testimony that recently gives more
guidance about the implementation of the DFA.

And so you identify what the resource
values are concerned. You identify potential study
locations where you might go to observe the flows.
You prepare some forms that are circulated ahead of
time that will identify the potential variables that
you would want to address. And that can be several
pages long.

I guess the nearest comparison, if you're
familiar with recreation surveys, whether it be for
whitewater rafting or whatever it is, for fishing,
the DFA is similar to those, but it often
incorporates more details.

It can actually incorporate average
velocities or average depths, channel widths. It

1 could incorporate physical data, as well as the
 2 judgment of the participants into how well the
 3 criteria that are pre-established are then satisfied
 4 with the different levels of flows that are observed.

5 Q And you mention the participants, who would
 6 participate in this DFA?

7 A Probably even you.

8 Q Even me?

9 A It's designed for the participants, the
 10 stakeholders that are concerned about the resources,
 11 and it becomes less manageable with a large number of
 12 people. So sometimes you can have designated
 13 participants for different groups.

14 Q You don't want to have 50 or 60 people
 15 running around trying to do an evaluation. You can,
 16 but it makes it more difficult to implement.

17 Typically, it's on the order of eight to
 18 ten people that will actively participate
 19 representing various stakeholders, resource values.

20 Q And would the Water Commission participate
 21 as part of that?

22 A If they chose to, yes. You could also
 23 choose to participate at varying levels. You could
 24 participate in the study design and the
 25 interpretations and the ultimate recommendations, and

1 leave it to particular specialists to go out and
 2 gather the data.

3 Q And how would you -- let's just take for
 4 example in Hawaii, and in Na Wai 'Eha in particular,
 5 traditional customary rights and practices are very
 6 important. And a lot of those are based on access
 7 and use of our waters, especially in the stream.

8 How would we decide who would represent the
 9 interests of the Native Hawaiian practitioners?
 10 Would it be one person for all the Na Wai 'Eha? How
 11 would that work?

12 A That would have to be determined by a
 13 stakeholders group. Since demonstration flows are
 14 generally provided for a short period of time of
 15 observation, you would not have a biological
 16 response. So for Native Hawaiian uses, those
 17 participants would have to go out and just judge the
 18 physical characteristics in terms of the acquisition
 19 of whatever resource they might wish to harvest or
 20 observe.

21 Q And does this group, the stakeholder group,
 22 actually decide what the standard would be?

23 A What the DFA does is provide you a range of
 24 ratings for different flow levels. It's similar to a
 25 PHABSIM. It doesn't have the continuity of the shape

1 of the curve.

2 Ideally what you would like to do would be

3 to provide a flow that would more or less give you

4 the shape of your expected response curve. It's kind

5 of like the Goldilocks theory: There is one that's

6 too high, one that's too low and one that's just

7 about right. Because you're just trying to cover the

8 range of conditions. There are many different

9 resource values that all have different responses,

10 such as whitewater kayaking is a different range than

11 somebody who wants to go out and soak a worm for

12 fishing.

13 So you try to target your flows towards

14 what your resource values are, as well as the

15 availability of water and your ability to provide the

16 water.

17 Q So basically the group decides by consensus

18 what would be acceptable to all of the stakeholders,

19 is that fair?

20 A Ideally.

21 Q And what happens if you can't decide by

22 consensus?

23 A You go to a hearing. There's -- all of

24 these methods are subject to the politics of the

25 situation, and just the vagaries of the individual

1 characteristics of a proceeding.

2 Q But the bottom line is that basically the

3 group, ideally the stakeholders participants in the

4 DFA, would all agree on what would be acceptable to

5 all of the interests?

6 A Generally the stakeholders agree on how to

7 do the evaluation. It's very likely at the end of

8 the evaluation that people will have different

9 opinions about what is best. And at that point you

10 have the information that will let you argue as to

11 why you think your position is the best.

12 It may provide a higher value for your

13 particular interest, and you're not concerned about

14 some other value. And so depending on the

15 perspective of the stakeholders, you could have

16 different interpretations of the results just like

17 the PHABSIM.

18 Q And so how does one -- well, so has the DFA

19 been validated, I mean, like PHABSIM?

20 A Validation can be used in many different

21 ways. DFA, per se, is the application. And so as

22 far as the validation, it only ranks the criteria

23 that you put into it. So it doesn't really do, say,

24 predictions of biomass or anything like that.

25 So there is really no mechanism to

1 validate, in the scientific sense, the DFA.

2 Q So I guess it is a process. You don't
3 really validate it, because you don't have something
4 to measure against?

5 A Well, it is what it is. You have your
6 ranking criteria, an then you get the results.

7 Q And I guess the results would depend on the
8 particular individuals participating in the group and
9 what their stakeholder interests were, right?

10 A Yes. And that, of course, is subject to
11 group interactions. And somebody might be very
12 aggressive and others can be less aggressive. You're
13 always subject to group interactions.

14 If you have trouble defining what your
15 criteria should be, you can go through a process such
16 as the Delphi method, where an impartial arbiter then
17 would take the opinions of all the participants and
18 come up with a scheme for implementing the DFA.

19 Q Is it your recommendation that DFA, sort of
20 standing alone, could be used to establish the
21 instream flow standards for Na Wai 'Eha streams?

22 A It would help to inform that decision, but
23 DFA by itself does not recommend a particular flow.

24 Q I'm a little confused. DFA doesn't come up
25 with a particular flow, it just comes up with what

the interests are and what -- what does it come up
with?

A It gives you a ranking of the various flows
in terms of the perspective of the stakeholders'
interests and the variables that are assessed.

Q So assuming that you -- I mean, I guess in
order to rank the different flows, would you also
have to observe the different flows, high flows, low
flows?

A That's why it's called a demonstration
flow, yes.

Q So you'd put the water back in the stream,
you'd look at it, and everybody would give their
input as to whether that would work?

A That's correct.

Q And so with regard to Na Wai 'Eha, because
these streams are diverted, in order to have the
multiple flows, we would also need releases for the
DFA?

A If you wanted to apply the DFA, you would
have to have controlled releases. It becomes
difficult because of the timing of the availability
of the participants, the timing of floods, access to
the various study sites that you might choose.

But, yes, you release a flow and go out and

1 observe it and rank it according to the DFA.

2 Q If the DFA is assessing different
3 attributes of flow that could also be measured,
4 wouldn't it be beneficial to measure it?

5 A Yes. As I mentioned, you can go out and
6 get various measures of average depth, average
7 velocity. There's many different physical
8 characteristics that you can acquire. It depends on
9 whether you want to put them into your DFA, if you
10 believe they're useful.

11 Q And, I guess, again, getting back to
12 depending on the particular results or participants,
13 stakeholders, the recommendations that come out of
14 the DFA would be different depending on who the
15 participants were?

16 A Yeah. I did mention that, yes, because
17 different people see different things when they look
18 at a river with different objectives.

19 The DFA helps inform the decision. It's
20 quite valuable because then all the parties know what
21 the flow looked like, so you have a visual image
22 associated with a particular discharge. If you get
23 nothing else out of it besides that, you look at a
24 stream and you know what the flow is, and that by
25 itself is extremely difficult to do.

Q I think that would be helpful.

You mentioned in your testimony that the
DFA could be done at no additional cost, is that
right?

A At no additional cost in water, if it was
done concurrently with the PHABSIM in general. But
depending on who the stakeholders are, and how they
might be compensated for their time, there could be
additional cost involved in that.

You also have additional cost as far as
study design and coming up with the criteria. But in
the broad sense, those are fairly minimal cost.

Q But I guess, there could be some cost.
People would have to fly here to look at the water in
the stream and that sort of thing?

A If they were not local, yes.

Q Well, if I was invited, I would have to fly
out.

A Me too.

Q So, Mr. Payne, are you aware that HC&S,
Cades' client, shares the parent company, A & B, with
EMI, who is also sort of your client in the East Maui
Case, did you know that?

A Yes. I understand A & B is the parent
company.

1 Q And I realize that you did some work for
2 EMI, I'm not sure whether EMI or their attorneys, for
3 the East Maui case; is that correct?

4 A I only was contracted to work with John
5 Ford and SWCA. And so I understood that it was
6 passing through to the clients, and I did meet with
7 EMI and with A & B.

8 Q So I would like to focus specifically on
9 sort of your knowledge of USGS' ongoing study in Na
10 Wai 'Eha, kind of what is going on over here.

11 And you weren't invited to participate in
12 the aquatic biology working group for the Na Wai 'Eha
13 studies, were you?

14 A No.

15 Q But you did attend the October stakeholders
16 meeting, right, October 2007?

17 A Yes. There was a presentation by USGS of
18 the proposed methods at that workshop, yes.

19 Q Did you attend any other USGS meetings for
20 the Na Wai 'Eha study?

21 A No.

22 Q Do you know what the status of the modeling
23 work for Na Wai 'Eha using PHABSIM is?

24 A Only in the broadest sense. I understand
25 that they have selected study sites and they have

begun collecting some hydraulic data for calibration
of the PHABSIM models.

Q Would it surprise you to know that -- well,
do you know that none of the modeling, actual
modeling work for Na Wai 'Eha using PHABSIM has been
done yet?

A That wouldn't surprise me, no. It takes
awhile to acquire the data to calculate the hydraulic
models. And you can't really calibrate the hydraulic
models until you have all the applicable data.

Q Did you know that although USGS could use
PHABSIM, they can and may kind of alter their model
or their use of it, so it's different from the
version they used in East Maui?

A I don't know anything specific about that.
I suppose that they could. They indicated, and I
believe it's in Dr. Oki's testimony, that they would
use the same approach as they did in East Maui.

Q But you don't know other than what was in
Dr. Oki's testimony? You're not sure whether or not
that could or might have changed?

A I have no other information.

Q Did you participate -- did you participate
if USGS joint fact-finding process for USGS studies
for Na Wai 'Eha streams?

1 A No. I was only at that one workshop.

2 Q Are you aware that joint fact-finding

3 process, that that was attempted in Na Wai 'Eha?

4 A I have seen it as the exhibits of Dr. Oki's

5 testimony. That's the extent of my knowledge.

6 Q Based on the exhibits, did you know that

7 the JFF process was unsuccessful, largely because of

8 the lack of consensus regarding different issues?

9 A I believe you're referring to the specific

10 exhibit that was the attempt of the groups to mediate

11 an approach.

12 Q Yes, I am.

13 A Do you want me to pull that out?

14 Q No, I'm just asking whether you are aware

15 of the reason that that was unsuccessful.

16 A I read that, and I believe that that was

17 the outcome of that process.

18 Q Were you aware of the fact that HC&S

19 instructed its representatives not to participate in

20 that process?

21 A No. I was unaware of that process until I

22 read Dr. Oki's testimony.

23 Q Did you also -- were you also aware of the

24 fact that the parties in this case, in addition to

25 the joint fact-finding process, attempted a mediation

to resolve the case and that that also failed?

MR. SCHULMEISTER: Object to that as

irrelevant and improper to raise this issue.

HEARINGS OFFICER MIIKE: For this witness. I

I don't think it's appropriate for this witness. I

don't understand the line of questioning --

MS. SPROAT: Just asking whether he was

aware of this, that it failed. That's fine.

Q Based on your knowledge of PHABSIM, are you

aware that if sufficient flows are restored to Na wai

'Eha, that modeling, especially the hydraulic

modeling aspect of PHABSIM, could be reduced or

perhaps even eliminated?

A You said if sufficient flows are restored,

that modeling can be reduced or eliminated?

Q As part of the controlled releases.

A I'm not sure what "sufficient" means.

Q I guess sufficient to calibrate a model.

So if -- my point is if there's controlled releases,

that controlled releases could preclude the need for

hydraulic modeling for PHABSIM in Na Wai 'Eha?

A That would be an alternative method that

would be applied, such as the DFA. And you could use

the DFA in place of the PHABSIM, yes.

HEARINGS OFFICER MIIKE: Correct me if I am

1 wrong, but I thought that part of even being able to
 2 do a good PHABSIM, you would need to some either
 3 natural or controlled releases, so that you can have
 4 varying flows to understand how that fits the model.
 5 So maybe I misunderstood the question, but
 6 I thought the question was if you have releases, you
 7 don't need to do a PHABSIM.

8 THE WITNESS: If you have releases, you can
 9 evaluate them differently. But if you do have
 10 releases, you could also implement the PHABSIM by
 11 acquiring the hydraulic data.

12 HEARINGS OFFICER MIKE: Then your answer
 13 is if you do have releases, you can do an evaluation
 14 that is better or at least equal to doing the
 15 releases and doing a PHABSIM in addition to all the
 16 other information?

17 THE WITNESS: You could do both, either or
 18 both. If you have flow releases --

19 HEARINGS OFFICER MIKE: Well, I guess the
 20 simple question was, if you have controlled releases,
 21 you don't need PHABSIM any more. Isn't that
 22 basically what you asked? Can you read back her
 23 question?

24 MS. SPROAT: I can restate my question.
 25 HEARINGS OFFICER MIKE: No, I'll have her

1 read it back.
 2 I don't want to get into a situation where
 3 we go like yesterday where we had to have the
 4 attorney go and listen to it.

5 (Record read by the reporter.)
 6 HEARINGS OFFICER MIKE: Your answer was
 7 that you didn't need -- if we did controlled
 8 releases, we didn't need a PHABSIM, or there would be
 9 a reduced need for it, and you could still do a DFA.

10 THE WITNESS: Yes. You could also do what
 11 John Ford was suggesting and do a longer-term
 12 release, and then evaluate the biological responses
 13 of that. There is several different ways to approach
 14 the question of restoration.

15 HEARINGS OFFICER MIKE: Oh, I see. With
 16 controlled releases, one can look directly at the
 17 biological response, and you don't need to do a
 18 PHABSIM, because the other issue was PHABSIM and you
 19 do a biological response to more or less validate the
 20 PHABSIM.

21 THE WITNESS: Yes.
 22 HEARINGS OFFICER MIKE: But then you would
 23 still be faced with the question of, on those
 24 controlled releases, what one to pick in terms of a
 25 balancing of interest, which is the responsibility of

1 the Commission. A group can come up with a
2 recommendation, but it's basically a responsibility
3 of the Commission.

4 THE WITNESS: If you're doing controlled
5 releases, you can evaluate them by various methods.
6 You could evaluate them with PHBSIM, and you could
7 evaluate them with DFA.

8 The information from both of those could
9 help inform the Commission. If they wanted to then
10 incorporate a longer term-flow release and get a
11 biological response, that they could use the
12 information from those two studies in order to derive
13 that.

14 Q (By Ms. Sproat): Mr. Payne, I actually
15 wanted to go back to your study on Wailuaiki Streams.
16 I forgot to ask you something about that.

17 A No, you're you going to testify memory
18 again.

19 Q I have a copy. You can look at it, if you
20 like.

21 So based on your work in East Maui streams
22 and also in Na Wai 'Eha, do large agriculture
23 diversions, like those operated by EMI, HC&S and
24 Wailuku Water Company negatively impact the migration
25 of native stream animals?

A Yes.

2 Q Are the brief periods during freshets when
3 water kind of spills past the diversion, are those of
4 sufficient duration to allow upstream migration of
5 juveniles?

6 A In my relatively limited experience, yes.
7 When I did my studies on the east and west Wailuaiki
8 and the Kopilula, the 'opae were absolutely thick.

9 And the outflow of some of the plunge pools, the
10 'opae were so densely clustered along a rock, and
11 they were filter feeding rather than grazing -- they
12 have multiple feeding strategies -- you could not
13 squeeze in another 'opae. And that was above the
14 section of stream that, as I understood it, was
15 entirely dewatered for large periods of time. And
16 that -- I don't recall specifically, but some of
17 those diversions are constructed of perforations in a
18 bridge. And so that all of the water that falls
19 through the holes of the bridge into the canal.

20 So there are very definitely interrupted
21 considerable period of time, I don't know exactly
22 what, but there has been successful recruitment.

23 Q Just to be clear, that's in East Maui
24 Kopilula Stream, as far as your observations about
25 the 'opae being thick?

1 A Where I saw them that thick, yes. I have
 2 done minimal observations of the Na Wai 'Eha streams.
 3 Mr. Ford testified that he has seen them
 4 thick in some of the areas of the Na Wai 'Eha streams
 5 above the diversions.

6 Q And actually, I'm going to have to test
 7 your memory of the Kopilula study.

8 This is a copy of your report, it's dated
 9 June 15, 1988, and this is entitled Instream Flow
 10 Assessment for east, middle and west Wailuaiki
 11 Stream, east and west Wailuaiki Hydroelectric Project
 12 Maui, Hawaii.

13 On page two here, under aquatic species of
 14 interest, it talks about the 'opae kala'ole that you
 15 were referring to. And it says here: No other
 16 aquatic species are present in large numbers in the
 17 streams most probably because the Koolau Ditch dries
 18 up their flow entirely at its point of diversion.

19 Fish species, such as o'opu, gobies require access to
 20 the ocean to complete their life history, and the
 21 brief periods during freshets, when water spills past
 22 the ditch, are unlikely to be of sufficient duration
 23 to allow upstream migration of juveniles.

24 Downstream migration of adults or larva
 25 would also be affected by flow diversion into the

ditch, resulting in species lost out to the irrigated
 fields.

So in your report you did recognize that
 these particular diversions impeded recruitment.
 Isn't that right?

A At the time I wrote this, this was my
 understanding. When I did my initial surveys, I only
 found 'opae up there. And in my experience with
 other streams, including the Lumahai and Hanalei, is
 that the gobies can migrate, but we've subsequently
 learned that there is an elevational component to
 which species will go to which elevation.

And so here, this first part, I was
 speculating, based on my knowledge at the time, as to
 why I didn't find the other species. I did not find
 the o'opu alamo'o up there, which is the Lentipes,
 which subsequent surveys by DAR, as I understand,
 have found them in considerable numbers at higher
 elevations. I did not encounter those at this
 particular time in this particular stream.

I still agree with the second part of that
 that when you have reproduction in the streams, that
 the larvae, as they're drifting downstream, will go
 into the ditches.

Q Thank you for clarifying that.

1 I also -- during your direct testimony
2 today, Mr. Schulmeister asked you about approximate
3 infiltration rates for Waikapu Stream and 'Iao
4 Stream. Do you recall that?

5 A I recall a discussion. All of my
6 information came out of Dr. Oki's testimony.

7 Q The only reason I raise that is because, as
8 I mentioned earlier, in paragraph eight of your --
9 wait -- in paragraph seven of your written testimony
10 it says: Not being an expert in groundwater
11 hydrology, I do not address the time that might be
12 required to assess streamflow losses in these
13 streams, and/or any gains or losses. Do you see that
14 paragraph seven in your testimony?

15 A Yes, I do.

16 Q And based on your written testimony that
17 was submitted, isn't it true that you don't have a
18 basis to speculate about the infiltration in 'Iao and
19 Waikapu Streams?

20 A I was trying to be fairly specific about
21 the source of my information, and I did believe
22 that -- I assumed the rates from the other streams
23 that Dr. Oki had developed with his preliminary
24 information could reasonably be applied to those
25 others.

1 Now, how accurately that is -- Dr. Oki
2 doesn't even know what the rates are in the streams
3 where he got the information from to any specificity,
4 so you rates of infiltration in the other streams
5 could either be lower or substantially greater.

6 Q And so just to be clear, the information
7 was based on Dr. Oki's testimony, not having gone
8 into Waikapu in the lower reaches or anything like
9 that?

10 A I have seen the lower reaches of the
11 Waikapu, but I have no other direct information other
12 than what is in Dr. Oki's testimony.

13 Q Thank you for clarifying that.

14 I also wanted to follow up on another point
15 that Mr. Schulmeister raised. During your direct
16 testimony today he asked you for a cost estimate of
17 some of the follow-up studies that Dr. Benbow had
18 mentioned yesterday. Do you recall that?

19 A Yes. I gave a wild ballpark, not knowing
20 the actual scope of work, just estimating based on
21 the types of studies that were discussed by
22 Dr. Benbow.

23 Q And I just wanted to make sure we were
24 clear on that.

25 A I'm not going to provide a proposal.

1 Q Also with regard to that cost estimate, you
2 mentioned that there would be a need to collect
3 additional baseline data. Do you recall that?

4 A Yes.

5 Q Do you know what current -- well, what
6 baseline data is currently available on these
7 streams?

8 A Only from my discussions with Mr. Ford and
9 what I may have learned in this proceeding. I
10 understand there's a lot of work that Dr. Benbow has
11 done, whether that can be used as baseline
12 information remains to be seen in the context of how
13 quantitative his data is, and whether he has
14 established replicated study sites over time. It's
15 possible that that information could be usable in the
16 broader sense.

17 My understanding right now is that baseline
18 data for the purpose of evaluating the effect of
19 recruitment and on the upstream populations is
20 extremely limited.

21 Q But you're not clear on the exact extent of
22 all of the baseline data that is available for these
23 streams?

24 A To my understanding, it would be on the low
25 end.

1 Q But you're not exactly sure?

2 A It's only certain things that I'm really
3 sure of, and that's not one of them, no.

4 Q Mr. Schulmeister also asked you about some
5 of the species that you observed below the diversions
6 in the various streams. Do you recall that?

7 A I believe I offered some opinions of what I
8 had seen in my brief visits to the streams.

9 Q And I just wanted to clarify, because I
10 thought your testimony yesterday was that when you
11 went up, you didn't actually get into the streams,
12 that John Ford and Bob Kenzie hopped in the streams,
13 but you stayed out and observed?

14 A That was in the upper Waikapu. I did
15 observe the lower Waihe'e from the road crossing, and
16 visually saw o'opu below the bridge after a freshet.
17 That was on the recession limb of a freshet, at a
18 flow of approximately five cubic feet per second.

19 And then in the lower Waiehu at the road
20 crossing, I actually did get in the water and
21 attempted to physically capture some of the species
22 that I observed there. And as I remember, I got at
23 least one 'opae. I saw several other species that I
24 was unsuccessful at capturing, but the water was too
25 shallow to physically snorkel.

1 But I did see several, what I took to be,
2 amphidromous species in there.

3 Q Do you know which species those were?

4 A The 'opae kala'ole. And I captured a
5 juvenile o'opu, which I provided to Dr. Kenzie for
6 later identification. I do not know how that was
7 keyed out or if it was.

8 Now, if I had my electro-fisher, I might
9 have been much more successful. But that was not the
10 purpose of the visit, it was merely an interest.

11 Not to be incomplete, I did visit the lower
12 Waikapu. And with some small dip nets, I did capture
13 several individuals of the, I believe they were
14 swordtails in one of the pools by the diversion
15 there, right there in town of Waikapu.

16 Q Mauka of the main highway there, of
17 Honoapiilani Highway?

18 A Correct.

19 Q I also wanted to follow up on your
20 discussion with Mr. Schulmeister about Dr. Benbow's
21 recommendation of 75 percent of the median flow. I
22 just wanted to clarify that -- well, was it your
23 testimony that Dr. Benbow said that he would do a
24 six-month or a one-year median?

25 A As I understood his testimony, he would

make a start of the Q₅₀, based on the longer term
period of record. And then based on a shorter term
period of record, he would redefine the Q₅₀ and
provide a different level of flow for the subsequent
six months to a year.

Q I just wanted to clarify. I think we're
almost pau -- actually there is one final thing.

I wanted to follow up on your scope of work
for -- and I understand, based on your earlier
testimony, that you're actually subcontracted through
Mr. Ford?

A Yes, I am.

Q And what is the scope of work that you've
been hired to do?

A I don't have that available to me. I'm
trying to go from memory. But I believe the scope of
work was a not-to-exceed amount of dollars for
services as assigned.

Q And do you remember what the not-to-exceed
amount was?

A No.

Q Would you be willing to provide a copy of
that scope of work to us?

A As far as I know, I'm willing. Whether I
will be able to or not, depends on the client. I'm

1 not sure. Typically correspondence, especially in
 2 something that may become an adversarial proceeding,
 3 is marked attorney/client privileged. So I don't
 4 know the status of that in this particular instance.

5 Q Would you be willing to check? Mr. Ford
 6 provided a copy of his scope of work yesterday, I
 7 believe it was. Are you willing to check with Mr.
 8 Ford, and assuming that he's agreeable, will you
 9 provide a copy to the Commission and the parties?

10 A I will provide everything that I am allowed
 11 by the client to provide.

12 Q Thank you very much. I have no further
 13 questions at this time.

14 HEARINGS OFFICER MIKE: Let's take a
 15 five-minute break.

16 (Recess taken.)

17 HEARINGS OFFICER MIKE: Before we cross.

18 Ms. Sproat, those two publications you were referring
 19 to on past studies by Mr. Payne will be submitted as
 20 A-182 and A-183. Mr. Van Dyke.

21 CROSS-EXAMINATION

22 BY MR. VAN DYKE:

23 Q Good morning, Mr. Payne. My name is Jon
 24 Van Dyke, Special Deputy Corporation Counsel
 25 representing County of Maui, Department of Water

Supply. Thank you for your participation in this
 event and for your efforts to help us all understand
 how to sort through this.

When I was asking earlier during the voir
 dire portion, I asked a question -- let me just start
 with that -- which was designed to help us understand
 how you're combining the various testimony that
 you've been provided.

In your CV you have a section on company
 qualifications where you feature TRPA's efforts in
 teaching and using PHABSIM. TRPA offers training,
 workshops and university classes in the application
 of PHABSIM with microcomputer software developed by
 TRPA.

Do you see that under COMPANY
 QUALIFICATIONS?

A Yes, I have that here.

Q So to put it a little bit crassly, your
 company makes money teaching people how to use
 PHABSIM properly?

A Actually, I would say I generally cover my
 expenses or sometimes less than that, because I have
 a very strong interest in trying to see that these
 techniques are utilized properly, because I have
 benefitted over the years from applying these

1 studies.

2 As I mentioned I'm a strong believer in

3 these studies when they're done properly. For many

4 years I have run across these studies done

5 improperly, which reflects badly on the

6 well-performed studies.

7 So I have attempted to try to provide

8 instruction in the absence of any other available

9 instruction or nearly.

10 There really is only two other sources, one

11 being some materials and slide tape presentations

12 that are available from the instream flow group, who

13 is currently with the USGS. And another is

14 fundamentally a computer analysis class run by Utah

15 State.

16 So I try to teach on demand the greatest

17 range, all the way from study design, field

18 techniques, computer analysis, habitat suitability

19 criteria curve, development.

20 So the question about whether I make money

21 on it or not, it's hardly a lucrative business.

22 Q And I didn't mean to in any way impugn what

23 you were trying to do. Let me ask the question a

24 different way.

25 Your company does promote the use of

PHABSIM through its efforts to help people understand

how to use it properly?

A In the sense of promoting it, I offer

classes occasionally. A lot of times those classes

aren't filled to be able to trigger, to be offered.

I don't think "promote" is really a good description

of what I do. I allow the implementation of PHABSIM.

I like to see studies done, done properly.

Q So you don't promote PHABSIM?

A I'm trying to understand your definition of

the use of "promote".

Most of the times when I'm in a proceeding

where there is either a request for a proposal from a

client, or there is a scoping session on how to

evaluate a particular project, the issue of the

different tools comes up, and based on the consensus

of the group, then a study design is crafted.

And in many cases those study designs

include the application of PHABSIM. In some cases

they don't. So if they are included, then they would

be implemented.

Q Thank you.

And your company has also developed a

unique software RHABSIM that is an adaptation of

PHABSIM. Would that be a proper way to describe it?

1 A Yes, I suppose. I've done that twice. The
 2 first time I did it was about 1984, I believe, '85,
 3 when PHABSIM was only available on main frame
 4 computers, if you provided a magnetic tape to a CDC
 5 cyber computer at wherever you had access. I had
 6 access at Humboldt State University. Then you could
 7 utilize the computer programs PHABSIM.

8 On my own, because the links were down to
 9 Humboldt State very frequently, I went to the source
 10 code of PHABSIM and reprogrammed it to run on the
 11 microcomputer technology that was available at the
 12 time, so I was not dependent on other, on that
 13 machine to run my programs for clients.
 14 I also made that commercially available to
 15 anybody that wanted it in an attempt to recover some
 16 of my overhead cost.

17 As microcomputers became more
 18 sophisticated, I did another version which I called
 19 RHABSIM, which actually broadened the application of
 20 PHABSIM by putting the physical habitat modeling
 21 together with the criteria, together with the habitat
 22 time series, which the original PHABSIM software did
 23 separately.

24 So I have that package, which was an
 25 enhancement of the original program, and I have sold

1 that commercially. Right now I'm a generation behind
 2 on the operating software with XP and Vista, so I'm
 3 giving the program away for free.

4 Q Thank you.

5 In paragraph eight of your written
 6 testimony in this proceeding, sentence number three,
 7 you tell us, referring to PHABSIM, that the method is
 8 not simple to implement properly and it is relatively
 9 easy to generate unreliable or even spurious results.

10 To begin with, could you explain for us
 11 what the difference between unreliable results and
 12 spurious results would be?

13 A Unreliable would be a lesser degree of
 14 spurious.

15 Q Does spurious imply some motivation to
 16 misuse the procedure?

17 A Not at all, no.

18 Q It just implies greater stupidity or
 19 ineptness?

20 A I wouldn't characterize it that way. It
 21 merely means that you can do things incorrectly where
 22 you might get misleading results, and you can do
 23 things so incorrectly that you can actually be in a
 24 highly erroneous analytical situation. It's
 25 typically done inadvertently, as I mentioned, because

1 it is a difficult program.

2 Q And you just used the term "highly

3 erroneous". So is that more or less the same as

4 spurious, highly erroneous?

5 A It would probably be a continuum.

6 Q Which is worse, spurious or highly

7 erroneous?

8 A Well, spurious is worse. Disastrous would

9 be beyond spurious.

10 Q Thank you.

11 Now, two days ago -- I believe you were

12 here, but I'm not entirely sure -- Mr. Ford described

13 the aquatic biologist as crabs in a bucket, in terms

14 of how they relate to each other.

15 Do you remember his testimony along those

16 lines?

17 A I heard he said that. I thought it was

18 funny, but I didn't really understand what it meant.

19 Q Do you disagree with that characterization?

20 A Since I don't really know what it means, I

21 can't say I agree or disagree with it.

22 Q You've seen crabs in a bucket in your

23 lifetime?

24 A I've had crabs in a bucket and have had

25 crabs pinch me, yes.

1 Q And have you observed how crabs behave with

2 each other in a bucket?

3 A They tend to be scrabbling around.

4 Q When one tries to climb out, do the others

5 help?

6 A No.

7 Q Do they sometimes interfere when one is

8 trying to get out?

9 A If they're all trying to scrabble around,

10 yes, they can interfere.

11 Q So they get in each other's way, either

12 purposely or inadvertently?

13 A I can't get into the brain of a crab to

14 assign motivation.

15 HEARINGS OFFICER MIKE: It's a very small

16 space.

17 Q (By Mr. Van Dyke): Obviously, aquatic

18 biologists have brains, that's clear. Is their

19 behavior in some way comparable in that they get in

20 each other's way, whether inadvertently or purposely

21 from time to time when working together?

22 A There are always disagreements and

23 controversies, lack of consensus among the range of

24 aquatic biologists.

25 Q And the final sentence of yours in

1 paragraph eight is one where you're critical, perhaps
2 even highly critical of other aquatic biologists.

3 Is that a fair characterization?

4 A No. It would be not aquatic biologist, but
5 the PHABSIM modelers and the individuals that
6 prepared this report.

7 I have tried to craft this to convey my
8 concern without being overly insulting. As I
9 mentioned, there are on-going relationships and
10 considerations of future work together, and it does
11 not do to alienate people you may be needing to work
12 with in the future.

13 So that may not be the most artfully worded
14 paragraph, but that's what I was trying to do, convey
15 my concern without being overly critical.

16 Q And when you were being questioned by Mr.
17 Schulmeister earlier this morning, he was addressing
18 this same sentence. And there was some discussion
19 about a letter that you and Mr. Ford had prepared
20 regarding the USGS' efforts to use PHABSIM.

21 Do you recall that?

22 A Yes, I do.

23 Q And according to my notes, you said, with
24 regard to the letter, that this wasn't the proper
25 forum to discuss it because perhaps you, yourself,

1 misunderstood what they were trying to do, and that
2 you seemed to sort of be cautious about the comments
3 you made in that letter.

4 Is that correct?

5 A The comments that I made in the letter were
6 as factually accurate as I could make them. I am
7 trying to work within the constraints of working
8 cooperatively and expressing my concerns. I would
9 hope that -- I left an avenue open that I could be
10 incorrect. But so far there has not been the
11 interaction between me and USGS, because of the
12 nature of the respective proceedings to accomplish
13 that.

14 I recommended on the very first that this
15 whole process would proceed more smoothly if it could
16 be cooperative. But there always different concerns
17 and different risks that have to be weighed by the
18 parties as to which process would be in their best
19 interest. And so I have no say over really how that
20 should proceed. I have my preferences and then I
21 have the realities of the situation.

22 Q But is it your testimony that your views of
23 the USGS approach could be incorrect?

24 A Yes.

25 Q Could I suggest then that we remove that

1 last sentence of paragraph eight from your testimony
2 if you don't think that it necessarily is accurate?
3 A No, I believe that that statement is
4 accurate.

5 Q So your testimony is that you're not wrong.
6 Might you be wrong?

7 A There is -- no, actually, no.

8 Q So now you're withdrawing your earlier
9 testimony that you may have misunderstood the USGS
10 approach and you might be wrong?

11 A I'm trying to be diplomatic and there is no
12 good answer either way to say.

13 Q This is not a time for diplomacy, but a
14 time to find out what is going on; what the truth is.
15 That's what we need your testimony for.

16 HEARINGS OFFICER MIIKE: Mr. Payne, why
17 don't you just read the part of that sentence that
18 starts with "I"?

19 THE WITNESS: I cannot conclude that they
20 are sufficiently conversant with the numerous
21 technical aspects of the method for their work to be
22 taken on faith.

23 HEARINGS OFFICER MIIKE: To me that sounds
24 like -- I would interpret that to mean that what he's
25 saying is that I cannot conclude that that thing was

1 done correctly. Which I think would be general and
2 broad enough to include the fact that he might be
3 wrong. So I don't really see a need to take that
4 off. Take it and argue your case on that in any way
5 you want, but he is expressing an opinion.

6 MR. VAN DYKE: Yes. And that's all I was
7 trying to determine, whether he is sticking by this
8 opinion or not.

9 HEARINGS OFFICER MIIKE: You were asking
10 him to withdraw it.

11 MR. VAN DYKE: But it is a pretty strong
12 statement. Even with the attempted diplomacy, this
13 is a strong statement.

14 HEARINGS OFFICER MIIKE: I would rather
15 have experts who have strong opinions than those who
16 say they don't have any.

17 MR. VAN DYKE: If he wants to stand by his
18 opinion, that's fine. But earlier he did say he may
19 have misunderstood what the USGS is trying to --

20 HEARINGS OFFICER MIIKE: Well, all of that
21 is in the record.

22 MR. SCHULMEISTER: It's also irrelevant,
23 because his opinions were for the East Maui study.
24 This is West Maui, and there is no West Maui study.
25 So beyond the relevance of what is to be decided in

1 this proceeding.
2 HEARINGS OFFICER MIKE: No, he's saying,
3 it's based on his past preview of USGS studies, he
4 doesn't have that much confidence on the application
5 of their work on this study. I think that's a true
6 statement. But anyway, I think we should move on.

7 MR. VAN DYKE: Thank you.

8 Q In the next paragraph, paragraph nine, you
9 point out, as you've said also in your oral
10 testimony, that's PHABSIM method as a whole remains
11 unvalidated for Hawaiian streams and aquatic
12 organisms.

13 Now, please correct me if I am wrong, but I
14 believe you testified yesterday that the PHABSIM has
15 been validated only for three species in the entire
16 world. Is that correct?

17 A To my knowledge, that's correct.

18 Q But it's been used hundreds, thousands of
19 times; is that also correct?

20 A Yes, that is.

21 Q And with regard to many other species,
22 would that also be correct?

23 A That is correct, yes.

24 Q And is it your testimony that whenever it's
25 used for any species other than these three that have

1 been validated, that it is inherently unreliable?

2 A It relies on the assumptions that are made
3 that relate the physical parameters that are measured
4 in the model with the assumed population responses of
5 the target organisms.

6 And so everyone that participates in one of
7 these studies is well aware, or if they're not they
8 should be, typically they are well aware, that there
9 are weaknesses in the modeling for species that have
10 not been validated, and that that should be
11 considered when they're making decisions based on the
12 results of the PHABSIM analysis.

13 Q And when you talk about validation -- and
14 I'm sorry if I'm repeating earlier questions -- but
15 just to quickly -- to validate something, does that
16 mean that you look, after the fact, to see whether
17 your predictions were accurate?

18 A Yes.

19 Q And so if one of these hydroelectric plants
20 had been built in East Maui, for instance, which you
21 wrote about in 1988, then you could go back in and
22 see whether you -- and if they followed your
23 recommendations, you could go back in and see whether
24 the 'opae were still there and that would be a
25 validation?

1 A That would be a partial validation of the
2 recommendation, but it would not be a full validation
3 of the PHABSIM which requires an assessment of the
4 habitat index over a range of flows.

5 So a full validation would require that
6 flows be released in a controlled manner and then
7 studied over time so that you can have more than just
8 one data point. Because for a hydroelectric project,
9 there's typically a fixed release.

10 So on this curve in Exhibit 1 at the
11 bottom, you would only be looking at a single
12 potential point on this habitat index function.

13 Q In paragraph 11, third sentence, you say,
14 you refer to: My personal observation that native
15 aquatic species are present in these streams after
16 many decades of flow diversion.

17 Now, could you tell us whether you're
18 talking about all of the Na Wai 'Eha streams when you
19 make that statement?

20 A No, I'm not talking about all of the Na Wai
21 'Eh Streams. That statement should be -- when I
22 wrote that, I was actually thinking of my overall
23 knowledge of species distribution, and also thinking
24 of the east and west Wailuaiki.

25 I have not seen -- this would be incorrect

to imply, as this does, that I have seen and observed
all these organisms in the Na wai 'Eha streams.

Q So this is misleading, because the previous
sentence refers to the streams of Na Wai 'Eha?

A I would agree with that, yes.

Q Have you observed the Na Wai 'Eha streams
with regard to the presence of native aquatic
species?

A I have been on the upper Waikapu and have
seen 'opae, and I have been in the Waihe'e and seen
the native o'opu.

Q And Mr. Ford testified about those visits
as well. And I believe his testimony was that he saw
adults but not the range of individuals that one
might see in a more robust population. Is that
correct?

MR. SCHULMEISTER: Object, lack of
foundation, assumes facts different from what
Dr. Ford testified.

HEARINGS OFFICER MIIKE: Rephrase it. I
know you're focusing on that, but really that is sort
of like, not quite as spurious, but sort of like a
not necessary precondition of a sentence, because
he's focusing on the computational methods.

But I can see why you're concerned about

1 the conclusion of that, but really the whole purpose
2 of that is to discuss the computational methods.
3 This was sort of like a -- I don't know what the word
4 you choose for it -- but it was not necessary for him
5 to put that in there.

6 But with that aside, go ahead, Jon.

7 MR. VAN DYKE: Can we remove it?

8 HEARINGS OFFICER MIKE: If you want to,
9 sure.

10 Q (By Mr. Van Dyke): Would you agree, would
11 you remove that sentence, Mr. Payne, that you've told
12 us was misleading?

13 A I would modify that to leave in the
14 "despite" and add in, where it says, "these streams",
15 replace "these" with "several Maui streams".

16 So replace "these" with, "several Maui
17 streams after many decades of flow diversion," to
18 keep that from being misleading, to prevent that from
19 being misleading.

20 Q Are you testifying that what might be the
21 case in one Maui stream, can be extrapolated to
22 another Maui stream?

23 A I would say that that could be possible,
24 yes. You can do generalized extrapolations of one
25 stream to another.

1 Q And that's been your experience, your
2 empirical observations, that streams on Maui are more
3 or less fungible, interchangeable?

4 A I did not testify to that. You asked me if
5 it could be extrapolated. I said it might be to be
6 extrapolated. I have not done enough observations
7 myself to come to any definitive conclusions. I have
8 only seen what I have seen.

9 Q When you went to the upper Waikapu region,
10 did you see biota, fauna that you would describe as
11 having biological, ecological integrity in terms of
12 having a full range of intergenerational individuals?

13 A That's why that "despite" is in there.
14 Because you just had to define yourself what overall
15 biological and ecological integrity actually means.
16 That's a very imprecise term that requires a lot more
17 description.

18 So I was just barely attempting to
19 characterize the fact that those words are very
20 imprecise.

21 Q Was my definition a logical and adequate
22 one for those terms?

23 A No, it would be incomplete.

24 Q Could you give us your preferred definition
25 of overall biological and ecological integrity?

1 A Not on the spur of the moment, no. There's
2 too many factors to think about. There's been books
3 written on what that means.

4 Q Do you agree or disagree with Mr. Ford when
5 he testified that he only saw adult individuals when
6 he visited the upper reaches of the Waikapu Stream?

7 A He saw what he saw, and he related what he
8 saw to me, so I have no basis to dispute that. I
9 didn't do any of my own observations deeply. I saw
10 'opae in the ditch that were clearly visible.

11 Mr. Ford put on his wetsuit and snorkel,
12 along with Professor Kenzie, and they both got in and
13 snorkeled and made much more extensive observations.

14 Q So when you use the term "my personal
15 observation", you're relying on Dr. Kenzie and Mr.
16 Ford's observations?

17 A No. And I didn't testify to that. I have
18 made my own personal observations and I have
19 described them to you.

20 HEARINGS OFFICER MIIKE: I have a solution
21 here. Let's strike all of this. I'm going to strike
22 the "despite" part of the testimony, because it says
23 that he's only going to discuss the computational
24 method. And if that is so, then he's just addressing
25 the 75 percent of annual median flow. Because really

1 he talks more about the method, than why people have
2 not used such a method.

3 So I don't want to get into prolonged
4 discussion about this and that. There's been ample
5 discussion elsewhere about that. So simplest way,
6 limit your testimony to what the computational
7 method, which is what you discuss.

8 MR. VAN DYKE: So we strike --

9 HEARINGS OFFICER MIIKE: Strike the

10 "despite", and when what is left is: "I only discuss
11 here", leaving unsaid any reference to the
12 biological, ecological integrity of the water.

13 MR. SCHULMEISTER: I just want to note this
14 is over my objection.

15 HEARINGS OFFICER MIIKE: Okay, all right.

16 MR. VAN DYKE: Thank you, thank you very
17 much.

18 Q Just a couple more questions. In paragraph
19 14 you refer, in line two, of paragraph 14, to
20 multiple instream flow values, when you're talking
21 about the DFA process.

22 I just wonder if you could help us by
23 explaining what you mean by the word "values" in that
24 phrase?

25 A It would include others, such as aesthetics,

1 recreation, fishability, harvest by Native Hawaiians.
2 Those are all instream flow values.

3 The state Water Code defines, I believe,
4 nine instream flow values, and I believe several of
5 those could be incorporated into a DFA.

6 Q Thank you, very much.

7 I'm now going to refer to Exhibit A-160,
8 which is a letter you wrote on June 10th, 2003 to
9 Gordon Tribble.

10 Do you have a copy of that?

11 A I do have a copy. Let me find it. Okay, I
12 have it.

13 Q And, of course, this refers to the East
14 Maui streams rather than the west, the Na Wai 'Eha
15 streams that we're talking about in this hearing, but
16 I just wanted to ask about some language in paragraph
17 two where you say: The single greatest impact of the
18 East Maui irrigation development on aquatic fauna has
19 not been the amount or timing of diverted flow but
20 diversion structure capability to totally dewater
21 streams.

22 And then next: Dewatering is accomplished
23 through the frequent use of perforated concrete
24 bridges as stream crossings over the cross-island
25 canals.

In Na Wai 'Eha, have you observed the
diversion structures that are used to divert water
from the streams into the ditches?

A Several of them, yes, I have. I have not
seen all of them.

Q And could you describe for us the ones you
have seen and whether they meet the criticism that
you have in this letter?

A They would be substantially similar. They
are constructed more of steel grates that are
parallel with the flow where the water from the
stream drops directly into the canal, and they have
the capability of taking the entire flow that's on
the surface at that time. There is probably some
leakage around the structures.

Q And is it your testimony that these
diversions are inappropriate in terms of proper
maintenance of stream biota?

A By any means that you dry up a stream, that
does not contribute to the maintenance of aquatic
biota, these are very effective at drawing up
streams.

Q And are you aware of other, mechanisms for
diversion that would be -- would have a less of an
impact in reducing the stream biota?

1 A Yes, I am.

2 Q Could you give us an example of such other

3 diversion devices?

4 A Anything that would provide a continuous

5 pathway for migratory organisms around those types of

6 structures would help for the migration. But if

7 you're going to be taking all of the water, you would

8 have to change the schedule of releases and the

9 mechanisms of releases to prevent the drying up of

10 the streams.

11 These particular structures could be

12 modified in some ways to provide a flow, if that were

13 the decision. Some of the grated areas could be

14 blocked off. A valve could be opened within the

15 ditch to return water. There would be various

16 mechanisms available to provide water.

17 Q Thank you very much. I have no further

18 questions.

19 HEARINGS OFFICER MIKE: Mr. Mancini.

20 CROSS-EXAMINATION

21 BY MR. MANCINI:

22 Q Just two questions, Mr. Payne.

23 You testified in response to a question by

24 Mr. Schulmeister concerning the loss rates per mile,

25 the Waikapu Stream. Do you recall that?

1 A Yes, I do.

2 Q And my recollection was you indicated that

3 the loss rate you recalled was one million gallons

4 per mile. Do you recall that?

5 MS. BUNN: Objection, misstates the

6 testimony.

7 Q (By Mr. Mancini): What was your testimony,

8 if you recall?

9 A I believe, looking at Dr. Oki's testimony,

10 that there was a loss rate in some of the streams at

11 approximately one million gallons per day, per mile.

12 Q That testimony didn't relate specifically

13 to the Waikapu Stream? If you recall.

14 A I have no information for the Waikapu

15 Stream.

16 Q Do you recall whether that was a net loss

17 after the gains? Do you know what I'm referring to?

18 A No.

19 Q During the period of a mile there would be

20 loss and gains. I'm trying to determine whether

21 your recollection was that that was a net loss?

22 A I believe it would be net loss, because if

23 there were gains -- you're getting beyond my area of

24 expertise. I would have to speculate.

25 Q Let me get back to your area of expertise.

1 You had testified, best I understood your
2 testimony, there's certain need for consistency of
3 flow, both with regard to the biological study and
4 relative to control releases relating that

5 Dr. Benbow's adjusted 75 percent would be provide a
6 consistent flow.

7 My question is, how in other jurisdictions,
8 with your experience, does one get a consistent flow?
9 One can limit the takeout, but one can't limit the
10 input.

11 My question is: How is this accomplished
12 in other jurisdictions?

13 A Well, you can use the takeout to try to
14 control what goes by if the actual input is variable.
15 If you wanted to provide a consistent flow, you could
16 use either a storage or diversion structure to
17 fine-tune the difference between the inflow and the
18 outflow.

19 Q I can understand the storage structure, but
20 I can't understand the other method other than the
21 storage structure. Can you explain that?

22 A I can try to provide a hypothetical.

23 Q Sure.

24 A That if you were trying to provide ten CFS
25 and there was 20 coming down the stream, that you

could divert the other ten CSF. And then if the
inflow dropped to 15, then you would only divert five
to provide the ten down below.

Q You would have to have a consistent
quantification of that inflow, wouldn't you, to do
that?

A Yes. And you could also do it by water
level, you can do it indirectly. There are ways to
try to fine-tune that.

Q Thank you.

HEARINGS OFFICER MIIKE: But that would
only work in cases where your flow is at the minimum
in the stream, because in the examples that you
applied to Dr. Benbow, if you do a 75 Q₅₀ in the
streams, there's still going to be a time in which
there would be insufficient flow below what you would
want to maintain.

THE WITNESS: That's correct. If the
inflow is less than your target flow, you cannot make
up the difference.

HEARINGS OFFICER MIIKE: But the use of the
Q₅₀ says that on the average it's going to be the Q₅₀,
but it also means that there are certain times that
it will below it?

THE WITNESS: Depending on the slope of the

1 flow exceedence curve, it could be very limited time
 2 that you would actually have the Q₅₀, because the
 3 hydrograph would be transitioning through that level.
 4 HEARINGS OFFICER MIIKE: I guess the other
 5 thing that's missing in that discussion is that we
 6 are talking about as though the Q₅₀ flow would be the
 7 only flow in the stream. But in the regulation under
 8 the Water Code, one, you must prove
 9 reasonable-beneficial use of diversions.

10 So there may be much more in excess over
 11 your Q₅₀ flow, for example, than can reasonably and
 12 beneficially be used. And those would remain in the
 13 stream.

14 So just in terms of the Q₅₀ flows, the
 15 modified Q₅₀ flows, it would again be either further
 16 modified, because there would be de facto in the
 17 streams water that is not being used even though it
 18 may be permitted or may be reasonable and beneficial.
 19 So it gets a little be more complicated, I think.

20 But the whole point is that the only way
 21 you can really monitor this is over a certain period,
 22 that you sort of hit the average that has been
 23 allowed to be either diverted or be kept in the
 24 stream.

25 It's not so much that the stream is the

1 default mode, it's the -- do you see what I mean?
 2 It's not like only so much goes in the stream and no
 3 more. It's only so much goes off the stream that is
 4 allowable and everything else stays in the stream.

5 THE WITNESS: I believe I'm following you.
 6 It depends on the capability of extracting flow.
 7 Basically the Q₅₀ is the Q₅₀. You can only refine it
 8 with additional information over time, or you can
 9 shorten your definition of what period of time you
 10 would generate a Q₅₀.

11 But a Q₅₀ for any stream, unless there is
 12 some long-term trends, which are entirely possible,
 13 that the Q₅₀ is a fixed amount.

14 HEARINGS OFFICER MIIKE: Let me ask you,
 15 for purposes of your studies, when you said you
 16 needed constant flow, you couldn't really see how
 17 Dr. Benbow's method, because there's variation in
 18 there all the time, on top -- I suppose what you
 19 meant by that was that you sort of needed a constant
 20 flow in terms of what you deliberately put in the
 21 stream, but you have no control over the variations
 22 over rainfall and dry periods, things like that?

23 THE WITNESS: That's correct.

24 HEARINGS OFFICER MIIKE: Now, you're also
 25 going to have the variation about how much is being

1 used properly offshore and how much must remain in
2 the stream. So that variation added on top of the
3 natural variation would still allow you to do these
4 studies?

5 Because you're never going to see a
6 constant flow at any one time, you're going to see an
7 ebb and flow all of the time.

8 THE WITNESS: That's correct. My testimony
9 about Dr. Benbow's proposal would be separated, you
10 would always have that variability going on.

11 What I was commenting about his approach,
12 as I understood, it was the difference between
13 picking a flow, and then to the best of your ability,
14 have that be the flow for the period of your study.

15 So that you try to isolate the effect of that
16 particular flow.

17 If you were change that flow during the
18 course of your study, you would add additional
19 variability. And so at the end of the study, you
20 would not have any real idea, because of that double
21 variability, as to what the effect would be of that
22 flow.

23 HEARINGS OFFICER MIKE: Okay. I think I
24 understand what you're saying is that you really need
25 a constant variable and then you can try to account

1 scientifically for the variation, because you need to
2 isolate one. That's fine when you're talking in the
3 abstract of Q₅₀ or percent of that. But even your
4 description of this says even that particular flow is
5 not going to be constant, because 30 percent of the
6 time it's going to be less.

7 So even the amount that you would say that
8 I'm putting in as my constant variable, is not. So,
9 again I ask, how would one account for that in these
10 studies where you can come out with a valid result?

11 THE WITNESS: Let me try to provide an
12 example. Say your flow that you wanted to study was
13 five CFS. I don't know where that might fall as far
14 as percent of time, the Q₅₀ or 90 or whatever, say five
15 CFS.

16 You would design a release program that
17 when there was five CFS available, you would release
18 five CFS.

19 HEARINGS OFFICER MIKE: What if there is
20 more available?

21 THE WITNESS: If there's more available,
22 then the diversions would function to remove -- the
23 way they would normally operate. They would remove
24 the flows above five CFS to the extent that they are
25 capable. That imposes the five CFS.

1 HEARINGS OFFICER MIIKE: But, you see, the
2 reality of regulatory process is balancing of
3 interest. It won't allow that if the diversions
4 cannot reasonably and beneficially use all of the
5 remaining water above the five CFS.

6 THE WITNESS: They would not use all of the
7 available water, but there would be a portion of it,
8 so a greater --

9 HEARINGS OFFICER MIIKE: But they would not
10 then be diverted either. You see what I'm saying?

11 THE WITNESS: No.

12 HEARINGS OFFICER MIIKE: In the Waiahole
13 case we set an IIFS for the streams. We went through
14 the permit process to say the amount of water
15 transported to leeward side would get X.

16 And in setting the IIFS we had said what
17 would be available for offstream uses. And then on
18 top of that, the permittees had to come in and
19 justify their amount.

20 So we had amount available for permits,
21 amounts permitted. And then we also said you may
22 have a permit for five mgd, but you may only be using
23 three. We are not going to allow you to take that
24 two remaining and put it in the ditch somewhere out
25 on the leeward side. So you only use what you can

1 reasonably use up to your permit amount, with a
2 variation on moving means.

3 So that meant that even though the Waiahole
4 Stream may have had an IIFS of five, which would keep
5 constant in that particular case, in reality, the
6 amount going in there was far more than that, because
7 the leeward users were not using all of the water
8 that they had.

9 So that even in the Waiahole case, the
10 researchers that are doing that are being faced with
11 a variable of flow. Ideally -- well, not ideally --
12 ideally for the researchers it would have been the
13 IIFS we set; but in reality, it's not.

14 So I really don't know. I haven't followed
15 up specifically on those studies, I don't know how
16 they're accounting for that, but I think that's an
17 issue for the studies here.

18 Mr. Moriwake has been trying to respond.

19 MR. MORIWAKE: I just wanted to point out,
20 just to be clear, that while Mr. Payne has been
21 qualified as generalist expert in instream flow
22 methodology, he obviously is not familiar with the
23 regulatory requirements of Hawaii law, and so to that
24 extent, whatever sort of testimony he may be
providing as to how things are done in Hawaii, is

1 purely speculation. Has no basis.

2 I guess, given hypotheticals, he can
3 discuss what his opinion is, but beyond that I think
4 he's venturing beyond his realm.

5 HEARINGS OFFICER MIKE: All I'm saying is
6 that I'm in his area of expertise. All I'm saying is
7 that the conditions where researchers say are ideal,
8 are never going to be applied here.

9 So I was just sort of like -- I shouldn't
10 say fishing -- but opining for how they would deal --
11 he probably can't answer that, but I just wanted to
12 impress upon them that it is not -- no matter what
13 happens, you're dealing with the real world of
14 regulation and balancing. And it is not as simple as
15 the stream gets this much and other people get this
16 much.

17 THE WITNESS: Yes. And to the extent that
18 I understand that, that is part of the background
19 variability. And my intention was hypothetical, if
20 you could possibly control for that five CFS to be in
21 there, or less, then you would be able to evaluate
22 the five CFS.

23 But to the extent you cannot provide that,
24 as you cited in the Waiahole case, then you have
25 additional variability. And this is what Dr. Benbow

was suggesting, that he would not provide five CFS,
he would provide something different every six
months. And so he's inducing variability that would
be unnecessary.

HEARINGS OFFICER MIKE: He's just further,
from your opinion, further compounding what you
thought could be designed in the usual way in which
you do these things?

THE WITNESS: Exactly.

MS. BUNN: We've been discussing this a lot
this morning, and I haven't objected, but I do think
that misstates Dr. Benbow's testimony.

He said that was an alternative, something
that could be considered, not that that is what he
would do or that was his recommendation.

His proposal recommendation was in his
written testimony. He was talking about possibility.
Yes, we could do this. This is one way. This is
another way. And it's been translated as he would do
this.

HEARINGS OFFICER MIKE: I beg to differ.
It was my questioning of him. And what I needed at
that time was that -- I didn't see how we could
implement that without further information upon what
he meant by that. And that he volunteered. I said

1 what are you talking about a moving mean, and he
2 volunteered that answer.

3 MS. BUNN: And he said that would be one
4 way.

5 HEARINGS OFFICER MIKE: But I think he
6 meant a moving mean. What he said was that I don't
7 know what the period I would take as the moving mean.
8 So that was the issue.

9 But anyway, it seems to me that in
10 designing a satisfactory -- a statistically or
11 significant, or however you want to define these
12 studies, no matter what, it's going to be
13 inordinately difficult.

14 And what popped in my mind was that's
15 probably how you use the PHABSIM study, even though
16 you've only validated it in three species. It's
17 another factor to throw into the pot of things about
18 how you make a decision.

19 You may have scientific uncertainty about
20 that, but it's not the scientists that make the
21 ultimate decision about the balance of instream and
22 offstream uses. And so just in terms of the decision
23 makers, we are more interested in the confidence you
24 feel in a particular method. And when we throw all
25 those factors together, how we come to a conclusion.

You talked about the DFA method as sort of
one way of doing it, but that's a little bit
different from we are -- in a sense that, in that one
you have stakeholder, and some of them may just stick
to their position and never reach consensus. But we
have to act in place of considering all of those and
we have to be the ones that make that decisions.

I don't have a problem with statistically
uncertainty or things like that about the PHABSIM or
any of how these things are being discussed.

We are going to come to a decision one way
or the other. And then, given those conditions, you
guys have to design studies that sufficiently answer
questions about biological availability, just in
terms of that particular issue.

Mr. Schulmeister, I'm sure you have -- Ms.
Bunn. Let's take a five-minute break.

(Recess taken.)

CROSS-EXAMINATION

BY MS. BUNN:

Q Good afternoon, Mr. Payne. My name is Pam
Bunn and I represent the Office of Hawaiian Affairs.
I just had a couple of questions about some of the
diagrams you were making yesterday.

In my notes when -- and I don't think it

1 was that particular Exhibit No. 1, but that's pretty
2 close. You talked about there being two components
3 to PHABSIM, the first being the hydraulic data
4 collection along stream systems with vertical
5 measurements.

6 And I assume that correlates to A up in
7 exhibit to your testimony, number one?

8 A In the broadest sense, I will accept your
9 characterization, yes.

10 Q Why don't you recharacterize it for me
11 correctly, please.

12 A This is a cross-section of a stream
13 representing the types of data collection that you
14 acquire, the water surface elevations in relation to
15 discharge and the patterns of velocity that you would
16 obtain at different discharges, and the bottom
17 profile and the substrated cover characterizations.

18 Those would all be components of the hydraulic
19 element of PHABSIM.

20 Q And the hydraulic element is one of the two
21 elements of PHABSIM, correct?

22 A Yes.

23 Q And the second element was the habitat
24 suitability criteria, correct?

25 A That's correct.

Q Now, in my notes it was under the hydraulic
data collection where I believe you said you used
three different levels of flow for calibration
separated by one logarithmic cycle, correct?

A That's the idealized design of calibration
for a PHABSIM model.

Q And that's because you can only extrapolate
within certain limits, and if you're going to
extrapolate, say, beyond 250 percent of high flow, or
beyond 40 percent of low flow, that extrapolation may
not be appropriate?

A Your objective with the one-log cycle is to
try to take potential error out of your hydraulic
calibration. And, for example, you wouldn't want to
have three flows, two of which are quite close
together and the other one is farther apart. Because
at that point you would only have effectively two
data points, and you can always draw a straight line
between two data points, and you would not have any
indication of the error in your measurements.

Because it's very difficult to get an accurate
measurement of the vertical surface of a flowing
stream.

So there will be inherent error. Typically
in the field techniques you will take multiple

1 measurements across a stream to try to derive net
2 water surface elevation at that respective flow. So
3 that induces error.

4 By having the three-log cycles, it let's
5 you assess the extent of error that you might have to
6 determine how reliable the hydraulic model could be.

7 Q So is it fair to say then that for the
8 proper application of PHABSIM, and in particular the
9 hydraulic component of PHABSIM, it's necessary, or
10 ideal, I think was your word, to have a calibration
11 by actual releases of water; and whether those
12 releases are the result of freshets or controlled
13 releases, it's necessary to have a range of actual
14 releases of water to calibrate your hydraulic model?

15 A Whether they're releases or whether they're
16 natural, you have to have those levels of flow to be
17 able to calibrate your hydraulic model, yes.

18 Q Now, does the calibration by use of actual
19 water in the stream, regardless of how it got there,
20 does that calibrate just for the hydraulic model, or
21 does that calibration also apply to the habitat
22 selection criteria, habitat suitability criteria?

23 A Only to the hydraulic model. The habitat
24 suitability criteria need a time component for the
25 biota to adjust. They are observations of fish made,

potentially several different flows. That gets
extremely complicated about how you do that. And I
think I've done enough damage to try to explain this.

Q I think you're helping now.

Is it fair then to say that with a range of
three actual release values that's used to calibrate
the hydraulic element of PHABSIM, that wouldn't take
the place of a PHABSIM analysis, correct? It just
calibrates the hydraulic modeling. And if you had a
large enough range with enough data points, you might
not even have to model the hydrology?

A The hydraulics.

Q The hydraulics?

A That's true. This method was developed to
try to use the power of hydraulic models to minimize
the amount of effort that it would take to do this
empirically.

Originally, prior to the computer model's
development, these sort of relationships at the
bottom of this Exhibit 1 had to be generated by
multiple measurements, up to ten visits to the stream
at different levels of the flow along the X axis of
this relationship to physically measure the habitat
index at those flows.

The hydraulic modeling allowed you to

1 simulate in between or to extrapolate beyond your
2 collected data, which typically requires three visits
3 to the stream instead of ten or more visits to the
4 stream.

5 Q So let me see if I understand. PHABSIM is
6 a modeling technique for when you don't have infinite
7 time and infinite variability of flow available to go
8 out and make actual measurements of each of these
9 things, correct?

10 A And infinite funds, yes.

11 Q And given that this is a way to model the
12 amount of usable habitat that might be available with
13 a given discharge?

14 A Yes.

15 Q And in order to correctly do the hydraulic
16 modeling part of the PHABSIM analysis, it is
17 necessary to have actual water in the streams at
18 appropriate levels to calibrate the hydraulic
19 modeling?

20 A I'm debating how much information to
21 introduce because --

22 Q Keep it simple, please.

23 A There are other methods to gather the
24 hydraulic data, including one of the most recent
25 popular approaches which is called two-dimensional

1 modeling. And in two-dimensional modeling you
2 acquire merely bed topography over broader section of
3 stream, say three or 400 feet of stream, you will do
4 the bed elevations. And then you could introduce
5 water, and the hydraulic modeling capability will
6 then propagate the depths and velocities up through
7 that channel. So that does not require multiple
8 measurements of flow. You need a rating curve at the
9 downstream end of that, which can actually be
10 developed in several different ways.

11 But in the broadest sense, you're correct,
12 to develop the standard one-dimensional hydraulic
13 models, you actually need physical water in the
14 stream to accomplish that.

15 Q Now, you said you had reviewed the EMI
16 application of PHABSIM. Were you aware that there
17 were no controlled releases to calibrate the
18 hydraulic model in the EMI study?

19 MR. SCHULMEISTER: You meant to say the one
20 that was done in East Maui, not EMI, right?
21 MS. BUNN: I did. I meant the East Maui
22 streams.

23 A Yes. I was going to try to clarify that as
24 well.

25 Q My apologies.

1 A I was aware that there were difficulties in
2 acquiring the hydraulic data for those studies, yes.

3 Q Were you aware of the reason for those
4 difficulties?

5 A To the extent of my knowledge, there was a
6 lack of agreement about how the parties would
7 participate in the study.

8 HEARINGS OFFICER MIKE: This has been
9 asked and answered several times.

10 MS. BUNN: Okay.

11 Q So just so I'm clear, the need for whether
12 it's controlled releases, freshets, whatever, actual
13 water in the streams to calibrate the hydraulic
14 modeling doesn't have any impact on the habitat
15 selection or suitability criteria, right? That still
16 is modeled?

17 A Habitat suitability criteria are derived
18 ideally from direct observations of your aquatic
19 organisms, and the physical conditions that they
20 occupy. And so that can be done at different levels
21 of flow.

22 But, again, it might require observations
23 over a wider range of flows. Because as I mentioned,
24 developing habitat suitability criteria can be very
25 complex, and you have to account for the influence of

availability of habitats on the shapes of your
curves.

Just, for example, if you're studying a
stream that doesn't have any depths greater than ten
feet, you have no idea what the suitability of depths
greater than ten feet might be. Or say if you have a
range of velocities that's not available, or if there
is bias in the range of what might be available. In
the study design you have to try to account for that.

Q Have you ever conducted or participated in
a DFA analysis?

A Yes.

Q How did it work out?

A It varied. The most recent one that I did
was for canoeing in the Roanoke River in Virginia.
And the components of that were fishability,
esthetics, fish habitat suitability for walleye and
various species. It had many components.

And when it was done, the participants were
very satisfied that they had identified a threshold
of flow below which canoeing was not a very fun
exercise. They did identify that higher flows would
probably be better for fish habitat, than just
strictly the canoeing criteria.

But we had a PHABSIM study on the remainder

1 of the river to describe the fish habitat
2 suitability, and that was very successful. There
3 have been other instances where it hasn't been
4 successful because of various reasons.

5 Q And I think that partially answered my next
6 question, which was how a DFA analysis would account
7 for one of the objectives being to provide for the
8 needs of the biota in the streams. Would that just
9 be by virtue of having aquatic biologists look at the
10 flow and say I think that's enough?

11 A That would be part of it, but usually you
12 don't just look at the flow, you try to breakdown
13 into its various components what the biologists are
14 judging when they say that flow is enough, you need
15 to say for what species. You might need data on the
16 average depth, as I mentioned, or other physical
17 characteristics.

18 The last thing you want to do is go out and
19 do a DFA and say here's the stream, what do you
20 think. The purpose of it is to try to breakdown
21 judgment into the components of a judgment, so that
22 it is not so subjective that it becomes more
23 objective, more replicable and more usable by
24 reviewing agencies.

25 The most common is the FERC. When you're

trying to use a DFA, it's very uncertain that if it's
based strictly on professional judgment, then the
FERC can't exercise their obligation to do an
independent review, because they have no basis for
that since they weren't there.

So it tries to quantify that in a much more
objective manner, but admittedly it will still
contain subjective elements.

Q I just had one last question.

When you said that the DFA method required
consensus, does it require unanimity? Like if one
party objects to the consensus reached by the rest of
the stakeholders, has DFA failed at that point? Does
it go to a hearing?

A I didn't say that it required consensus.

Often it doesn't result in consensus, because
different people look at different things, and they
have different objectives in their mind when they
look at things.

What it's designed to do is to bring more
information as to why they might disagree to provide
other parties the ability to judge how the different
parties reach their conclusions.

All it does is provide additional
information and to try to minimize the subjective

1 nature of what people look at when they see a stream.

2 Q I must have misunderstood then, because I
3 thought in response to one of Ms. Sproat's questions
4 you said that if there were no consensus, then it
5 goes to a hearing, which I imagine would be something
6 like this. And I guess I'm trying to understand what
7 a successful DFA looks like versus an unsuccessful
8 one.

9 I assume an unsuccessful one is one that
10 results in a hearing, but I could be wrong.

11 A That would apply to any of the instream
12 flow methods. Success can be defined in many
13 different ways. You can have a successful study and
14 an unsuccessful resolution of an agreement on what
15 the flow should be.

16 Q So is it --

17 HEARINGS OFFICER MIKE: You're going to
18 have to define for me a few questions soon.

19 Q (By Ms. Bunn): I guess what I'm trying to
20 get at is, does it result in a hearing when there's
21 not unanimity or when there's not consensus? Is
22 there some distinction between consensus and
23 unanimity? Can one party or one stakeholder force it
24 into a hearing?

25 MR. SCHULMEISTER: Object, compound.

HEARINGS OFFICER MIKE: I don't -- one
person, if they have standing, enforces it in a
hearing, so that's the answer. Really it's not for
him to answer that question.

MS. BUNN: Okay. I have no further
questions. Thank you.

HEARINGS OFFICER MIKE: Let's break for
lunch and come back to 1:35. I believe we're going
to start with Dr. Polhemus.
(Noon recess taken.)

HEARINGS OFFICER MIKE: Let's go back on
the record. Na Wai 'Eha, your next witness.
MR. MORIWAKE: Call Dr. Polhemus.

DAN A. POLHEMUS

was called as a witness by and on behalf of Hui Na
Wai 'Eha and Maui Tomorrow, was sworn to tell the
truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. MORIWAKE:

Q Good afternoon. Please state your name for
the record.

A My name is Dr. Dan A. Polhemus.

Q Dr. Polhemus, what do you do?

A I am currently the Administrator for the
Division of Aquatic Resources, Department of Land and

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

‘Iao Ground Water Management Area High) Case No. CCH-MA06-01

Level Source Water Use Permit Applications)

and Petition to Amend Interim Instream Flow)

Standards of Waiale‘e, Waiehu, ‘Iao, &)

Waikapū Streams Contested Case Hearing)

TESTIMONY OF JOHN L. FORD, M.S.

Personal Qualifications

1. I have B.S. and M.S. degrees in Zoology from the University of Hawai‘i at Mānoa, with an emphasis on tropical insular stream ecosystems. I have over 30 years experience in natural resources management, environmental science, and aquatic biological research throughout Hawai‘i, Oceania, Japan, China, and California. I formerly held positions as an Ecologist with the US Army Corps of Engineers Honolulu District, Fisheries Biologist and Senior Staff Biologist with the US Fish and Wildlife Service Division of Ecological Services in Honolulu, Pacific Islands Land Protection Coordinator with the US Fish and Wildlife Service Division of Refuges and Wildlife in Honolulu, Assistant Director of the Nature Conservancy of Hawai‘i, Deputy Field Supervisor with the US Fish and Wildlife Service Division of Ecological Services in Ventura, California, and Vice President of Geo InSight International. I am currently the Program Director and Senior Biologist for SWCA Environmental Consultants Honolulu, Hawai‘i office, and am responsible for overall company operations, research, and supervision of SWCA staff in the Hawai‘i and Guam offices.

2. I studied at the Hawai‘i Cooperative Fisheries Research Unit at the University of Hawai‘i at Mānoa under Dr. John A. Maciolek, and began research into the population biology of amphidromous species in streams of the Kīpahulu District, Haleakalā National Park in 1974 with Dr. Robert A. Kinzie III of the University of Hawai‘i at Mānoa. My Master’s research published in 1979 focused on the life history of hīhīwai in East Maui and Hawai‘i Island streams. Since then I have conducted research and assessments of native Hawaiian stream life in continuous and

intermittent streams throughout the Hawaiian Islands, including Kahoma, Honolua, Honokōhau, Makamaka ole, Kabakuloa, Waie‘e, Waiehu, ‘Iao, and Waikapū streams on West Maui.

3. I served on the State of Hawai‘i Natural Area Reserves System Commission under former Governor John Waie‘e, and for a brief period served as the Commission’s Acting Chairperson. I have also served on the State of Hawai‘i Department of Health Water Quality Standards Advisory Group, State of Hawai‘i Aquatic Invasive Species Advisory Group, Steering Committee of the Hamalei Estuary Baseline Study, Hawai‘i Water Resources Functional Plan Advisory Committee, and Hawai‘i Department of Health 208 Water Quality Planning Committee. I served as a guest lecturer at the University of Hawai‘i graduate-level limnology classes, and at The Kanehameha Schools and Hawai‘i State Department of Education. Throughout my career I have kept abreast of current research being conducted in Hawaiian streams by investigators in academia, government resource agencies, and the private sector including their work published in refereed journals, technical reports, agency databases and bulletins, and contract reports. I enjoy an excellent rapport with my professional colleagues from the US Geological Survey, US Fish and Wildlife Service, State of Hawai‘i Division of Aquatic Resources, Commission on Water Resources Management, Bishop Museum, and numerous universities who are engaged in the science of Hawaiian stream ecology, and carefully consider their research findings and hypotheses in my own work.

4. I have served as an expert witness as an aquatic biologist in Hawai‘i, and have published over 25 papers on various aspects of Hawaiian and Pacific island stream ecology, population biology of native Hawaiian stream animals, and instream flow issues. I have also authored numerous environmental assessments and impact statements related to freshwater stream issues in Hawai‘i and Oceania including resource mitigation and alternatives analysis; and natural area selection, design, and acquisition. My curriculum vitae and list of publications appears as Exhibit 1.

5. Within the past four years, my studies in Hawaiian streams have included assessment of instream flow issues in East and West Maui, long-term monitoring, and impact assessment of streams on Kāua‘i, Maui, O‘ahu, and Hawai‘i Islands. Outside Hawai‘i, I have conducted

ecological research in streams on Tutuila, American Samoa; Tahiti Nui; Chumk, Pohmpei, and Kosrae in the Federate States of Micronesia; Guam; Rota in the Commonwealth of the Northern Mariana Islands. These studies included baseline population assessments and impact assessment associated with hydropower and water supply development.

Engagement

6. SWCA Environmental Consultants was recently tasked by Cades Schutte LLP on behalf of Hawaiian Commercial and Sugar Company to evaluate the biology of Nā Wai 'Eha streams, and provide recommendations regarding the suitability of instream flows to sustain native aquatic animals. Our field work began in September 2007 and is projected to continue through the June 2008 is under my direction with assistance from Dr. Robert A. Kinzie III of SWCA, a noted expert on Hawaiian stream ecology, and Thomas R. Payne of Thomas R. Payne and Associates, a leading authority on PHABSIM instream flow modeling with over 30 years experience including directed applications of PHABSIM in East Maui and Kaua'i streams. To date, SWCA scientists have conducted longitudinal biological inventories primarily focused on amphidromous species throughout Waie'e, Waiehu, and Waikapū streams.

7. In our review of testimony provided by Dr. M. Eric Benbow in Case Number CCH-MA06-01, we have identified a number of concerns which we address in the following paragraphs.

8. We agree with Dr. Benbow on the following - surface diversions of streams remove water from the channel; stream flow can be reduced or intermittent in reaches below diversions; dry reaches can be temporary barriers to upstream and downstream movements of stream animals; and diverted streams that are largely dry during periods of prolonged low flow generally have reduced populations of amphidromous species. However, this is not to say that diverted streams have no populations of amphidromous species, and that such species do not surmount dams and diversion structures within their natural elevational ranges of dispersal. Dr. Benbow fails to acknowledge that there are many naturally intermittent streams in Hawaii where mid-

reaches contain standing pools during base-flow and drought conditions that provide ecologically important habitat for native amphidromous species.

9. The central question in the Nā 'Wai Eha issue is the value of the species affected by diversion of flow versus the value of the beneficial out-of-stream uses, not whether dams and diversions do or do not have some direct impact on aquatic animals.

10. Dr. Benbow definitively cites stream diversion as the "overriding factor impairing the biological and ecological integrity of diverted Central Maui streams..." (Benbow, paragraph 8). Yet throughout his testimony he does not acknowledge the potential direct and synergistic effects of stream channelization and realignment, alien aquatic species and their parasites and diseases, urbanization and excessive soil erosion, or changes to stream water budgets caused by alien riparian vegetation. We are not aware of any study that has definitively quantified the relative effects of dewaterment and channelization on native amphidromous species, nor are we aware of any validation study that defines the relationship of incremental changes in stream flow to the presence or abundance of aquatic species.

11. The terms "scientifically evident" and "ecological integrity" used by Dr. Benbow (paragraph 8) are not defined. No method for quantifying "ecological integrity" is provided.

12. Dr. Benbow (paragraph 9) does not indicate the distance below diversions where "most stream life eliminated".

13. Dr. Benbow contradicts himself (paragraph 10). He correctly states that the life cycles of native 'o'opu (gobies), 'ōpae (shrimp) and hūhūwai (snail) have "...specifically adapted to natural stream flow conditions..." But then he states, in the same sentence, that they therefore "...require continuous flow to link biologically the mountains (mauka) to the ocean (makai)." DAR, SWCA, and other investigators have demonstrated over the past decade that native amphidromous species are commonly found throughout windward and leeward naturally and artificially intermittent streams throughout Hawai'i. Therefore, Dr. Benbow's claim regarding the requirement for continuous flow to the sea seems to be unsubstantiated.

14. In paragraph 11, Dr. Benbow does not provide any data or give citations for studies that quantify the impact of ditches upon the larvae of amphidromous species in Hawai'i. No data are provided to show that available larvae, specifically those drifting in the coastal marine zooplankton, are influenced by flow conditions in streams. He does not provide data showing the importance of continuous stream flow as a cue to migration of post-larvae from the zooplankton, except on a small localized scale. He provides no data or citations to studies that quantify the effectiveness of freshets and flood flows in eliminating invasive or non-native species from Hawaiian streams.

15. Dr. Benbow provides no data or citations to studies that have quantified long-term changes to population size of native amphidromous species throughout Hawaiian streams (paragraph 12.) None of the amphidromous species in Hawai'i are listed as candidate, threatened, or endangered species.

16. Dr. Benbow provides no data or citations of studies that show how stream insects actually convert food and support the marine intertidal and riparian bird species (paragraph 13). The term "overwhelming conclusion" as used in this paragraph needs to be supported by references to the literature. Dr. Benbow gives no information as to which macroinvertebrates can serve as indicator species.

17. Dr. Benbow provides no data or citations of studies that show that intertidal habitats and offshore marine communities benefit from continuous stream flow (paragraph 14). In this paragraph the phrase "scientifically recognized" must be supported by references to the literature.

18. It is not clear in paragraph 15, whether Dr. Benbow means that the entire stream is missing aquatic communities below diversions, or only that a portion just below a diversion is affected. During periods of prolonged base flow and drought, SWCA has found that populations of aquatic invertebrates and amphidromous species are sustained in still pools within the streambed. In our studies, we have found that densities of native 'o'opu in such pools can exceed tens of fish per square meter, and that fishes naturally disperse out from these pools

during periods of continuous flow. Intermittently dry reaches serve as up- and downstream pathways for migration of amphidromous species when the channel carries water.

19. Dr. Benbow's assertion that cross-channel, grated diversion galleries are the most damaging type of diversion may be true (paragraph 16), although he provides no quantitative data that can support or refute his statement. In our studies in Honolulu, Waikapu, and Waie'e streams on West Maui, we found that native amphidromous species can and do surmount these structures to inhabit the upper reaches of the streams. Minor structural modification of these diversions might lead to increased success in upstream and downstream movement of native species. Based upon our findings in Kahoma Stream on West Maui, we believe it is possible that the concrete straightened channel in lower 'Iao Stream plays a far greater role in preventing the recruitment of amphidromous species than do periodic reductions in stream flow, though this suggestion must be verified by quantitative study.

20. Dr. Benbow (paragraph 17) uses the term "minimally necessary for the stream ecosystem" but does not define it or explain how it could be determined.

21. Dr. Benbow states that continuous flow from the upper reaches of the streams to the sea is necessary to support the linkages of the amphidromous stream fauna (paragraph 22). However, it is not clear if he means continuous flow along the entire length of the stream channel throughout the entire year. If that is his meaning, we have already observed that this claim is not supported (Ford, paragraph 12). Dr. Benbow (paragraph 22) does not define the term "reproductive instream biological communities".

22. Dr. Benbow (paragraph 23) does not define what "a pure scientific perspective" is.

23. What is the basis for Dr. Benbow's claim that no less than 75 percent of the median flow is necessary "...to support sustainable stream ecosystems from mauka to makai over the long term" (paragraphs 24 and 25). We find no calculations or data in his testimony to support this claim.

24. Dr. Benbow (paragraph 25) provides no data with evidence for "potential cascading impacts".

25. Dr. Benbow notes that a naturally occurring drought led to a 50 percent decline in some insect populations in a pristine reach above the diversion on 'Iao Stream, and that the populations of insects disappeared over a 4-5 year period (paragraph 25). However he provides no evidence showing "cascading impacts throughout the entire ecosystem".

26. Dr. Benbow provides no data quantifying the "erosion of biodiversity" (paragraph 26).

27. Dr. Benbow states that infrequent flows to the sea in 'Iao Stream "prevented monitoring" of post-larval [we assume upstream] migration. Again, I submit that the concrete channel in lower 'Iao may be a major factor preventing colonization of the stream by native amphidromous species. Waiehu, Waikapu, Waikapi, Honokohau, and Honolua Streams on West Maui all have stream diversions, yet they are inhabited by amphidromous species. Both Kahoma and 'Iao Streams have both channelized lower reaches and surface diversions. Kahoma has no naturally occurring amphidromous species above the channelized sections. Currently, there are insufficient data on populations of naturally occurring amphidromous species in 'Iao Stream to support or refute this idea.

28. Beginning on page 15 of his testimony, Dr. Benbow summarizes seven research studies that sound very interesting. Dr. Benbow does not clarify whether all these studies have been published in refereed journals or if they part of the Earthwatch program? No judgment on the conclusions from these studies can be reached without seeing how the studies were conducted and the resulting data.

Ecology of Hawaiian Streams

29. All of the native biota in Hawai'i originally came from sources outside the archipelago (Ziegler 2002). Immigrant stream organisms from many taxa arrived from regions throughout the Pacific region. For ease of discussion, the larger native stream animals are

sometimes called 'macrofauna'. In Hawai'i, this group consists of gobioid fishes ('o'opu), neritid snails (hūhūwai and hapawai), and decapod crustaceans ('opae). The remaining smaller, but no less important animals are generally insects, though lymnaeid snails, worms, sponges and smaller crustaceans are numerous. This somewhat artificial division based on size also separates the amphidromous macrofaunal species from the remaining animals which live their entire life in or around the streams (Ford and Kinzie 1982, Kinzie 1997, McDowall 2003). Notably, the only freshwater animals listed as endangered or as candidates for listing are in this second group.

30. Myers (1949) used the term *amphidromous* to describe fishes that undergo regular, obligatory migration between freshwaters and the sea 'at some stage in their life cycle other than the breeding period'. McDowall (1988) described two different forms of amphidromy. All the Hawaiian amphidromous species exhibit 'freshwater amphidromy' where spawning takes place in freshwater, and the newly hatched larvae are swept into the sea by stream currents. While in the marine environment, the larvae undergo development as zooplankton before returning to freshwater to grow to maturity. An important ecological characteristic of the amphidromous fauna is the ability (in varying degrees among species) to move upstream, surmounting riffles and small falls, and for some species even very high waterfalls (Ford and Kinzie 1982, Radtke and Kinzie 1996).

31. The native amphidromous fauna of Hawaiian streams consists of only five species of gobioid fishes: *Awacous guamensis* ('o'opu nākea), *Sicyopterus simpsoni* ('o'opu nōpili), *Lentipes concolor* ('o'opu alamo'o), *Stenogobius hawaiiensis* ('o'opu naniha); and the eleotrid *Eleotris sandwicensis* ('o'opu akupa). Native amphidromous invertebrates include two gastropods, *Neritina gramosa* (hūhūwai) and the estuarine *Neritina vespertina* (hapawai); and the decapods, *Atyoida bisulcata* ('opae kaka'ole) and *Macrobrachium grandimanus* ('opae 'oeha'a).

32. To avoid confusion, SWCA stresses that amphidromous species occur throughout the world's freshwaters, and further, the native Hawaiian species are descendants from amphidromous species elsewhere and did not develop this life style after their arrival in Hawai'i (Meyer 1949, Kinzie 1991, McDowall 2003). This means that the life history characteristics and

ecological requirements of these species reflect a pattern common to amphidromous species throughout the world, not one specific to the Hawaiian Islands.

33. In addition to the amphidromous macrofauna, some other native marine species are important in Hawaiian stream ecology. Fishes in the terminal and lower reaches of Hawaiian streams also include an endemic predatory flagtail *Kuhlia xenura* ('āholehole). 'Āholehole are known to attack nests of goby eggs (Ha and Kinzie 1996) and may also consume returning post-larval gobies. Many other itinerant marine species may undergo juvenile development in streams; however, since non-amphidromous species do not have the ability to climb terminal waterfalls, these species may only occur in streams with low gradient terminal reaches or estuaries. Additionally, numerous alien stream animals, both amphidromous (e.g. *Macrobrachium lar*) and restricted to freshwater, are impacting native Hawai'i systems including fishes, amphibians and crustaceans (Yamanoto and Tagawa 2000).

34. The non-amphidromous native stream fauna has, until fairly recently, received less attention. However, the native insects, snails and other invertebrates are important for their diversity, endemism and their contribution to the freshwater ecosystem dynamics. Currently, the US Fish and Wildlife Service has listed six damselfly species in the endemic genus *Megalagrion* as Candidate Endangered Species. Polhemus and Asquith (1966) have reported 8 species from Maui: *M. blackburni*, *M. calliphya*, *M. hawaiiense*, *M. jugorum*, *M. koelense*, *N. nigrohamatum nigrohamatum*, *M. pacificum* and *M. nestotes* without differentiating East and West Maui, *M. nestotes* may only occur in East Maui. For West Maui, *Megalagrion blackburni* was originally described from the head of Wailuku Valley, *N. nigrohamatum nigrohamatum* is noted as being abundant in 'Iao valley, and *M. jugorum* was described from the ridges of the West Maui Mountains (Polhemus and Asquith 1996). A ninth Candidate Endangered Species, the orangeblack Hawaiian damselfly (*Megalagrion xanthomelas*), was originally found on West Maui, but is probably extirpated there now (Polhemus and Asquith 1996).

35. As with the macrofauna, there are many alien freshwater insects and other invertebrates. Their impact on native systems is not well understood. Decisions regarding re-

watering streams must take into account not only the direct benefits to native species, but should also consider the potential for the spread of alien stream species.

36. While the relationship between the morphology of the stream channel and hydrology is direct and well understood (Macdonald et al 1983, Morisawa 1968), there is also a strong influence of the channel conditions on the distribution and abundance of the stream biota. The importance of the longitudinal profile of streams to the location of aquatic species in tropical insular streams was known to Hawaiians of the past (Titcomb 1972) as well as today (Maly and Maly 2001a, 2001b).

37. Modern stream biologists have worked to quantify these natural history observations. Biologists have learned that the geomorphologic profile of tropical insular streams strongly influences the distribution of amphidromous species within a given stream due to the differences in climbing ability, territorial behavior, dietary preferences, and interspecific interactions among the amphidromous species. While these distributional patterns hold as generalizations, large overlaps in species distributions and exceptions to the pattern are common (Ford and Carothers 2006). Maciolek (1977) coined the phrase "Lentipes streams" to describe those streams in which 'o'pu alamo'o was the dominant or only native amphidromous fish present. Usually, these were small to mid-size streams having a terminal waterfall or cascade that prevented colonization by other amphidromous fishes. Kinzie and Ford (1975 and 1982) and Kinzie et al (1986) also described trends in longitudinal distribution of amphidromous species that could be attributed to stream morphology. Parham (2000) on Guam, Nelson et al (2003) on Polmpei, and Cook (2004) on Tau described similar patterns. Recently, Parham (2000) used this as the basis for a computer model, based on geographic information systems (GIS) technology, which he hopes will predict the distribution of amphidromous species within island streams. Geomorphology also has influenced distribution and local endemism in several families of aquatic insects (Polhemus 2007).

38. This issue is significant to the establishment of instream flow standards (IFS) insofar as it helps to pinpoint reaches where we would expect to find significant populations of amphidromous species, and where others might be naturally excluded regardless of flow

alterations (as noted also by Gingerich and Wolff 2005). SWCA is focusing its Nā Wai 'Eha studies on the locations of diversion intakes and losing reaches to better identify where important reaches for upstream and downstream migration are located.

39. In the recent past, aquatic biologists in Hawai'i considered the presence of all the native species described above as an indicator of outstanding environmental quality. Conversely, the total absence of these species in streams between sea level and 1500 ft. elevation was considered a possible indicator of environmental degradation (Hawai'i National Park Studies Unit 1990). However, community structure in a given Hawaiian stream may change frequently due to random processes affecting reproduction, recruitment of post-larvae, migration, predation and competition, and survival (Kinzie and Ford 1982, Kinzie 1988). Therefore, the absence of a given species at any reach and time must not be taken as a definitive indicator of poor stream quality (see also McRae 2007).

40. Since the arrival of humans in the archipelago some 1600 years ago there have been alterations to the islands' landscapes, streams, and watersheds (Kirch 1982, 2000, Burney et al 2001, Athens et al. 2002). Understanding and formulation of management plans today requires understanding of these events in the past. Much of the available information on human alterations in Hawaiian streams has been summarized in the SWCA white paper submitted to EMI (Ford and Crothers 2006). Only the main points will be revisited here.

41. While restoration to a pre-Captain Cook state (Mitke 2004) might be an idealistic goal for stream restoration, so much post-contact modification has occurred that the combined impacts of cumulative perturbations to Hawaiian streams over time prevent us from even knowing what a stream with pre-Captain Cook characteristics looked like or how it might have functioned (Kinzie 1993). Zimmerman (1963), Kirsch (1982), Wagner et al (1985), Stone (1985), Cuddihy and Stone (1990), Athens et al. 2002, and Ziegler (2002) summarize the impacts to forested watersheds in Hawai'i caused by activities of prehistoric Polynesians beginning about 1,600 years ago. Activities most likely to adversely impact stream ecosystems included the extensive lower watershed deforestation by clearing and burning, agriculture, especially the modification of stream flow for wetland crops, introduction of alien species, and fishing.

42. Following the arrival of the first and second waves of Polynesian immigrants, the Hawaiians refined the *ahupua'a* concept of resource allocation and diversions were engineered to irrigate taro fields (Kirch 1982, Gingerich et al 2007). Sometimes quite extensive in nature, these *'auwai* carried water to irrigate taro *lo'i* throughout the middle and lower reaches of many valleys on the five major Hawaiian Islands (Handy and Handy 1972). Widespread impacts of these pre-historic activities and deforestation caused by the introduced Polynesian rat included decrease in watershed soil moisture, permeability, and surface water retention, rapid run-off, sedimentation of streams and nearshore waters, lowered water tables, altered-microclimates, and drought (Newman 1969, Spriggs 1985). Hawaiians directly influenced the stream fauna by fishing and collection of returning post-larvae (*hinama*) (Titcomb 1972); however, this impact may have been small compared to the alterations in the landscapes (Athens et al 2002).

43. By the time comprehensive descriptions of the Hawaiian landscape began appearing in western literature in the late 1700s, feral ungulates and non-native plants had already begun to dramatically change the nature of Hawaiian watershed structure and function. The *kapu* placed upon killing introduced cattle permitted the unchecked growth of large herds, which along with introduced sheep beginning in 1793, decimated native lowland forests. This was accompanied by the introduction of non-native plants that forever changed the nature of Hawaiian watersheds. These cumulative effects of human activities led to the permanent and irreversible modification of Hawaiian watersheds and their streams. The effects include but are not limited to the following, in rough chronological order:

- Changes to watershed vegetation, soils, and water budgets by introduced species
- Destruction of watershed vegetation and soil erosion caused by feral ungulates
- Surface water diversions, groundwater and well development
- Soil erosion from sugar cane and pineapple cultivation
- Discharge of bagasse at stream mouths between the late 1800's and 1972
- Aquatic alien plant and animal introductions
- Introduced diseases and parasites of aquatic animals
- Urbanization and industrialization with subsequent impacts upon water budgets and quality

• Widespread stream channel modifications for flood control

• Modern consumptive practices (e.g. fishing with illegal electroshocking and traps)

44. Maciolek (1978) stated that *Neritina granosa* (hāhāwai) can occupy continuous streams up to 400 meters in elevation; however, it is uncommon to find hāhāwai at that elevation. Ford (1979) and Brasher (1997) found that hāhāwai were limited to about 185 meters and 223 meters in the lower reaches of Waiohū and Waikolu Streams, respectively. Both investigators suggested that this was due to the effects of dewaterment on habitat availability. Way et al (1998) noted altered patterns in reproductive success among *Lentipes concolor* ('ō'opu alamo'o) from continuous Makamaka'ole Stream on Maui and diverted Waikolu Stream on Molokai. Beabow et al. (1997) also found that a Maui diversion reduced habitat for benthic invertebrates. A major unanswered question is whether these impacts threaten the survival of native amphidromous species. This question is central to the crafting of instream flow standards, but has yet to be properly answered.

45. Timbol and Maciolek (1978) and Wilcox (1996) catalogued stream diversion, channelization, and related morphological alterations to stream channels. By the time these reports were published most streams in the State had had some form of modification. Kido (1997) noted that the "rapidly changing terrestrial landscape in Hawaiian watersheds coupled with the escalating rates of alien species introductions are altering natural functioning of these [stream] ecosystems". In any particular stream, however, it has been difficult to determine which of the detrimental impacts (e.g. diversion, channelization, water pollution, continued fishing pressure, or invasive species), or combination thereof, are having the greatest negative impact on populations of native amphidromous species. On every stream, there is probably a different set of pressures; however, all of these are likely to have a synergistic impact on amphidromous species statewide. Oki (2004) identified a pattern of declining base flows in streams throughout the Hawaiian Islands since 1913, and suggested that this may indicate a reduction in groundwater storage and subsequent reduction in groundwater discharge to streams. The causes of this statewide trend were not completely clear but large scale climatic factors probably are playing an important role.

46. By the mid-1950's, fishing for 'ō'opu nākea was mainly for sport or home

consumption (Ego 1956). A few local residents still actively gather abundant mountain shrimp 'ō'opu kala'ole for parties and special occasions. Most fishing pressure for 'ō'opu is focused on upper elevation ditches and flumes where the 'ō'opu are most abundant and easy to catch. They can also be collected from the vertical walls lining plunge pools at the bottom of waterfalls. The 'ō'opu are usually collected with 'ō'opu nets that can be purchased from local fishing and sundry stores. While 'ō'opu populations are much reduced on populated islands such as O'ahu, it is not known what the caused these losses. The shrimp are still abundant in higher elevations in streams on other islands, especially in more remote areas.

47. Hāhāwai are also gathered for human consumption. Unlike the 'ō'opu, hāhāwai are naturally restricted to lower elevations, and therefore, are more accessible to gatherers. Nevertheless, some streams still have fair population densities even near populated areas, though the snail is almost gone from O'ahu. At the same time, some streams located far from populated areas that appear to have suitable habitat do not have populations of hāhāwai. The reasons for this distributional pattern are not known, but highlight the potential importance of factors influencing recruitment of post-larvae from the sea.

48. In Hawai'i, the State Fish and Game Division (now Division of Aquatic Resources, or DAR) outlawed the practice of collecting goby fry or binama in the early 1950s in response to declining stocks, though illegal gathering was known to continue for some time despite enforcement efforts. To the best of our knowledge, goby fry runs of the magnitude historically reported (Titcomb 1972) have not been seen in Hawai'i for decades. Furthermore, traps designed to catch adult 'ō'opu nākea as they migrated downstream to spawn during freshets were also outlawed; however, such traps can still be found in remote areas today.

49. SWCA believes that there are no 'pre-Captain Cook' streams (*sensu* Milike 2004) in Hawai'i today, and there can never be such streams again due to the complex synergistic effects of watershed alteration by a millennium of human alteration of the environment throughout the archipelago. There are, however, streams with minimal levels of alteration that continue to

harbor healthy populations of native amphidromous species. These are commonly referred to today as being 'pristine', 'unaltered', or 'natural' (Hawai'i National Park Studies Unit 1990).

50. Despite the history of disturbances in island watersheds that began with the Polynesian immigrants the amphidromous fauna of Hawai'i persists, although not in the numbers once described in literature and lore. The characteristic species may still be found in many streams on all five major islands, and often in abundance. No specific evidence is available to suggest that any of the amphidromous species is presently at risk of extinction. Surprisingly, no studies focused upon the long-term population trends for Hawaiian amphidromous species have yet been conducted, and there is nothing in the scientific literature on this topic.

51. Unlike streams in temperate continental ecosystems where seasonal cues (e.g. wide temperature changes and spring snow melt) strongly influence the biology and behavior of animals, stochastic or chance processes are more important to the biology of tropical insular streams (Kinzie and Ford 1982, Lake 2000). Many streams in Hawaii are naturally ephemeral due to their geological structure, and sometimes run dry, as water is 'lost' through the streambed. Timbol and Maciolek (1978) recognized ninety-six perennial streams on Maui. Fifty-eight percent (58%) of these were continuous, the rest naturally interrupted. Seven streams were found to have altered channels, all on West Maui. Polbermus et al. (1990) refer to these streams as perennial (interrupted) streams: they are prone to periods of no flow under natural conditions.

52. Aside from periodic drought and elevated water temperatures, Hawaiian streams are subjected to torrential flooding and landslides. All three processes can locally exterminate stream fauna in affected reaches. Ford and Yuen (1986) observed dramatic evidence of this immediately following a cataclysmic landslide in Pelekunu Valley, Moloka'i. These events occur throughout the year. Yet despite their wide fluctuations in stream flow under natural conditions, both interrupted and intermittent streams can provide habitat for amphidromous species, as a decade of extensive stream surveys by State of Hawai'i Division of Aquatic Resources staff have demonstrated.

53. A review of the literature demonstrates that most amphidromous species have broad periods of reproductive activity and relatively weak seasonal trends. Lindstrom (1999) found this to be the case during his study of larval gobioid drift in the Wainiha River on Kana'i. In their study of fish populations in small Hawaiian streams, Kinzie and Ford (1982) found that reproduction, recruitment, and hence community structure at any given time were the result of stochastic phenomenon. They found that reproductive periodicity in native stream fishes was so broadly spread over time that it appeared unlikely that a strong correlation with seasonal cues had evolved. They also found that the timing of recruitment was also widely variable and prolonged. Other detailed life history studies (Courret 1976, Ford 1979, Ha and Kinzie 1996, Kinzie 1988, Way et al 1998, and Lindstrom 1998) discovered similar evidence with regard to the timing of reproduction and recruitment.

54. Recent studies of larval drift by Lindstrom (1999) have confirmed that 'o'opu reproduction occurs year round and is generally affected by freshets rather than seasonal or other cues. Nishimoto and Khamo'o (1997) also found that post larval recruitment of gobies into streams occurs year-round, and appears to be most common immediately after freshets and periods of heavy rain. Hence, populations of the same species in different streams appeared to be acting independently with regard to breeding and recruitment (Kinzie and Ford 1982), and may be more strongly affected by instream and offshore conditions.

55. Equally important is the invasion of stream mouths by post-larval amphidromous species. Research by several authors suggests that this may occur at different times for different species. Given the stochastic processes influencing current patterns, stream flow, and planktonic larval survival one would expect that these patterns might be subject to considerable temporal and geographic variation. Common in all areas is the necessity for terminal discharge of sufficient duration and volume to attract and accommodate upstream migration of post-larval fishes, mollusks, and crustaceans. McRae (2005) suggested that during wet periods, small streams might be more significant as contributors of larvae to the oceanic larval pool. In dry periods, large streams may provide more propagules. Hence, they argue the representative streams of all types must be protected in order to ensure the continued survival of amphidromous species in Hawai'i.

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Education and Training

- M.S., Zoology, emphasis in Limnology, University of Hawaii at Manoa, 1979
- B.A., Zoology, emphasis in Marine Sciences, University of Hawaii at Manoa, 1977
- Executive Program Certificate, Natural Resources Management, Penn State University, 1991
- Japan Internship Program, JETRO; Tokyo, Japan, 1999
- ESRI (ArcView) and Intergraph (MGE) software training, 1993

Registrations and Certifications

- Advanced Open Water Diver (National), USFWS, 1981
- Auxiliary Sailing and Seamanship (National), USCG; Pearl Harbor, Hawaii, 1981
- Advanced Open Water Diver (National), USAE, 1979
- Private Pilot SEL Certification (National), FAA, 1971
- Open Water SCUBA Certification (National), NASDS (SSI), 1970
- Basic SCUBA Certification, USAF Enlisted Club, Taiwan, 1966

Areas of Expertise

Mr. Ford has more than 30 years successful, progressive management and business development experience in government and professional consulting, including more than 15 years federal government experience in natural resources management and environmental compliance in the Hawaii, CNMI, Guam, FSM, and other Pacific Islands with the Honolulu District, U.S. Army Engineers and the U.S. Fish and Wildlife Service. He has served as an expert witness, and has extensive experience in designing, managing, and conducting studies in tropical aquatic ecosystems, instream flow issues, coral reef ecology, contaminants assessment, mitigation and alternatives analysis, and natural area selection, design, and acquisition in Hawaii. He is a former Chairman of the Hawaii Natural Area Reserves System Commission, and has served on numerous agency boards and committees.

He has more than 12 years experience with geographic information systems (GIS) planning, design, implementation, and support, and nine years experience with defense facilities and environmental GIS. He provided extensive support for Army, Marine Corps, Navy, and Air Force GIS strategic and implementation planning, installation base mapping, systems implementation, training, and application development (including environmental applications).

Mr. Ford is knowledgeable in federal, state, and local environmental laws, regulations, and policies, environmental compliance, and collaborative field surveys. His work experience has also encompassed Samoa, French Polynesia, Japan and Okinawa, Hong Kong, China, Korea, Thailand, and the US mainland.

Mr. Ford has authored hundreds of documents including scientific articles in refereed journals, technical publications, agency reports, environmental assessments and impact statements, Fish and Wildlife Coordination Act Reports, National Wildlife Refuge design documents, and related environmental compliance documents. He currently oversees Hawaii Pacific operations and business development for SWCA and manages complex natural resources and environmental projects for commercial and government clients.

EXHIBIT E-17



Selected SWCA Projects

Project Manager, Alternate Water Supply Study for the US Navy, Guam (2006-2007): Teamed with hydrologist Tom Vance to evaluate alternatives to supplement the volume of water available for domestic use in Fena Reservoir, Guam. Studies encompass seepage runs, literature and engineering plan reviews, and instream flow considerations. Client: US Navy Region Marianas.

Aquatic Biologist, Honokane Nui Stream Assessment and Proposal for Comprehensive Stream Research (2006 - ongoing): Working in collaboration with the Kamehameha Schools Water Resources Manager and Hawaii Island staff, SWCA is conducting a biological assessment of natural resources within Honokane Nui Stream, evaluating other research conducted on streams flowing across lands owned by Kamehameha Schools, and preparing recommendations for comprehensive research. Client: Kamehameha Schools.

Aquatic Biologist, Kahoma Stream Assessment; West Maui, Hawaii (2004): Conducted field survey and prepared a report to evaluate the ecological health of Kahoma Stream following a century of water diversion and three decades of concrete channelization in the terminal reaches. Client: Kamehameha Schools.

Project Principal, Waialua Preschool Surveys; Kauai, Hawaii (2005 - 2006): Conducted flora and fauna surveys at two alternative project locations and prepared a report of findings and recommendations. Client: Belf Collins Hawaii.

Program Director, Mamalaha Highway - Kawaihae Connector Road Project; Hawaii (2006): Conducting an ecological assessment of an intermittent stream to evaluate potential impacts of highway bypass and bridge construction. Client: Belf Collins Hawaii.

Program Director / Senior Biologist, MCTAB Vegetation Management Plan; Honolulu, Hawaii (2006-ongoing): Leading an interdisciplinary team of professionals to develop recommendations for invasive plant management in order to maximize the use of the project area for military training activities. Client: Marine Corps Base Hawaii.

Aquatic Biologist, Honokahou and Hanolu Stream Interim Instream Flow Standards (2006 - ongoing): Conducting literature review and field studies to support the client's petition to the Commission on Water Resources Management to amend the interim instream flow standards in Honokahou and Hanolu Streams, West Maui, in response to a Land Use Commission requirement. Client: Maui Land and Pineapple Company, Inc.

Project Manager, Wailea 670 / Hanua'ula ; Maui, Hawaii (2005-ongoing): Prepared a plan to survey client's 670-acre parcel for endangered Blackburn Sphinx Moths; conducted field trips in collaboration with professional botanists to identify and map rare elements of the remnant native dry forest within the project parcel; met with Maui County Council members and assisted client in preparation for testimony at public hearings. Currently developing conservation management plan. Client: Goodfellow Brothers.

Project Principal, USFWS Region 1 GIS Services; Portland, Oregon (2005-ongoing): Serve as liaison with Pacific Islands Office of the USFWS for GIS mapping requirements associated with National Wildlife Refuge Comprehensive Conservation Plans. Client: U.S. Fish and Wildlife Service.

13.18-24



Education and Training

- M.S., Zoology, emphasis in Limnology, University of Hawaii at Manoa, 1979
- B.A., Zoology, emphasis in Marine Sciences, University of Hawaii at Manoa, 1977
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- Japan Internship Program, JETRO; Tokyo, Japan, 1999
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- Advanced Open Water Diver (National), USFWS, 1981
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He has more than 12 years experience with geographic information systems (GIS) planning, design, implementation, and support, and nine years experience with defense facilities and environmental GIS. He provided extensive support for Army, Marine Corps, Navy, and Air Force GIS strategic and implementation planning, installation base mapping, systems implementation, training, and application development (including environmental applications).

Mr. Ford is knowledgeable in federal, state, and local environmental laws, regulations, and policies, environmental compliance, and collaborative field surveys. His work experience has also encompassed Samoa, French Polynesia, Japan and Okinawa, Hong Kong, China, Korea, Thailand, and the US mainland.

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13.18-24



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- B.A., Zoology, emphasis in Marine Sciences, University of Hawaii at Manoa, 1977
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He has more than 12 years experience with geographic information systems (GIS) planning, design, implementation, and support, and nine years experience with defense facilities and environmental GIS. He provided extensive support for Army, Marine Corps, Navy, and Air Force GIS strategic and implementation planning, installation base mapping, systems implementation, training, and application development (including environmental applications).

Mr. Ford is knowledgeable in federal, state, and local environmental laws, regulations, and policies, environmental compliance, and collaborative field surveys. His work experience has also encompassed Samoa, French Polynesia, Japan and Okinawa, Hong Kong, China, Korea, Thailand, and the US mainland.

Mr. Ford has authored hundreds of documents including scientific articles in refereed journals, technical publications, agency reports, environmental assessments and impact statements, Fish and Wildlife Coordination Act Reports, National Wildlife Refuge design documents, and related environmental compliance documents. He currently oversees Hawaii Pacific operations and business development for SWCA and manages complex natural resources and environmental projects for commercial and government clients.

EXHIBIT E-17

Project Principal, Hanamaulu Stream Monitoring, Kauai, Hawaii (2005-ongoing): Designed and conducted quarterly biological and water quality monitoring in an urban stream in response to a Hawaii Land Use Commission directive to assess ecological impacts of client's commercial land development activities. *Client: Lihue Land Company.*

Program Director, Auloo Wetland Boundary Determination; Honolulu, Hawaii (2005): Directed a team of scientists to conduct a wetlands boundary assessment of a remnant freshwater marsh on Oahu, Hawaii. *Client: Kaneohe Ranch.*

Program Director/Aquatic Biologist, Honokohau Stream Long-Term Monitoring; Maui, Hawaii (2005-present): Monitoring Honokohau Stream, West Maui, to evaluate ecological impacts of a 1.5 mgd water release at an elevation of 825 ft and prepared a report of findings. *Client: Kapalua Land Company, Ltd.*

Project Manager, Maui Blackburn's Sphinx Moth Habitat Assessment; Maui, Hawaii (2004): Searched for evidence of endangered Blackburn's Sphinx Moths on non-native tobacco plants in an abandoned sugar cane field slated for urban development, and conducted client training class to identify moth life stages, and appropriate liaison with US Fish and Wildlife Service staff. *Client: Alexander & Baldwin Properties, Inc.*

Program Director, Honokohau Stream and Bay Survey; Maui, Hawaii (2004): Conducted baseline biological and water quality study of Honokohau Stream and Bay, and prepared a report to address the potential impacts of releasing additional stream flow below a century-old irrigation impoundment. Presented professional testimony before the Hawaii State Land Use Commission. *Client: Kapalua Land Company, Ltd.*

Program Director, Koolau Re-subdivision Conservation District Use Application Environmental Assessment; Koolau, Oahu, Hawaii (2004): Evaluated environmental effects of a proposed land use re-subdivision on natural and cultural resources, and prepared selected portions of an EA for client. *Client: PBR Hawaii.*

Program Director, Work Plan for Wuyishan Double World Heritage Site; Wuyishan City, Fujian Province, China, PRC (2004): Conducted extensive research and liaison with numerous agencies and organizations to develop a Work Plan guiding future development of a feasibility study for sustainable tourism and environmental infrastructure improvement; and helped to procure World Bank funding for a sustainable eco-city development plan. *Client: Fung Associates.*

Project Manager / Senior Biologist, East Maui Streams, Phases I-IV; Maui, Hawaii (2003-present): Designed and conducted field studies to validate parallel USGS studies and conducted independent field research to develop recommendations for interim instream flows for 21 study streams in windward East Maui. *Client: Morihara Lau & Fong.*

Project Manager, Identification and Eradication of Invasive Spiders at Kuku'o Resort; Kana, Hawaii (2003): Assessed client concerns about potential infestation by alien spiders. *Client: WB Kuku'o Resorts, LLC.*

13.18-25

Selected Individual Project Experience

Oahu Forest National Wildlife Refuge, Ko'olau Mountains, Oahu: Conducted literature review and field studies, collaborated with scientists, land owners, and resource agencies, and prepared the draft environmental assessment for acquisition and management of certain parcels in the central Ko'olau Mountains on Oahu by the National Wildlife Refuge system.

National Wildlife Refuge at Ritidian Point; Guam: Conducted refuge design, real estate acquisition planning, and environmental documentation, and served as a liaison with the Government of Guam, U.S. Navy, and U.S. Air Force agencies in development of this overlay national wildlife refuge to protect endangered Mariana crow and Mariana fruit bat habitat.

U.S. Navy Ecological Reserves; Guam: Conducted quantitative marine biological surveys, impact assessment, environmental compliance documentation, mitigation planning, and liaison with U.S. Navy agencies to create two set-aside conservation areas at Orate Peninsula and Finegajan (Double Reef) following construction of the Apra Harbor Ammo Wharf.

Marine Corps Air Station Futenma Drainage Study; Okinawa, Japan: Managed this project to inventory and map (with GPS/GIS) all surface drainage features on the Marine Corps Air Station Futenma, develop a model of surface water inflow and outflow on this property, and identify potential sources of point- and non-point pollutants.

SACO Base Relocation; Okinawa, Japan: Supported commercial clients by developing GIS maps and related 3D graphics illustrating alternative scenarios for the construction of a combined commercial field and Marine Corps Air Station adjacent to Camp Schwab, near Nago (Okinawa), Japan.

U.S. Military Base Mapping; Japan: Designed and managed this complex aerial mapping project of more than 60 U.S. military installations on Okinawa and mainland, Japan. The project involved management of eight subcontractors, including Japanese companies, for establishing survey control and monumentation, aerial photography, film processing, photogrammetry, and GIS data production. Final deliverables included comprehensive survey report, softcopy color digital orthophotos, digital elevation models, AutoCAD drawing files, ArcView shapefiles, and ArcInfo coverages. Follow-on contracts involved the delivery of GIS systems, data installation, and attribution with legacy databases, GIS application development, training, and on-site support.

GIS Strategic and Implementation Planning, U.S. Air Force: Assisted in the development of strategic and implementation plans for the adoption of geographic information systems by civil engineering squadrons and other operational units within the U.S. Air Force, including PACAF, AETC, and AFCEE.

Nanpil Hydropower Study; Pohnpei: Designed and conducted comprehensive limnological investigations of the Nanpil and adjacent river systems on the island of Pohnpei (Eastern Caroline Islands) within the Federated States of Micronesia for a COE hydropower development project. Biological collections led to the identification of several new fish species.

Limnology of Lake Susupe, Saipan, CNMI: Designed and conducted limnological investigations of Lake Susupe, Saipan, as part of the US Army Engineers Susupe Flood Control Study.

13.18-26

Ecological Studies in Pelelunu Stream; Molokai, Hawaii: Designed and conducted limnological and ecological investigations in lands owned by The Nature Conservancy of Hawaii, and developed recommendations for area management and protection of stream resources.

PHABSIM Applicability Research, Hawaii: Participated as an aquatic biologist with a team of scientists studying the efficacy of the PHABSIM model to evaluate habitat suitability and weighted usable area in relation to incremental flow variations in Hawaiian streams, and published results in technical journals.

Past Professional Accomplishments

- Former USFWS representative to the Oceania Oil Spill Response Team
- Former USFWS Pacific Area Coordinator for environmental contaminant assessment
- Participated in studies for and authored hundreds of NEPA, CWA, FERC, and related compliance reports for federal land and water resource development projects, MILCON, and related engineering projects
- Managed development of GIS applications for UST/AST, HAZMAT, radon, oil/water separators, land use planning, and natural and cultural resources management
- Administered multi-million-dollar federal budget and supervised 21 professional staff ecologists
- Coordinated multi-million-dollar federal land acquisition and habitat protection budgets in Hawaii
- Authored proposals for over 177,000 acres of new National Wildlife Refuges in Hawaii and Guam
- Authored agency position statements on federal water resource development projects
- Managed Legacy Program and DERP funded projects in Hawaii
- Directed fundraising campaigns for the sustinment of private nature preserves in Hawaii
- Directed and participated in instream flow studies in the Hawaiian, Mariana, and Caroline Islands
- Directed and participated in coral reef studies on Guam for the Chief of Naval Operations
- Directed and participated in joint-agency studies for MILCON and related construction projects
- Directed ecological characterization studies of lands targeted for acquisition and protection
- Operations management contributed to a DUNS Open Past Performance Rating of 92 / 100
- Demonstrated management of complex, multi-million-dollar IT projects in the U.S. and Japan
- Aggressively promoted corporate internship programs with affiliate universities and colleges
- Established and maintain liaison with teaming and business partners in industry and academia
- Mentored employees in project and subcontracts management
- Developed technical and cost proposals, teaming agreements, and subcontractor scopes of work
- Managed professional subcontractors and consultants, and supervise senior staff
- Managed complex joint-service project saving customers \$3 million by avoiding duplicate effort.

Past Professional Experience

- Program Director and Senior Biologist, SWCA Environmental Consultants; Honolulu, Hawaii (2003-present)
- Director, Asia Pacific Region, Geo InSight International, Inc.; Honolulu, Hawaii (2002-2003)
- Vice President, Geo InSight International, Inc.; Carpinteria, California (1995-2002)

13.18-27

- Environmental Program Director, Geo InSight International, Inc.; Ojai, California (1993-1995)
- Assistant Field Supervisor, U.S. Fish and Wildlife Service; Ventura, California (1992-1993)
- Pacific Islands Land Protection Coordinator, U.S. Fish and Wildlife Service; Honolulu, Hawaii (1989-1992)
- Senior Staff Biologist, U.S. Fish and Wildlife Service; Honolulu, Hawaii (1986-1989)
- Assistant Director, The Nature Conservancy of Hawaii; Honolulu, Hawaii (1985-1986)
- Fishery Biologist (Management), U.S. Fish and Wildlife Service; Honolulu, Hawaii (1981-1985)
- Ecologist, U.S. Army Corps of Engineers; Ft. Shafter, Hawaii (1977-1981)

Volunteer Community Service

- Board Member, Ojai Valley Land Conservancy
- Commissioner, Hawaii Natural Area Reserves System Commission
- Chairperson, Hawaii Natural Area Reserves System Commission
- Coordinator, Hawaii Biodiversity Joint Venture
- Founder, Hawaii Interagency GIS Forum
- Steering Committee, Hamalei Estuary Baseline Study
- Member, Hawaii Water Resources Functional Plan Advisory Committee
- Member, Honolulu Federal Executive Board
- Member, Hawaii Department of Health 208 Water Quality Planning Committee
- Lecturer, University of Hawaii (open channel hydraulics, limnology)
- Lecturer, The Kamehameha Schools (aquatic ecology)
- Lecturer, Hawaii State Department of Education (aquatic ecology)

Professional Affiliations and Committees

- American Association for the Advancement of Science
- National Association of Environmental Professionals
- North American Benthological Society
- Society of American Military Engineers
- Society for Conservation Biology
- Pacific Science Association

Awards and Honors

- 2nd Place Award for Best Technical Integration, ESRI International Conference, 1997
- 2nd Place Award for Multimedia GIS Presentation, ESRI International Conference, 1996
- 1st Place San Diego Geography Showcase, 1996
- 1st Place Award (Tie) Lyman Award for Undergraduate Research, University of Hawaii, 1973
- Received more than 50 letters of appreciation, commendations, certificates of recognition, special achievement and superior performance awards from agencies, organizations, academic institutions and individuals for contributions in environmental education, research and management

13.18-28

Selected Publications and Symposia

- Ford, J.I. 1988. Conservation of Hawaiian Stream Ecosystems. 32th AIBS Annual Meeting, University of California at Davis, Ca.
- Ford, J.I. 1991. GIS Innovations in the Hawaiian Islands. GIS World Magazine 4(2): 34-35.
- Ford, J.I. and R. A. Kinzie, III. 1980. Factors influencing the distribution of an endangered freshwater fish in streams in Haleakala National Park. Proc. AIBS-NPS Conference on Scientific Research in National Parks. San Francisco, Ca.
- Ford, J.I. and R. A. Kinzie, III. 1982. Life Crawls Upstream. Natural History Magazine 91(12): 60-67.
- Ford, J.I. and R.A. Kinzie. 1986. Status of *Lemniscas concolor* (Cill 1860), a rare diatomous goby endemic to Hawaii. 67th Annual Meeting, The Western Society of Naturalists. Hilo, HI, December 27-30, 1986.
- Ford, J.I. and J.A. Maciolek. 1986. Freshwater Macrofauna of Tutuila, American Samoa. 2nd International Symposium on Indo-Pacific Marine Biology, Truk & Ponape Islands, FSM.
- Kinzie, R.A. III and J.I. Ford. 1982. Population biology in small Hawaiian Streams. Tech. Rep. 147. University of Hawaii Water Resources Research Center, Honolulu.
- Kinzie, R.A. III, J.I. Ford, A. Yuen, and S. Chow. 1986. Habitat modeling of Hawaiian streams. Tech. Rep. 171, Water Resources Research Center, University of Hawaii, Honolulu.
- Kinzie, R.A. III and J.I. Ford. 1988. A test of transferability of habitat utilization curves for Hawaiian stream fishes. pp. 336-343 in: Proceedings of a Workshop on the Development and Evaluation of Habitat Suitability Criteria, U.S. Fish and Wildlife Service Biological Report 88-11; K. Bovee and J.R. Zuboy, eds., Ft. Collins, CO.
- Kinzie, R.A. III and J.I. Ford. 1991. Habitat requirements of insular amphidromous fishes. Conservation and Management of Tropical Inland Waters: Problems, Solutions and Prospects, University of Hong Kong, September 5-9, 1991.
- Maciolek, J.A. and J.I. Ford. 1987. Macrofauna and environment of the Nampili-Kiepw River, Ponape, Eastern Caroline Islands. Bulletin of Marine Science, 41(2): 623 - 632.
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- Numerous professional symposia, conferences, and workshops sponsored by US and foreign academic institutions and professional societies, and numerous IT industry trade shows. Authored hundreds of NEPA, CWA, FERC, and other compliance reports for federal land and water resource development projects in Hawaii/Pacific region and western states. Authored numerous confidential contract reports for commercial clients in Hawaii, Oceania, and China, including several dealing with instream flow issues.

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

WILLIAM W. PATTY
CHAIRPERSON
JOHN C. LEWIN, M.D.
MICHAEL J. CHUN, Ph.D.
ROBERT S. NAMATA
GUY K. FUJIMURA
MANNABU TAGOMORI
DEPUTY

MAY 30 1990

Mr. Robert L. Warzecha
Vice President & Manager
Agricultural Group
Hawaiian Commercial & Sugar Co.
Puunene, HI 96784

File Reference: HC&S

Dear Mr. Warzecha:

Declarations of Water Use, HC&S and East Maui Irrigation

Thank you for your two letters dated May 16 regarding the declarations of water use for Hawaiian Commercial & Sugar Company and East Maui Irrigation Company, Ltd. We have revised our descriptions of use for these two companies in accordance with your requested amendments.

With respect to HC&S's declarations in Category 3, we are referring to the proposed future diversion of Waikapu Stream and also to unused wells which were registered by HC&S. Garret Hew's letter to us dated February 23, 1990 includes a list of the 12 HC&S wells which are unused and which we accordingly placed in Category 3.

With respect to the certificates of use, please be assured that the final format to be adopted will provide a far more comprehensive and thorough description of water sources and uses than the brief text summaries prepared to date. The commission staff is working towards a certificate format which would include, at a minimum, a description of each active source by name, a reference number, and capacity. If a single certificate is issued to describe all of EMI's systems and uses, it will be a very long one.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Iao Groundwater Management Area
High-Level Source Water Use
Permit Applications and Petition to Amend
Interim Instream Flow Standards of Waiehe,
Waiehu, Iao & Waikapu Streams
Contested Case Hearing

Case No. CCH-MA06-01

DECLARATION OF
G. STEPHEN HOLADAY

DECLARATION OF G. STEPHEN HOLADAY

I, G. STEPHEN HOLADAY, hereby declare:

1. I am employed by Alexander & Baldwin, Inc. ("A&B") and hold the title of President, Agribusiness, in which position I oversee, among other things, the operations of Hawaiian Commercial & Sugar Company ("HC&S"), which is a division of A&B.
2. I hold a Master's degree in Business Administration from the University of Hawaii'i and earned my Public Accountant's Certification in 1972. Prior to joining A&B in 1983 as its controller, I was the chief financial officer of Aloha Airlines, Inc. for six years and before that I was on the audit staff of Peat Marwick, Mitchell & Co. in Honolulu for four years.
3. The agribusiness operations of A&B that I oversee include the sugar cultivation and power generation operations of HC&S, Kauai Coffee Company, and two trucking and commercial services that serve the needs of A&B Companies as well as third party customers on three islands. These operations are aggregated for financial reporting purposes. As reported in A&B's 2006 Annual Report, these four agribusiness related companies generated an operating profit in 2006 of \$6.9 million against revenues of \$127.4 million (5.4%). The outlook for 2007 for the agribusiness operations is for nominal profitability. Exhibit E-8 is a copy of the 2006 Annual Report.

13.20-1

4. The struggles of the sugar industry in Hawaii'i are well known. A&B, which has been engaged in the production of cane sugar in Hawaii'i since 1870, is the larger of Hawaii'i's only two remaining sugar plantations, growing 81% of the state's 2006 raw cane sugar crop. HC&S' plantation consists of approximately 43,300 acres of land on Maui, of which approximately 35,000 acres are under cultivation.

5. There are a number of reasons why HC&S has been able to sustain its sugar operations whereas all but one of the other sugar plantations in the State of Hawaii'i have been forced to cease operations for lack of profitability, including A&B's own McBryde Sugar Company on Kauai'i that A&B elected to shut down in 1995.

6. 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 flat or gently sloping 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 5250 acres it had in sugar cultivation before closing its plantation in 1988.

7. It has taken more than just maintaining the number of acres it has in cultivation, however, to enable HC&S to remain economically viable as costs have risen and global competition has placed downward pressure on sugar prices. Unlike plantations that have failed, HC&S has been able to generate significant revenues from selling electrical power to utilities

13.20-2

under long term contracts with fixed delivery requirements. Revenue from energy sales, including energy generated by hydroelectric plants on Kaula'i and Maui, accounted for 20 percent of the revenue generated by A&B's agribusiness segment in 2006. HC&S recently renewed its contract with Maui Electric Company ("MECO"). The renewed contract expires in 2014 which, in view of the penalties associated with failing to deliver the required amount of power, reflects a major commitment by A&B to continue with the cultivation of sugar on Maui, which is necessary to generate the bagasse that fuels most of the power sold by HC&S to MECCO.

8. HC&S has also benefited from the additional acreage that it has been able to cultivate since 1988 when Waihuku Sugar Company ceased cultivating sugar and leased some of its former fields to HC&S. This is more particularly described in the written testimony of Garret Hew and Rick Volner. Along with these additional fields, HC&S has been able to receive more water from the West Maui Irrigation system since 1988 inasmuch as water previously used by Waihuku Sugar Company has become available to HC&S, which has reduced HC&S' reliance on pumping brackish ground water to service its West Maui Fields.

9. East Maui Irrigation Company, Limited ("EMI") is a wholly owned subsidiary of A&B. Its function within A&B is to operate the water collection and transportation system in East Maui on land owned by EMI and licensed from the State of Hawaii for delivery of irrigation water to HC&S. In addition to supplying irrigation water to HC&S, EMI also supplies the irrigation and domestic water needs of most of upcountry Maui including the Kula Agricultural Park and also transports and delivers water to Maui Land & Pineapple Company, Inc. ("MLP").

10. All of the foregoing factors have contributed to HC&S' ability to remain financially viable to date. 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. Accordingly, HC&S has been diversifying its product lines by increasing production of specialty food-grade raw sugars, which yield higher margins than commodity sugar. In the last four years, HC&S has made capital investments of at least \$20 million toward this effort. In 2006, HC&S processed approximately 15,500 tons of specialty food-grade raw sugar (8.9% of its total production). HC&S intends to grow this segment of its business. In addition to specialty sugars, HC&S is exploring further expansion of its energy related operations.

11. It is absolutely critical to the continued economic viability of HC&S, however, that HC&S continue to have reliable access to surface water from both East and West Maui to irrigate its sugar fields. Any curtailment of irrigation water, especially during periods of low ditch flows, will have an immediate negative impact on HC&S' profitability.

12. 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 ("TSA"). HC&S has determined that, on a long term basis, sustainable yields should be between 13 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. One of the most important variables determining yields, however, is water.

13. As explained in the written testimony of Rick Volner, reduction of water deliveries to Waiale Reservoir, especially during periods of low ditch flows, will force HC&S to try to replace that water to the extent possible by pumping water from Well No. 7 at the expense

of pumping from other wells. Power limitations, however, restrict the amount of water that HC&S can ultimately pump, which affects sugar yields, as noted in the written testimony of Rick Volner.

14. HC&S is already at a crossroads with regard to how to both continue with the cultivation of sugar and its related activities of operating EMI and selling excess power to MECO and still return a profit to its shareholders. A&B has made significant investments in the last few years in exploring ways to improve HC&S' profitability, as previously noted, and is obligated on its contract with MECO through the end of 2014. Certainty of production, and thus certainty of water supply, is essential to making decisions and the related large investments to implement a change in strategic direction at HC&S, diversifying from the former commodity sugar business model of the Hawai'i sugar industry.

15. A&B is a publicly held company, however, answerable ultimately to its shareholders. If A&B's access to stream water is curtailed, it cannot be assumed that A&B will continue to be able to justify the continuation of HC&S' sugar operations to its shareholders. If HC&S were to shut down its sugar operations, there would be enormous negative impacts suffered by A&B, the State of Hawai'i and the entire community on Maui.

16. HC&S generally employs approximately 800 full time workers on Maui, and EMI another 17. In addition, HC&S employs the services of many support industries in Hawai'i such as trucking and other suppliers of goods and services, as well as enabling the County of Maui to service the water needs of upcountry Maui with water collected and transported by EMI. A conservative estimate of the amount that HC&S' spending contributes to the Maui County and State of Hawai'i economies is \$250,000,000, which is arrive at by applying a multiplier of 2.5 to the \$100 plus million HC&S spends each year on Maui.

17. If HC&S were to cease sugar operations, it would become uneconomic for it to renew its contract with MECO after its expiration. The prime economic justification for the contract is the cost effective co-generation of power from renewable energy made possible by the bagasse and hydro power that are byproducts of HC&S' sugar operation. Without the cultivation of sugar, no bagasse would be produced and it would not make economic sense for HC&S to continue operating its ditch systems. The cessation of sugar operations would therefore lead to the loss of a source of renewable energy in Maui.

18. The withdrawal of HC&S' 35,000 acres of prime agricultural lands from sugar will vastly increase the agricultural lands in the State of Hawai'i and on Maui that are idle, as the experience with the closure of other plantations demonstrates that it will take many years, perhaps decades, for replacement crops which do not have access to daily water to be developed. This will increase pressure to urbanize these lands instead of keeping them in agricultural use. Idling these lands will also result in the deterioration of existing irrigation systems and infrastructure that would be extremely expensive to replace.

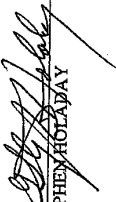
19. The cessation of sugar operations would also have negative consequences for the natural environment. The green expanses of sugar cane in Central Maui would return to an arid state if they were taken out of cultivation. Dust control and risk of fires in former sugar cane fields would be problematic.

20. Human health and safety concerns would arise as well. Without the revenue from HC&S' sugar operations to subsidize the cost of operating EMI, it would be uneconomic for A&B to continue to do so. The County of Maui, however, relies on the ditch system operated by EMI to transport and deliver water to its citizens in Upcountry Maui for domestic use and

agriculture. Alternate arrangements, at considerable public expense, would have to be made to supply water to Upcountry Maui.

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

DATED: _____, Maui, September 14, 2007.


G. STEPHEN HOLADAY

COMMISSION ON WATER RESOURCE MANAGEMENT
STATE OF HAWAII

Iao Groundwater Management Area
High-Level Source Water Use
Permit Applications and Petition to Amend
Interim Instream Flow Standards of Waiahee,
Waiehu, Iao & Waikapu Streams
Contested Case Hearing

Case No. CCH-MA06-01
DECLARATION OF
G. STEPHEN HOLADAY

DECLARATION OF G. STEPHEN HOLADAY

I, G. STEPHEN HOLADAY, hereby declare:

1. I am employed by Alexander & Baldwin, Inc. ("A&B") and hold the title of President, Agribusiness, in which position I oversee, among other things, the operations of Hawaiian Commercial & Sugar Company ("HC&S"), which is a division of A&B.

2. I have reviewed the written testimony of Delwyn Oki of the U.S. Geological Society ("USGS") with respect to the controlled releases he is proposing on behalf of the USGS. I have also reviewed the written testimony of Eric Benbow regarding his proposal for controlled releases, including his proposal that 75 percent of the annual median flow of all Na Wai 'Eha streams be restored indefinitely.

3. The incremental impacts on HC&S' operations of the releases proposed by USGS and Dr. Benbow temporarily or permanently are discussed in the written testimony of Rick Volner. As he explains, much of the impacts are hard to precisely quantify, but it is clear that they all would either reduce available irrigation water, or increase dependence on brackish ground water, both of which would reduce sugar yields and thus revenues and or increase costs.

4. It is essential to the survival of HC&S going forward that HC&S is economically viable, which involves achieving its targets in terms of sugar yields and maintaining a reasonable

cost structure. Small reductions on any given day might have little or no negative impact, depending on weather conditions, location, and crop cycle. Larger, persistent reductions, with no corresponding mitigation of impacts, especially if combined with reductions in the amounts that HC&S will be permitted to continue to divert in East Maui, will be devastating and will likely render HC&S unviable.

5. There are measures that could, in theory, be taken to try to mitigate the effects of reduced supplies of surface water, but they all have associated costs and strategic implications that must be considered. For example, Field 715 cannot be reached by water pumped from Well No. 7 without the installation of a new booster pump and the construction of a new pipeline. If surface water were to only temporarily be unavailable, it would not make sense to incur the capital cost of this new infrastructure. If surface water were to become permanently unavailable, installing the pump and pipeline would still be difficult to justify if it remained uncertain how much more water will be lost to reductions in diversions from other streams, which might make following Field 715 more prudent than expending capital to install another pump that will simply increase dependence on future power availability and brackish water that will reduce yields event and increase costs.

6. In general, all of the potential coping strategies involve increased reliance on pumping brackish ground water which inevitably has an associated energy cost and a negative effect on sugar yields due to the cane plant's response to salinity.

7. The withdrawal of one or two hundred acres from cultivation due to reduced availability of irrigation water could be tolerated provided that there is sufficient water to generate high quality yields on the majority of the acreage that remains in cultivation. On the other hand, the withdrawal of much larger tracts, such as the high yielding Iao Waikapu fields if

Iao Stream water were to become unavailable, if not otherwise mitigated, would clearly jeopardize the survival of HC&S.

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

DATED: _____, Maui, October _____, 2007.

G. STEPHEN HOLADAY

COMMISSION ON WATER RESOURCE MANAGEMENT
STATE OF HAWAII

Iao Groundwater Management Area
High-Level Source Water Use
Permit Applications and Petition to Amend
Interim Instream Flow Standards of Waiehu,
Waiehu, Iao & Waikapu Streams
Contested Case Hearing

Case No. CCH-MA06-01

**DECLARATION OF
G. STEPHEN HOLADAY**

DECLARATION OF G. STEPHEN HOLADAY

I, G. STEPHEN HOLADAY, hereby declare:

1. I am employed by Alexander & Baldwin, Inc. ("A&B") and hold the title of President, Agribusiness, in which position I oversee, among other things, the operations of Hawaiian Commercial & Sugar Company ("HC&S"), which is a division of A&B.
2. I have reviewed the Responsive Testimony of Catherine K. Chan-Halbrendt, Ph.D. ("Chan-Halbrendt") and have the following points to offer in rebuttal.
3. Much of Chan-Halbrendt's testimony is derived from a spreadsheet she prepared with selected statistics compiled from Alexander & Baldwin's Form 10-K Reports for the years 1981-2006. While Chan-Halbrendt acknowledges that aggregated data from the 10-Ks "is not appropriate to perform an analysis of the economic impacts of reducing the amount of Na Wai Eha water available to HC&S," she nonetheless proceeds to use them to challenge some very basic points regarding the importance to HC&S of maintaining high quality sugar yields, measured in tons of sugar per acre ("TSA"), and the economies of scale that result from the size of its plantation.
4. There are many reasons why using the 10-Ks as a shorthand means of relating HC&S' historic yields to the reported profits of A&B's Agribusiness Group is flawed. These

include, but are not limited to, the failure to account for other revenues, such as power sales to MECO, increased transportation and other costs, declines in sugar prices, the addition of the specialty sugars sales in later years, the effects of disease and drought, the effects of federal disaster relief payments received by HC&S for drought conditions, and the inclusion of C&H in the financials of the Agribusiness Group from 1993 through 1998.

5. Setting aside all of the foregoing problems, a basic flaw in Chan-Halbrendt's analysis is her failure to focus on crop age and acres harvested. HC&S grows sugar cane in two year crop cycles and thus seeks to harvest approximately half of its cultivated acres each year. All other things being equal, the greater the age of the cane at the time of harvest, the greater the yield and the resulting sugar revenues over which to spread the average cost of preparing, planting and harvesting each acre during a given two year cycle as well as the fixed costs of operating and maintaining HC&S' mill and other facilities.

6. As explained in the written testimony of Rick Volher and illustrated in Exhibit E-22, there is a very high correlation between average crop age per acre harvested and TSA. In 2006, for example, the TSA of 10.2 corresponds to an average crop age of 21.2 months, whereas for 2003 the TSA of 13.1 corresponds to an average crop age of 26.

7. Prolonged drought conditions, such as HC&S has experienced for much of the last 15 years, can cause a reduction in average crop age by delaying the replanting of harvested fields and prompting the premature harvesting of fields whose growth potential is compromised by lack of water. Disease and other operating conditions can also cause a reduction in average crop age. In addition, during water short periods, the cane does not grow, hence the physical age of the cane is greater than the growth age.

13-20-13

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13-20-14

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8. The average crop age of harvested acres at HC&S has dropped from 2003 to 2006 due to the combined effects of drought and HC&S' 2001 closure of its Paia Mill, which was done to reduce costs and increase efficiency by centralizing all sugar processing at the Puunene Mill. In 2001, total acres harvested was approximately 2000 less than the prior year because the Puunene Mill was initially unable to absorb all of the lost capacity from the Paia Mill closure. Harvesting fewer acres increased the average crop age of the unharvested acres. As capacity was added to the Puunene Mill and HC&S gained more experience in the reconfigured operation, harvested acres increased again, resulting in a lower average crop age and lower yields.

9. As reported in A&B's October 26, 2007 Form 10-Q, which is Exhibit E-23, Agribusiness suffered an operating loss of \$3.2 million for the third quarter of 2007. As explained further therein:

Agribusiness revenue for the third quarter of 2007 decreased \$4.5 million, or 11 percent, compared with the third quarter of 2006. The decrease was due mainly to \$4.7 million in lower bulk raw sugar revenue due principally to lower sales volume.

10. Notwithstanding Chan-Halbrendt's purported inability to understand from her superficial review of A&B's Form 10-Ks why HC&S projects a need to achieve yields in the range of 13 to 14 TSA to remain viable, no complicated economic analysis is necessary to understand that, all other things being equal, producing more sugar per acre harvested results in more net sugar revenues. Similarly, harvesting more acres, all other things being equal, results in the production and sale of more sugar.

11. Given the currently reduced crop age of HC&S's fields, HC&S expects to reduce its rate of harvesting into 2008 and 2009 to allow for an increase in crop age so as to improve yields, and then return to harvesting at its historic rate of approximately 16,000 to 17,000 acres per year that maximizes the acreage that can be served with currently available irrigation water

13:20-15

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as well as the current processing capacity of the Puunene Mill. The short term result will be diminished revenues both from reduced sugar production and reduced production of bagasse to fuel the power plant. The hoped for longer term result will be increased yields which, together with increased revenues from the production and sale of specialty sugars and further expansion of energy related sales, will allow HC&S to remain economically viable. This will only be possible, however, if HC&S' continued access to irrigation water is not unduly compromised.

12. Chan-Halbrendt, at page 4 of her testimony, in the second paragraph, cites a USDA statistic that the average sugarcane farm size in the U.S. in the year 2002 was only 1,027 acres to suggest that HC&S does not truly benefit from any economy of scale due to its size. This logic is deeply flawed because it fails to account for the fact that HC&S, due to its isolated location in the middle of the Pacific Ocean, must not only grow its sugar cane - it must also process it to a form that can be economically shipped to market. Small growers in the continental U.S. do not have to process their own cane. They can sell to a third party processor or join a cooperative that processes the sugar cane grown by its members. The comparison to HC&S is therefore meaningless.

13. Chan-Halbrendt, at page 5 of her testimony, asserts that: Sugar cane has the lowest per-acre crop value of \$1,466, compared to the per-acre values of other crops such as fruits, coffee, and vegetables and melons of \$4,151, \$4,663, and \$10,749, respectively. The overall result is that, despite the decline of the sugar industry, the farm gate value of agriculture in Hawaii has remained constant since the 1980s.

This analysis is flawed because the farm gate value of cane does not include all of what HC&S actually produces, which is not just the sugar cane but also raw sugar, molasses, food-grade sugar, and electricity.

13:20-16

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14. Finally, at page 6 of her testimony, Chan-Halbrendt cites to a 1989 State of Hawaii Department of Business and Economic Development study entitled, "Hawaii's Sugar Industry and Sugarcane Lands: Outlook, Issues and Options." She does not explain how the prognostications contained in this 1989 study could possibly be more useful than a review and analysis of the events that have actually taken place since then. For example, only a small fraction of the total acres previously cultivated by sugar and pineapple plantations are actually employed in diversified agriculture. On Maui, this is clearly evident from a review of acres previously cultivated by Waiuku Sugar Company, Amfac and Maui Land and Pine. Chan-Halbrendt does not explain why, if diversified agriculture is the panacea that she implies that it is, these acres have not been converted by their past or present owners to alternative crops instead of lying fallow, creating erosion and dust control problems, increasing the hazards of brush fires, reducing the recharge of underlying aquifers, and creating little or no employment opportunities or other contributions to the economy and well being of the residents of Maui or of the State of Hawaii.

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

Dated: November 16, 2007.


G. STEPHEN HOLABAY

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3 COMMISSION ON WATER RESOURCE MANAGEMENT
4 STATE OF HAWAII
5 'Iao Ground Water Management) CASE NO. CCH-MA06-01
6 Area High Level Source Water)
7 Use Permit Applications and)
8 Petition to Amend Interim)
9 Instream Flow Standards of)
10 Waihe'e, Waiehu, 'Iao & Waikapu)
11 Streams Contested Case Hearing)
12)
13 EXCERPTED TESTIMONY OF
14 G. STEPHEN HOLADAY
15 CONTESTED CASE HEARING
16 Held on January 31, 2008, at MOE, Wailuku, Maui,
17 Classroom 1, commencing at 9:10 a.m.
18
19 BEFORE: Jean Marie McManus, CSR #156
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3 APPEARANCES:
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5 HEARINGS OFFICER
6 LAWRENCE H. MIIKE
7
8 JULIE CHINA, ESQ.
9 DLNR Attorney
10
11 EDWARD SAKODA, Staff
12
13 JANE LOVELL, ESQ.
14 Deputy Corporation Counsel
15 200 S. High Street
16 Wailuku, Maui 96793
17
18 Attorney for County of Maui
19 Department of Water Supply
20
21 PAUL R. MANCINI, ESQ.
22 Mancini Welch & Geiger LLP
23 33 Lono Avenue, Suite 470
24 Kahului, HI 96732
25
26 GILBERT S.C. KEITH-AGARAN, ESQ.
27 Takitani & Agaran
28 24 N. Church Street, Suite 409
29 Wailuku, Maui 96793
30
31 Attorneys for Wailuku Water Company LLC
32
33 ISAAC H. MORIWAKE, ESQ.
34 KOALANI KAULUKUKUI, ESQ.
35 EarthJustice
36 223 S. King Street, Suite 400
37 Honolulu, Hawaii 96813
38
39 Attorneys for Hui O Na Wai 'Eha
40 and Maui Tomorrow Foundation
41
42 PAMELA W. BUNN, ESQ.
43 Paul Johnson Park & Niles
44 1001 Bishop Street, Suite 1300
45 Honolulu, Hawaii 96813
46
47 Attorney for OHA
48
49

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Appearances Cont'd

DAVID SCHULMEISTER, ESQ.
ELIJAH YIP, ESQ.
Cades Schutte LLP
1000 Bishop Street, Suite 1200
Honolulu, Hawaii 96813

Attorneys for HC&S

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1 HEARINGS OFFICER MIKE: Let's move on to
2 Mr. Schulmeister's next witness.

3 MR. SCHULMEISTER: Mr. Holaday.

4 G. STEPHEN HOLADAY

5 was called as a witness by and on behalf of HC&S was
6 sworn to tell the truth, was examined and testified
7 as follows:

8 DIRECT EXAMINATION

9 BY MR. SCHULMEISTER:

10 Q Please state your name?

11 A G. Stephen Holaday.

12 Q What does G stand for?

13 A Gerald.

14 Q You go by Steve?

15 A Correct.

16 Q By whom are you employed?

17 A Hawaiian Commercial & Sugar Company.

18 Q And you submitted some written testimony in
19 this case?

20 A Correct.

21 Q And you have a copy of that with you?

22 A I assume so.

23 Q Before we get into that, could you give a
24 thumbnail sketch of your educational background?

25 A I have a Bachelor's in Business

Administration. Specialized in accounting and
finance from Iowa State University. I have a
Master's of Business Administration from the
University of Hawaii.

Q You're not from Hawai'i?

A I'm originally from Iowa.

Q So what brought you to Hawai'i?

A The army in the summer of 1969.

Q And so it was after that you attended the
University of Hawaii?

A Correct.

Q Then looking at paragraph two of your first
written testimony, it indicates that prior to joining
A & B, you were chief financial officer of Aloha
Airlines?

A Correct.

Q And then before that, you worked with Pete
Marwick?

A Correct.

Q Basically your work history, your
professional career has been entirely within the
State of Hawaii?

A Correct, almost 40 years.

Q And when did you join A & B?

A January of 1983.

7

1 Q What was your position?

2 A I was originally the controller.

3 Q How long did you hold that position?

4 A Maybe a year, year-and-a-half. Then I was

5 the treasurer and controller. And then I was the

6 chief financial officer for several years.

7 Q And then eventually you got associated with

8 HC&S, is that right?

9 A Correct.

10 Q What is your current position?

11 A As of January 1st of this year I'm

12 president of the Agricultural Group, which

13 specifically -- let me back up.

14 Prior to January 1st of this year, I was

15 president of the ag group and general manager of

16 HC&S. So as of January 1st, in a transition phase

17 towards my retirement, I had given up the day-to-day

18 activities of HC&S, still working on strategic

19 things. And I remain responsible for Kauai Coffee,

20 which is A&B's coffee operation on Kauai. We have a

21 trucking and truck repair business on Maui and on

22 Kauai and Big Island. So I'm still responsible for

23 those.

24 Q So could you describe -- well, when did you

25 first become associated with HC&S, as opposed to A&B?

13-20-25

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1 A Roughly January 1st, 1996.

2 Q Prior to that had you had any

3 responsibility for ag operations at A&B or anywhere

4 else?

5 A Well, I was born and raised on a farm. And

6 I have 1300 acres of corn and soybean land in Iowa

7 that I actively manage from afar and go work there

8 twice a year.

9 Q Was that before becoming associated with

10 HC&S?

11 A Yes.

12 Q How did it come about that in 1996 you

13 moved from being the chief financial officer and

14 treasurer of A&B? Actually, I don't think you

15 described what your initial role with HC&S was in

16 '96?

17 A In '96 Dick Cameron, who was the previous

18 manager of HC&S had told Alexander & Baldwin he

19 wanted to retire. I don't know the workings of

20 succession planning necessarily for those above me,

21 but I was selected within A&B probably because of my

22 business background and the fact that I have been

23 around agriculture for a long time.

24 I came to HC&S and take care of HC&S and

25 Kauai Coffee, both of which were not doing

13-20-26

other. And HC&S is a relatively large and complex company, and if not everyone is on the same page talking every day, you can have things get out of balance. I think it was trying to put some business logic on how the plantation was run.

Q At that time had there already been, besides McBryde, a number of closures of sugar plantations in Hawai'i?

A Yes. I can't quite remember where I have the statistic from, but I think in more modern times there were 38 plantations. And probably in '96 you were down to three on Kauai, nothing on Oahu. I don't think -- I think Hamakua Sugar was shutdown and then there were two plantations here.

Q Was it -- at the time you were sent to manage HC&S, was it a foregone conclusion that HC&S would or would not join the ranks of the sugar plantations that had shutdown?

A I think A&B has always supported HC&S. It was making money. It was a question of was it making enough money, or -- trends were going the wrong way. Sugar prices haven't gone up in 20, 25 years and costs are going up every day.

Q When you were initially sent here, was there any expectation as to how long you would serve

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exceptionally well at the time, the coffee operation was losing money.

Q So by then had McBryde Sugar Plantation already closed?

A Yes.

Q Was it just recently before that?

A I don't remember the exact date that we shut down McBryde.

Q But it was already shutdown when you started at HC&S?

A Correct.

Q So when you say that probably because of your business background, could you explain how that related to your assignment to take over Mr. Cameron's position?

A I'm going to assume -- because like I said I don't know quite why I was selected -- plantations in Hawai'i have been run as plantations for a long time. And in my opinion, at least when I got there, it was a lot like the military. There was a general and there were colonels in charge of certain things. And then there were the lieutenant colonels, and then there were majors.

And basically what happened is everyone operated very independently and didn't talk to each

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1 as the manager?

2 A No. Other than my age, I assume -- I
3 always assumed I would retire at age 65 or less.

4 Q And then upon coming to HC&S, have you
5 undertaken to try to bring business logic to it and
6 enable it to survive?

7 A I hope so. I think that the major things
8 that we have done since I've been here, some of which
9 were not personally pleasant, probably over a
10 thousand employees when I came here. Today there's
11 like 800. Probably three more significant things.

12 Basically, as I said, you have a cost
13 structure that's going up every year, and a revenue
14 stream from raw sugar that have been steady to
15 downward over the last 25 years. So you need to find
16 more revenue and reduce cost somehow.

17 So the three major things, probably the
18 first one is, we had two mills at that time, one in
19 Paia, one at Pu'unene, five or six miles apart. So
20 we closed the Paia Mill and consolidated everything
21 at Pu'unene and that was done primarily to reduce
22 cost and to prevent the need for added capital in
23 there.

24 But probably more importantly, the Paia
25 Mill exported about 1.5 to 2 megawatts of power per

1 day, but was consuming about 40 percent of the crop.
2 HC&S can export 12 to 13 megawatts of power every
3 day. So we became a lot more energy efficient. We
4 took cost out of the business and we stretched out
5 how long we operate the year so that we can do it
6 with less people and less equipment.

7 Second thing we did is decided to go into
8 food-grade sugar, because the margins on food grade
9 sugar are higher than commodity sugar.

10 Thirdly, I kind of restructured the farming
11 side of the business, try and solve this
12 communication problem. We now have four farm
13 managers who are charged with operating an
14 entrepreneurial basis and being responsible for their
15 fields and for their crops.

16 Q So this has essentially been your project
17 for the last 12 years?

18 A Ten or 11.

19 Q And you say that your transition and status
20 as of January 1 of this year is in anticipation of
21 your retirement?

22 A Correct.

23 Q So looking back on this ten to 12 years,
24 how do you feel about what's been accomplished?

25 A I feel pretty good. HC&S is still here.

1 It's a healthy company for the most part. And I
2 think if these changes wouldn't have been made, it
3 would have been very difficult for A&B to keep HC&S
4 in existence.

5 Q Does HC&S have a future, in your opinion?
6 A In my opinion, yes.

7 Q Why do you think so?

8 A Well, I think we have done a good job of
9 controlling cost, and the business model is, in
10 concept, pretty simple. You got to control your cost
11 and you got to keep increasing revenues every year,
12 and the way that that's going to have to happen is
13 one of three things.

14 We generate a fair amount of income from
15 selling electricity. You've got to continue to do
16 that. We're going to continue to expand our
17 food-grade sugars. Again, the margins are higher.
18 And you've got to continue to control cost.

19 We're also looking at, from a strategic
20 point of view, alternative energy, where there would
21 be liquid transportation fuels or various things.
22 But those require significant amount of capital, and
23 everything that we do on the farm is going to require
24 water. So until we understand where we're at with
25 water, those strategic things are kind of sitting

still.

Q I would like you to elaborate a little bit
on what you just indicated in terms of importance of
selling energy. And in particular -- I mean, you
were here when Mr. Volner testified?

A Correct.

Q Part of his job is to, on a daily basis,
make decisions about how some of the power is used on
the plantation; is that right?

A Correct.

Q And the question has been raised, well, in
terms of pumping groundwater as a way of
supplementing surface water, that it's simply an
economic decision and there's nothing that prevents
HC&S from simply purchasing more power.

Do you remember that line of questioning?

A Yes.

Q Do you have any comments on that?

A I wouldn't agree with that for two general
reasons. As Rick said, without hydro, which is the
time of year we're talking about, we have the ability
to generate about 30 to 31 megawatts of power, that's
per hour. The parasitic load of the power plant is
about six. The factory itself, which is operating
and producing sugar takes about six. Then to run all

1 of our shops, the office and some of the wastewater
2 systems, that's about two.

3 I kind of lost track of th math, but I know
4 at that point in time we're under firm power contract
5 to deliver 12 megawatts of power to Maui Electric.
6 That leaves four for pumping during the day, and at
7 night we deliver eight instead of 12, so there's
8 additional four megawatts of power at night, which is
9 what we do.

10 When I first came, one of the things I
11 thought HC&S lost focus on what business they were
12 in, and we started pumping a lot more, and we shorted
13 Maui Electric. Two things came out of that.

14 One is they told us our power contract was
15 in jeopardy because we are no longer a firm power
16 supplier. Our power contract is unique and I think
17 it's the only one in the State of Hawaii. We get
18 about 1.8 million dollars a year for delivering firm
19 power, and then being able to provide them with added
20 spinning in reserve if they get in trouble. Then we
21 get paid on a voided cost.

22 Now, if we underdeliver, not only do we not
23 get the power revenue. The kind of rule of thumb is
24 we get penalized three times that power rate for the
25 power we don't deliver.

1 Now, the first quarter of this year that
2 power rate is, if I remember right, \$242 a megawatt
3 hour. So if we chose to pump and not deliver power,
4 not only would we lose the \$242, we would in fact
5 have to pay them roughly \$750 a megawatt hour.

6 That's a swing of about a thousand dollars a megawatt
7 hour, on a 24-hour for basis for one megawatt that's
8 \$24,000, I can't do the math in my head, but you're
9 getting very, very big numbers if you chose to try to
10 pump freely.

11 The second thing, not only is it economic,
12 but Maui Electric, when we sat down to extend the
13 power contract, told us that they would not renew
14 that power contract because we were not a firm
15 deliverer of power. And two things would happen.

16 That 1.8 million dollars a year would go
17 away, and they said our voided cost rate would go
18 down because we're no longer a firm reliable source
19 of power. For example, I think I know it's in the
20 public documents, I don't know the rate, but the wind
21 farm here gets paid less on voided cost basis than we
22 do.

23 Q And the reason for that?

24 A Is we deliver 24-hours-a-day, seven days a
25 week.

Q You mentioned that, you use the phrase, spinning reserve. What is that?

A Under the power contract, they can instantly take another four megawatts of power from us and we can't do anything about it. The computer controls we have in place will shutdown pumps, will shutdown the factory. In reality, if Maui Electric gets in trouble, they usually go up to about 18 to 20 megawatts of power from us, and we can't do anything about it because it's all computer controlled.

So, again, if they get in trouble either from generation point of view, in the past couple of years, if the wind farm drops off line real fast, they and us have to pick that up. If there is a car wreck someplace that takes down a power pole, there's a dead short in the line, that power will come out of our system. And we can't do anything about that.

Q Is there a force majeure clause in the agreement that allows you to avoid the penalties under some circumstances?

A There is a force majeure provision. That's the one I was talking about that we exercised back in probably the late '90s where if the soil moisture levels that Rick talked about yesterday are below, I

think it's 50 percent for a certain period of time, we can then declare force majeure, and/or deliver less power. But that's where we got in trouble with them, they said they would not tolerate that any more.

Q So in more recent times, current practice, when the soil moistures drop to the level where in theory you can invoke the force majeure clause, what's the policy of the company at this point?

A The policy of the last few years has been honor the contract and deliver the 12 megawatts.

Q And, again, the reason for that?

A I don't want to jeopardize that power contract.

Q So Mr. Volner commented a bit yesterday on the relative importance of the energy sales having changed over time. Could you just -- I mean, could you characterize the degree of importance of the energy sales to HC&S going forward?

A Correct. When I first came, I would say power revenue was five percent of our revenues. The last two years it's been 20, 21 percent. Going forward, because we get paid on an alternative -- or a voided cost rather, I would think that number will go to 25 percent probably in 2008, and it will keep

1 going higher and higher as fossil fuel costs go
2 higher and higher.
3 And, again, that's the only way -- that's
4 our main source of added revenue. We cannot, in my
5 opinion, cut cost any more. But we're seeing cost
6 increases.

7 Q Now, in paragraph ten of your first written
8 testimony, there is some discussion about the factors
9 that have contributed to HC&S' ability to remain
10 financially viable to date. And you talk about the
11 challenge due to the slim profit margins that can be
12 made by producing commodity sugar. And then talk
13 about the diversification to specialty grade,
14 food-grade raw sugars.

15 And then the next sentence, which is the
16 one I wanted to ask you about.

17 In the last four years, HC&S has made
18 capital investments of at least \$20 million toward
19 this effort.

20 Could you explain a little more the
21 difference between producing the commodity sugar and
22 the food-grade sugar, and why it was necessary to
23 incur capital expenditure of this order of magnitude
24 in order to be able to do that?

25 A Let me try to do the 50,000 foot level or

1 so. Commodity sugar is produced, you don't worry
2 about if there is contaminants in the sugar. Those
3 contaminants can come from processing,
4 inconsistencies, but primary all of the
5 non-food-grade sugars, the vessels and things where
6 we boil the sugars and things are in a soft steel,
7 mild steel type thing that over time it will have
8 metal flakes come off. You can't have that type of
9 thing in a food product.

10 So food-grade products, under the Food
11 Safety Act and various things, that's all stainless
12 steel environment. It's a separate building within a
13 building. It has restricted access. You can't get
14 in unless you have an I.D. card. People wear hair
15 nets. It's very, very clean. It's very, very
16 different type of equipment. But primarily it's all
17 stainless steel and restricted access.

18 Q And that was done within the preexisting
19 mill structure?

20 A As I said, we have got a building inside of
21 the a building, so we went in and gutted part of the
22 old sugar factory and built a building inside of a
23 building and put all new equipment inside of the new
24 building.

25 Q What kind of employees would then work

1 within that new building?

2 A Well, there's obviously different skill
3 sets involved. There is management people that are
4 professional managers. There's chemists, lab people,
5 then there's the bargaining unit people who run the
6 packaging equipment, pay attention to what is going
7 on, load the trucks.

8 Q And the -- so you have both management and
9 union labor that is working in the specialty sugar
10 part of the mill?

11 A Correct.

12 Q And then in order to construct the building
13 within the building, that was -- there was design
14 costs, construction costs?

15 A Correct. And, again, that was done with
16 primary ILWU labor, naturally.

17 Q I was fortunate enough to go on a tour of
18 HC&S before the mill shutdown this last operating
19 season, and I noticed that all the people on the tour
20 were provided with a brochure about HC&S. Is that
21 something HC&S does for community relations?

22 A Correct.

23 Q And the front of the brochure there is a
24 phrase: Reinventing the Business of Growing
25 Sugarcane.

1 Is that a theme that you've introduced to
2 the company?

3 A Correct.

4 Q Could you describe what is meant by that
5 reinventing the business of growing sugarcane?

6 A When I came to HC&S I thought that they
7 weren't focused on what they were really doing. And
8 I think it might have been also reason for a lot of
9 the other sugar companies getting in trouble. They
10 thought they were in the sugar business. The
11 business they're in, or I think we're in, my view, is
12 we are in the business of growing sugarcane plant,
13 and sugarcane plant produces three things.

14 Produces fiber for biomass, a new
15 politically correct term. Produces sucrose and
16 produces molasses.

17 Our focus has been how to maximize the
18 value of each of those three product streams and
19 produce it as efficiently as possible. For example,
20 with the biomass we spend about \$12 million on a
21 project to make the replacement for medium density
22 fiberboard. We were ahead of our time and the
23 equipment didn't work the way it was supposed to. We
24 wrote off the \$12 million.

25 Increasing the value of sucrose, that's

1 where we're expanding and increasing the volume of
 2 food-grade sugar. On molasses, we've looked at a
 3 couple of things, trying to make cattle feed here
 4 locally. Our initial look see at ethanol was using
 5 molasses only. So we're constantly focused every day
 6 on how can we add value to each of these product
 7 streams and minimize the cost that it takes to
 8 produce those three product streams.

9 Q I'm going to give you a copy of the
 10 brochure which I've marked Exhibit 28.

11 On the second page, basically a personal
 12 message from you, in which you describe the fact that
 13 the brochure, among other things, talks about the
 14 nearly 800 employees who are dedicated to keeping
 15 37,000 acres of Maui land in income producing green
 16 space. Is that again part of the message here?

17 A Correct.

18 Q On the next page there's a discussion about
 19 the relationship that HC&S has with the International
 20 Longshore and Warehouse Union, do see that?

21 A Correct.

22 Q Actually earlier in the proceeding, Mr.
 23 Kennison of the ILWU had testified and had some
 24 comments about the relationship with management at
 25 HC&S.

1 From your point of view, what has the
 2 relationship been with the ILWU?

3 A I think it has been excellent since I've
 4 been here. We've done some things that are basically
 5 unheard of in really union environment. Probably two
 6 that come to mind is we actually have profit sharing,
 7 most union contracts people want to get paid by the
 8 hour. Unfortunately that's only paid off one year.
 9 But the fact that they would sign it and want to
 10 participate and make it more profitable is very
 11 positive sign.

12 Secondly, we have the right to do
 13 evaluations on every union worker. I can't remember,
 14 it's at least once a year.

15 Thirdly, promotions into higher level jobs
 16 is based upon the ability to do the job, not
 17 seniority, and I think all of those things, and just
 18 a general attitude. I hear or I did prior to January
 19 1st, hear all third step union grievances. I used to
 20 do that when I was at Aloha Airlines. Very, very few
 21 unit grievances.

22 So I think our relationship is very good.
 23 They work with us every time we want to automate
 24 something even if it means losing jobs, they have not
 25 resisted that at all.

1 Q The thing about job advancement being based
2 on ability to do the job rather than seniority, does
3 that apply to nonunion staff as well?

4 A Sure. You remember the book Peter
5 Principal from maybe 30 years ago, we all get
6 promoted to our level of incompetence.

7 Q Yesterday during Mr. Volner's -- actually
8 it was the day before -- seemed like he was fairly
9 young to ascend to his position?

10 A He's done an excellent job so far.

11 Q There's only a few things in this brochure.
12 It's useful because it talks about all these issues,
13 but on page three there's a page that talks about a
14 hi tech sugar business and describes some of the
15 modernization of the mill.

16 And in the third paragraph there, last
17 seven years HC&S invested nearly 24 million to
18 upgrade Pu'unene factory and power generating
19 equipment.

20 Can you describe the purpose of that?

21 A Two things. One is that the technology
22 keeps changing. As I said earlier, everything within
23 the factory and the power plant is computer
24 controlled, so it continues to be state of the art on
25 computer controls.

1 We have tried to upgrade the amount of
2 material we can put through the Pu'unene Mill. When
3 we closed Paia, we were somewhat capacity constrained
4 on what we call the front end of the factory. So
5 we've expanded the front end of the factory which is
6 basically cane thinner and the preparation of the
7 fiber. So all of it is to make the operation more
8 and more efficient.

9 Q The next couple pages is just a general
10 description of the steps of the crop cycle and the
11 processing cycle.

12 A Okay.

13 Q And at the bottom, this is actually page
14 five, there is a diagram of sugarcane milling and
15 processing steps.

16 A Yes.

17 Q So on the left you've got sugarcane, then
18 basically takes you through the steps; on the right,
19 the commodity sugar, specialty sugar and molasses?

20 A Correct.

21 Q Does this sort of depict in a visual format
22 what you're talking about in terms of the income
23 generating products at the end of the stream here?

24 A Correct. But make sure you pay attention
25 to bagasse and electricity on the bottom part of the

1 page.
 2 Q Now, so the sugarcane, you extract the
 3 juice, then you have the bagasse. From bagasse the
 4 next box there says steam and power.

5 Now, we have heard some testimony about
 6 what the power constraints are, power generating
 7 capacity constraints are. But generally the power,
 8 other than the hydropower, comes from steam?

9 A Correct.

10 Q Could you talk a little bit about steam
 11 management as opposed to power management?

12 A On any given day or any given hour in
 13 addition to power limited, steam limited. We have
 14 three boilers, and you can only produce so much
 15 steam.

16 The three general uses of the steam are,
 17 first is steam for the turbo generators, which
 18 generate electricity.

19 The second use is all of the power movement
 20 processing within the factory are steam turbines.
 21 For example, there's 4,000, 1,000 horsepower steam
 22 turbines that drive the mills. There is a
 23 5000 horsepower turbine that prepares the cane. So
 24 you have to have high pressure steam.

25 I should back up. We use high pressure

1 steam to drive the turbo generators. We use high
 2 pressure steam to drive the turbines that are doing
 3 the work in the factory.

4 We then take low pressure steam or waste
 5 steam off of both the turbo generators and the
 6 primary driver turbines in the mill. That low
 7 pressure steam goes to the boiling house, which then
 8 boils off the water, separates the water from the
 9 sucrose.

10 Now, if you don't have enough extraction
 11 steam, you also have to take high pressure steam,
 12 put it through a pressure reducing valve, so that
 13 you're in effect converting high pressure steam to
 14 low pressure steam for processing of the sugar.

15 So on any given time you might also be
 16 steam limited. Because if you have -- it's not
 17 unusual to have something break. Very rarely does it
 18 break, but it could break, so you might lose a whole
 19 boiler. At that point in time if we lose the big
 20 boiler, we're upside down and the operation has to
 21 stop and we can't deliver a unit of power to Maui
 22 Electric until that's fixed.

23 Q And the commodity sugar gets shipped for
 24 processing by who?

25 A That sugar goes under contract to C&H Sugar

1 Company in Crockett, California.

2 Q And no special packaging is required in

3 order to --

4 A It's bulk shipped. In fact, at the dock

5 here, the terminal down at Kahului Harbor, we push it

6 around with D-8 or big loaders.

7 Q And the specialty sugars are produced and

8 packaged here entirely?

9 A We have our own retail products that you'll

10 see in the State of Hawaii under Maui brand.

11 Probably are biggest customer goes in food-grade

12 super sack, which is 1,000 -- or one ton sealed bag.

13 That sugar goes to sugar in the raw that you see in

14 Starbucks and any fine restaurant.

15 Q So that's probably our biggest customer.

16 They package for other people the same product.

17 You'll see it in the south. I think it's called

18 natural sugar.

19 We then sell sugar to juice companies,

20 candy people here in Hawai'i, jellies, jams. We also

21 make a slightly different product for C&H Sugar. In

22 the supermarket you'll see a package, C&H Raw Wash

23 Sugar. We sell to people locally here that repackage

24 the same product under different names.

25 Q So currently about what percentage of the

sugar that is produced by HC&S is under the specialty

side?

A In 2007 we produced and sold just short of

21,000 tons off of a very low crop size of 165,000

tons, so that's about an eighth -- 12 percent,

12-and-a-half percent. And our goal is to take

that -- we're just completing the equipment

installation now to take that up to, 60,000 tons. So

on a base year, all other things being equal,

200,000 tons of sugar production, that would

30 percent of the crop or so.

Q So at this point you would like to sell as

much of the commodity sugar as soon as possible

because it has a higher profit margin; is that right?

A Sell as much food-grade sugar. And the way

we have got everything sized, we can take it from 60

to a 100,000 tons. Everything has been engineered

and a lot of the equipment would not have to be

duplicated so we could get to a 100,000 tons or half

the crop with a more modest capital investment.

Q What are the limiting factors in terms of

making the transition?

A Two things. We have been capacity

constrained up until when we started the factory up

this spring.

1 Secondly, you can't sell a product that you
2 can't make. So you have to have the ability to
3 produce the product before you can go market it. We
4 have been out marketing a product that we in effect
5 have not made yet for the last two years.

6 There's a trend. This new product will be
7 sold as a new term is "evaporated cane juice". It's
8 not sucrose. You go to a health food store see a lot
9 of packages, natural food sections they have
10 evaporated cane juice.

11 So we're talking to a lot of people. A lot
12 of new food products are coming out with evaporated
13 cane juice which is unrefined sugar as opposed to
14 high sucrose corn syrup, because there's a concern in
15 America that high sucrose corn syrup could be leading
16 to obesity and several other health issues.

17 Q So, again, my understanding this transition
18 to the food-grade sugars, which would include the
19 Maui brand Evaporated Cane Juice?

20 A Correct.

21 Q And also the Maui brand Natural Cane Sugar?

22 A Correct.

23 Q And you indicated a fairly large customer
24 is -- who is it actually does the Sugar in the Raw
25 packaging?

1 A Sugar in the Raw is owned by two
2 family-owned companies. One is Cumberland Foods out
3 of New York City or Brooklyn. And then it's kind of
4 a -- I'm not sure if it is partnership, they all work
5 together and I'm not sure if there's common
6 ownership, but Sugar Foods out of Southern
7 California. But they both -- Sugar Foods has the
8 right to use Sugar in the Raw label.

9 Q So when we see the brown package sometime
10 in restaurants or hotels, this is actually packages
11 on the mainland?

12 A That's packaged on the mainland.

13 Q But it's processed here and then shipped?

14 A It's manufactured, put in one ton super
15 sacks and it's either shipped to Southern California
16 or Brooklyn.

17 Q But in the food-grade --

18 A In had food-grade environment.

19 Q So there's a fair amount of capital been
20 put into trying to do this, what reason is there to
21 think that this is going to work and that going
22 forward, this market is going to be available or not
23 scooped up by somebody else, like Brazil or somebody?

24 A This is the way we have marketed it. And
25 it's a concept that goes back to the closing of Paia

1 Mill. We operate the Pu'unene Mill basically from
2 mid February to as late of December 31st of every
3 year. So we're the only ones that have what I call a
4 along harvest season.

5 Other people in the United States, say,
6 Louisiana probably harvest for 90 days out of the
7 year. Texas is a little bit longer but not much
8 longer. Florida is like Texas, four or five months.
9 So if they were going to produce this product, they
10 would have to produce a lot of it in a short period
11 of time, which means their capital cost per unit
12 would be much higher than ours, plus they would have
13 to have a lot of warehouse to store the product.

14 Brazil is more interesting. I'm not quite
15 sure what their harvest season is because the country
16 is so big. But whenever they're dealing with the
17 U.S. at least they want to claim to be a third world
18 country. So I don't think a lot of people want to
19 buy food products from third world countries, but I
20 just don't think they're interested.

21 Q So your primary competition, as you try to
22 get this niche, you envision as being the States
23 sugar --

24 A I don't think -- obviously they're closer
25 to the marketplace, and I think if they were going to

1 do it, they would do it. I just think their harvest
2 season is far too short for them to do it
3 economically.

4 In addition, if you look at that Sugar in
5 the Raw, it will say in the front: Made in Hawai'i,
6 and on the backside it talks about Maui. Their
7 marketing research says that Maui carries a strong
8 ambience to using the name Maui on their product.

9 Q I guess, you gave me a brochure I've marked
10 E-29. Actually there's two, another one marked E-30.

11 So looking at E-29, I take it this is
12 essentially a marketing brochure?

13 A That's correct, this is brand new.

14 Q It's entitled: Maui Brand Evaporated Cane
15 Juice?

16 A Correct.

17 Q So the Maui name, I take it, is essential
18 to the marketing of it then?

19 A Correct.

20 Q And, again, this is -- explain again --
21 well, would this be marketed directly to consumers or
22 to manufacturers?

23 A It has limited application to consumers in
24 the State of Hawaii. It's primarily to industrial
25 food manufacturers.

1 Q So can you describe examples?

2 A Example would be people who make cereal.
3 People who make juices. So I can talk about existing
4 customers in the State of Hawaii. For example,
5 Hawaiian Sun, Aloha Made, which is ETOEN, Meadow
6 Gold. People like that.

7 We're also working with people on the Big
8 Island on a bunch of different food product there.
9 So for the Hawai'i market it's retail, but the bulk
10 of this we envision being sold to the West Coast food
11 manufacturers.

12 Q Why would the food manufacturers want to
13 pay for than what you get for commodity sugar or
14 evaporated cane sugar?

15 A It's marketed as specialized product. And
16 again, those of them who want to use the Maui name,
17 they're willing to pay just a little bit more for it.

18 And as point of reference, you can do the
19 math. I'm going to use the whole crop. But
20 200,000 tons -- we do everything on a per ton
21 basis -- I've lost the decimal, but 200,000 tons
22 times 2,000 pounds times a penny is a lot of money,
23 about \$4 million. So if you can increase your
24 revenue a few cents per pound, or your margin by a
25 few cents per pound, you're talking big dollars.

13-20-53

McMANUS COURT REPORTERS 239-6148

1 Q Exhibit E-30, this is a brochure entitled
2 Maui Brand Natural Cane Sugar?

3 A Correct. This is our particular retail
4 product in the State of Hawaii. It's a slightly
5 different than Sugar in the Raw. It's a little
6 darker, and little larger grain.

7 Q And I've seen this little bottle with the
8 Maui brand Natural Cane Sugar I guess in the airport
9 store and some of the stores around Maui?

10 A Right.

11 Q Sold locally?

12 A Right. And it's repackaged by certain
13 people. Duty Free repackages.

14 Q How is this different from C&H brown sugar?

15 A You're asking me a technical question.

16 Q During the tour the chemist talking to the
17 group gave an explanation. I don't know if maybe --

18 A Maybe we need the chemist. This is a
19 single crystallization, it's just a large crystal
20 where the molasses is retained in the crystal.

21 Brown sugar, as I understand it, is a very
22 different process, and, again, you're trying to make
23 sugar improperly, but you're trying to capture the
24 molasses inside brown sugar, but it's a much smaller
25 crystal size, it's a lot higher moisture.

13-20-54

McMANUS COURT REPORTERS 239-6148

Q We have to ask about this. I'm showing you a package of sugar like envelope. On the back it says Sugar in the Raw, but on the front it appears to have the seal of the president of the United States. Can you explain that?

A Yes. Right after 9/11 and the what was the white powder that was in the mail -- I guess someone in the white house thought it would be a good idea to not have white granulated sugar in the White House or Air Force One, so they put Sugar in the Raw and put the president seal on it, and it says made in Maui.

Q And this is the only one you have so we're not going to make it an exhibit.

A Please, do not.

Q Let's go back to your written testimony. Actually before we do that -- sorry about this -- on E-28, the brochure?

A Okay.

Q There was another thing I wanted to -- if you turn the page from where we were, from page five to page six, there is a page called: The people at HC&S and then there's a heading: Apprenticeship program.

Could you explain what the apprenticeship program at HC&S is?

A The apprenticeship program is a program that we created originally it was self-serving for our own high school level employees. So it's in combination with Maui Community College and I forget what other western something or other.

But it's to create high school level employees, like mechanics, electricians, power training mechanics, electrical people, millwrights, which would include welding skills and things like that.

To be accepted in the program you should be a high school graduate, but you have to demonstrate that you have good work skills and good work habits. And then you go into the pre-apprenticeship training program to verify all those things. I forget, it's quite a number of hours where they have to study and work and there's testing all the way. Then they become, for example, if you're a mechanic you can become ICE certified mechanic, as example.

So it's a the training program that creates a lot of high school level jobs. Unfortunately, we lose a lot of people after they have gone through the apprenticeship training program to people like Maui Electric. Some of the hotels that have need for -- pump a lot of water, they have massive electrical

1 systems. Mechanics are pretty fluid in the Maui
2 community. So trained a lot of mechanics.

3 Q Again, how many mechanics or heavy mechanic
4 mechanics does HC&S employ?

5 A Probably about 75 or 80.

6 Q Just to service HC&S equipment?

7 A Primarily we service our own equipment and
8 pick up up through big heavy construction equipment,
9 caterpillar equipment. We have some bigger John
10 Deere equipment that we do.

11 We do work for outside contractors if they
12 operate the type of equipment we operate. For
13 example, we wouldn't have any skill for working on
14 paving equipment, for example, but crawler tractor,
15 D-6, D-8, something like. If people want to bring it
16 in, we would do that.

17 Q What's Kahului Trucking?

18 A Kahului Trucking is a sister company.

19 Well, HC&S is actually a division, it's not a

20 subsidiary. So KT&S is a subsidiary of Alexander &
21 Baldwin. Originally it was the railroad that hauled
22 bulk sugar and various thing around the County of
23 Maui.

24 Q Is that part of what you manage?

25 A Correct.

Q The ag group?

2 A Yeah. So they handle -- they pick up all
3 the molasses and all the bulk commodity sugar and
4 store it until those two products are shipped.

5 Q And the next page, page seven, there is a
6 discussion about corporate citizenship, and I guess
7 philanthropy via Alexander & Baldwin Foundation?

8 A Correct.

9 Q Are they involved in charitable
10 contributions that effect Maui?

11 A Correct. I'm on the foundation board, but
12 as most people know, or should know, Alexander &
13 Baldwin was formed on Maui up near Makawao in 1870.
14 So A&B has always been a big supporter of the Maui
15 community.

16 Q And there's a list of various charities,
17 but I didn't see the Maui Coastal Land Trust. Are
18 you familiar with the Maui Coastal Land Trust?

19 A Sure. I give them some money.

20 Q So they are the recipient of charitable
21 contributions?

22 A Both from me personally and from the
23 foundation.

24 Q And that's the trust that wants to restore
25 a wetland by the mouth of Waihe'e Stream?

1 A I've heard that.

2 Q Then you have a question and answer thing

3 in the brochure which asks the question that I'm sure

4 you hear from time to time. So I'll ask it of you

5 now, why don't you replace sugarcane for an energy

6 crop like corn?

7 A There's three, four or five, really good

8 reasons. The first one is corn is going to require

9 freshwater, not brackish water, but freshwater about

10 every three days in the environment that we farm in.

11 There's not that much water available.

12 Secondly, we've got to remember where we

13 are in the globe, we're about 21, 22 degrees above

14 the equator, so our hours of sunlight are very short

15 here.

16 Now, people grow seed corn here, and seed

17 corn is really the parent stock. So I don't know

18 what their yields are. They're very tight with what

19 their yields are, but you cannot grow corn here, at

20 least the varieties developed so far on a commercial

21 basis, just not enough hours of sunlight in the day.

22 Thirdly, we have prevailing tradewinds that

23 create a flagging effect. I you look, a lot of the

24 trees around, they're all leaned over. I think that

25 would be an issue.

At fourthly, we farmed a pretty rugged environment in a lot of the plantation, lot of rocks. Farming equipment that is set up for corn just wouldn't work, I don't think. But the big thing is water and sunlight.

Q What is it about -- I mean does sugarcane have a tolerance for being shorted water from time to time?

A Sugarcane is a tropical grass, obviously. I think it has two great characteristics that have allowed it to grow in Hawai'i. It can deal with brackish water. As Rick said yesterday, one of the problems is it will tend to want to store things like potassium that's in the water instead of sucrose, and it's reasonably drought tolerant compared to other crops.

And it's probably the most efficient converter of sunlight to biomass of any plant. On our community tours, if you remember, we look at the crops that a lot of people talk about all the way from the people in Paia that would grow hemp if it was legal. Again, hemp needs longer hours of sunlight. But even if it was, the biomass that is produced by the sugarcane plant is the highest of anything that will grow in this part of the world,

1 even much higher than say, eucalyptus, which is close
2 as a second, switch grass, a lot of people on the
3 mainland talk about switch grass.

4 Q I'm done with E-28.
5 Paragraph 11, paragraph 12 of your written
6 testimony, you talk about: It's critical to the
7 continued economic viability that HC&S continue to
8 have reliable access to surface water for both East
9 and West Maui to irrigate its sugar fields. Any
10 curtailment of irrigation water, especially during
11 periods of low ditch flows, will have an immediate
12 negative impact on HC&S' profitability.

13 You were here when Mr. Volner was
14 testifying in response to some questions about what
15 the various, sort of the hierarchy of coping
16 strategies that HC&S would use as water were to be
17 diminished. And he talked about, for example,
18 pumping more is one thing that can be done, assuming
19 you had the power, and assuming you could take the
20 financial hit of having to pump more, and then also
21 just not irrigating as much basically, and then
22 finally following fields.

23 Could you describe -- I mean, from the
24 point of view of the overall financial management of
25 HC&S, what the trade-offs are as you move from one

step to the next in that hierarchy of coping
strategies?

A That's an extremely complex question. I
think if you fully understood the dynamics of trying
to grow sugarcane. The first thing is withholding
water. The plant will stay alive, but in effect it's
not growing. So it will stay alive, but it's not
going to produce any sugar. So that was part of your
question.

Another question was fallowing land. What
that does is you need to harvest about, in our
operation, 16,000 to 16,500 acres every year to keep
the plantation and your operation in balance. If
not, you'll have big years and little years and that
just doesn't work right on trying to get things to
the factory.

So as you fallow acres, and then you later
have water to plant them, it's going to reduce the
crop age. If you remember, when Rick talked about
crop age, the lower the crop age, the lower the sugar
content in the plant.

So a rule of thumb that we try and use, and
it all ties together, there's nothing magical about
this, is we need to harvest about 400,000 acre months
of cane growth per year to be viable. And that's

1 with these yield numbers I have here, 16,000 acres,
2 that gives you the 200,000 tons of sugar, more or
3 less.

4 So when you start either reducing fallow
5 the lands, you're going to reduce the crop age, so
6 you're going to reduce your acre months you're trying
7 to harvest. Or if you don't irrigate, you're going
8 to have an acre month, that's not really a viable
9 acre month.

10 In other words, the plant gets no water for
11 a month, it will still stay alive, but it didn't
12 produce any sugar.

13 Q Now, but if you did fallow some land,
14 wouldn't you also reduce cost?

15 A No. I think any economist or cost
16 accountant would talk to you about fixed cost and
17 variable costs. And variable cost tend to stairstep
18 over time or fixed cost.

19 You're not going to change the cost of
20 operating the factory or the power plant or all the
21 shops or the administrative people if you fallow
22 acres.

23 The only thing you are not going to spend
24 if you fallow an acre or two acres or whatever the
25 multiple is, would be the diesel fuel to prepare the

soil and take care of weed control and harvest it.
You would not have to pay for drip tubing. You would
not have to pay for fertilizer, and weed control,
chemicals.

So you have a very few variable cost, cost
that are purely variable in the operation. HC&S
unfortunately is a very high-fixed cost operation.

In other words, you can take out 500 acres or
something like that, and you're not going to change
the number of people. You're not going to change the
amount of equipment you have. You're not going to
change anything in the factory. You're not going to
change anything in the power plant.

Q So does that -- so what point -- but if you
reduce the amount of water and if you didn't fallow
the acreage, you'd get less acre months of growth?

A Correct.

Q And so less sugar?

A Correct.

Q In managing the plantation, do you look at
what point it's no longer worth planting the acres?
How does that work?

A Can you ask me what you're really asking me
again, please?

Q What I'm asking is if you fallow the acres,

1 then you have a small amount of variable cost that is
2 reduced?

3 A Correct.

4 Q But then you have no revenue?

5 A Correct.

6 Q If you have a hundred acres that has a poor
7 yield, then there will be some revenue?

8 A Correct.

9 Q And, of course, if it's well irrigated and
10 you have a good yield, then that amount of revenue?

11 A Correct.

12 Q So does looking at that equation, so to
13 speak, does that factor into the decisions about
14 withholding water, or at what point you fallow a
15 field?

16 A Yes. And you hope that over time there is
17 going to be dry months and wet months and you hope
18 the plant stays alive during the dry months and then
19 you're going to get some water to put on the plant.

20 Q There's been some discussion in the case
21 and in your second written testimony, if you have it
22 handy, paragraph seven, October.

23 A Okay.

24 Q In paragraph seven you indicate:
25 Withdrawal of one or two hundred acres from

1 cultivation due to reduced availability of irrigation
2 water could be tolerated provided that there is
3 sufficient water to generate high quality yields on
4 the majority of the acreage that remains in
5 cultivation. On the other hand, withdrawal of much
6 larger tracts, such as the high yielding Iao Waikapu
7 fields if Iao Stream water were to become
8 unavailable, if not otherwise mitigated, would
9 clearly jeopardize the survival of HC&S.

10 A Correct.

11 Q So the Iao Waikapu fields, we're talking, I
12 guess the number that's been used most often is
13 1,350 acres, if you include Field 920, although I
14 understand Field 920, at least temporarily, is going
15 to be withdrawn from cultivation for other reasons?

16 A Partially.

17 Q But the balance of those fields are
18 actually leased, right?

19 A Correct.

20 Q And so I guess -- so if those fields are
21 currently critical to be in production in terms of
22 the financial viability of HC&S -- to be the devil's
23 advocate here, if you're a skeptic, you'll say, well,
24 you are not going to have those fields forever.

25 Why should we assume that HC&S is going to

1 be able to survive if those fields may eventually be
2 unavailable?

3 A Here's my opinion. Those of us who live on
4 Maui, and to a lesser extent, I suppose people in
5 Honolulu, the land use change provisions on Maui are
6 extremely difficult. As I understand the process to
7 rezone those lands, which would take them out of
8 agriculture, first they have to be in the Community
9 Plan.

10 The Community Plan process, which is good
11 for the next ten years, has just begun. And although
12 it's a ten-year period, they usually end up being 15,
13 at least on Maui.

14 My understanding is politically they have
15 been told that those lands that we're talking about
16 specifically, politically people are saying they need
17 to stay in agriculture. Even if they got in, then
18 you have to go through State Land Use Commission.
19 Then you've got to come back for site specific
20 zoning, or first subdivision and then site specific
21 zoning, all these things.

22 In my opinion, that process is going to
23 take 15 to 20 years on the near-term A&B's experience
24 on Maui trying to develop land. So I think most
25 business' planning horizon is probably five to seven

1 years. So in all of our planning, we're assuming
2 those acres are going to still be available.

3 And based upon our discussions with Mr.
4 Atherton, he said those specific acres, at least he
5 told me, he would like to see them stay in
6 agriculture.

7 Q So when you say -- so when you -- so
8 looking forward for HC&S the time horizon over which
9 you can realistically plan is how long?

10 A I think most people today say five years.
11 If you're trying to have a capital investment, you
12 would hope that you can pay for it in five to seven
13 years.

14 Q So after five or seven years, we may have a
15 different environment in terms of whether the
16 commodity sugars have increased in terms of
17 percentage of the total production?

18 A Correct. I'm not even sure what is going
19 to happen this afternoon. So five years out is even
20 a little more difficult.

21 Q And also exploration of possible ethanol
22 production?

23 A Correct.

24 Q The time horizon there --

25 A Well, there's two forms of creating ethanol

1 right now. One is a known technology which is
2 fermenting sugar or starches, like they do with corn
3 or like Brazil does with sugar. That's known
4 technology. There are some problems that go with it
5 in an area like Maui.

6 But the big alleged savior is cellulosic
7 conversion where you convert biomass. And you could
8 have the opportunity to convert both biomass and
9 sugars into ethanol.

10 That technology has not been proven. And
11 there's actually two ways to do cellulosic
12 conversion, one is enzymatically and one is the
13 gasification process. The enzyme method works, but
14 it's not efficient. The gasification process is
15 everyone is working on it in every country in the
16 world, but it's not viable, but in five years it
17 might be.

18 Q So at least for the foreseeable future, you
19 think it's reasonable to count on having those acres?
20 A I do.
21 Q It came up during Rick Volner's
22 cross-examination yesterday about Field 767. Do you
23 know anything about that?

24 A I sure do.

25 Q What do you know about Field 767?

A I have been discussing with Avery probably
since I've been here when pineapple went out on that
particular parcel, if we could take that in, because
it's just contiguous to everything that we do there.
At the time I was told no, because Doc Byers
(phonetic), who unfortunately is deceased now,
envisioned that that would be a nice place to put a
shopping center. And he felt that if it was an
active agriculture it would be even harder to get the
land use changed.

So my impression was he wanted it to stay
in a fallow state. Since Mr. Atherton picked up that
land, it's now become available. And we would have
probably farmed it earlier except, Rick talked about
open acres, we're trying to close all of our own
acres first, so that's why it's going to be planted
within the next month, I would think.

Q One of the things that you talked about
yesterday was -- and this whole issue of HC&S going
forward, its future, and obviously you put 12-plus
years of your life into trying to make sure it does
have a future?

A I actually had brown hair and more of it
when I started.

Q And if a hypothetical owner of a sugar

1 plantation wanted to essentially go out of business,
2 and would you run the business into the ground, is a
3 phrase you used. Would you invest in it, as HC&S has
4 over the last 12 years?

5 A If I decided strategically I didn't want to
6 be in the business, I would immediately stop
7 investing, and I would get out of business as fast as
8 I could, because you have two years of revenue in the
9 ground growing, and you can start curtailing your
10 expenses immediately and make a lot of money getting
11 out of the business.

12 It's the people that tend to try and --
13 losing money, so they keep trying to stay in
14 business, they stop putting capital in the business,
15 start cheating on fertilizer, you get a compounding
16 problem, then you lose money getting out of the
17 business.

18 For me as a business person, if I felt
19 strategically that I couldn't make it work, I would
20 pull the plug right now and maximize my cash flow and
21 income getting out of the business.

22 Q And when you do retire, where do you expect
23 to live?

24 A Right where I live now in South Maui.

25 Q As you sit here today, do you think HC&S

does have a future?

A I think HC&S has a future with the same
operating parameters we have right now. In other
words, faced with the same amount of acres and the
same amount of water.

Q With regard to the water, how does that fit
into the prospects for the future of HC&S?

A It's absolutely critical.

Q Is there anything else that you would like
to say to Dr. Miike before he makes his recommended
findings to the Commission in terms of what the water
availability is going to be?

A My fear on this is no matter what happens
here, it's the triggering event for what's going to
happen to us in East Maui, and it's going to be the
triggering event which happens throughout the state.
If agriculture loses very much water, there's not
going to be any agriculture in the State of Hawaii.
There's not going to be any chance for us to be less
energy dependent.

I just don't think you can make agriculture
work without water. And so this is the tip of the
iceberg, from my view. We've got ongoing permitting
request on East Maui. So I'm just concerned. And
then you get the domino effect. You've already had

1 the domino effect, but if HC&S is out of business,
 2 then Hawai'i Agricultural Research Corporation, which
 3 is doing a lot of work on diversified crops which is
 4 primarily funded by the sugar industry, it's probably
 5 out of business.

6 I wouldn't speculate about what would
 7 happen to Gay & Robinson, which is the other
 8 remaining sugar plantation and they're changing their
 9 focus to energy, but I don't know if they can operate
 10 without HARC. I think this could be a triggering
 11 event that could cause a lot of damage to the
 12 agricultural industry in the State of Hawaii, and I
 13 frankly don't know -- this is my speculation --
 14 someone is going to have to come if that happens and
 15 condemn the East Maui irrigation system so up-country
 16 Maui has water. Because I don't think -- you know,
 17 it's just not financially viable to operate East Maui
 18 irrigation and deliver water to the county for \$0.06
 19 a thousand gallons.

20 Q Anything else?

21 A Not without getting more tears in my eyes.

22 Q I have no further questions.

23 HEARINGS OFFICER MIIKE: You're submitting
 24 all three of his testimonies?

25 MR. SCHULMEISTER: Actually, let me ask a

couple more questions.

Q You have your three testimonies there.
 Actually the third testimony is primarily rebuttal
 testimony to Dr. Halbrendt. I can submit it now. I
 am expecting Mr. Holaday to be present and be able to
 respond, but I would just ask Mr. Holaday as he's
 sitting here right now if you could just confirm that
 the two written testimonies -- let's just do all
 three now. I don't expect cross on the third one
 today is what I'm saying.

But the three written testimonies that you
 submitted, are those true and correct to the best of
 your knowledge?

A Correct, to the best of my knowledge.

HEARINGS OFFICER MIIKE: Let's take a
 ten-minute break.

CROSS-EXAMINATION

BY MR. MORIWAKE:

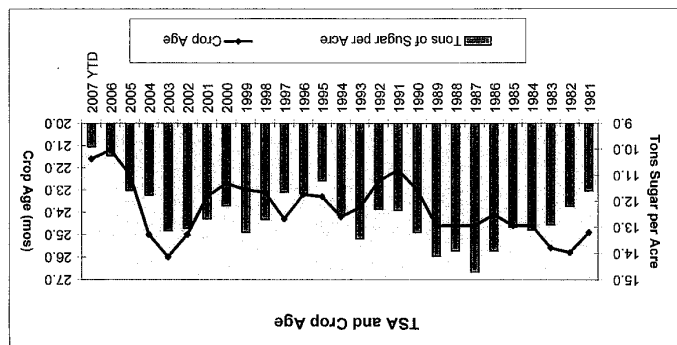
Q Good morning, Mr. Holaday.

A Good morning.

Q I'm Isaac Moriwake, attorney for Hui Na Wai
 'Eha and Maui Tomorrow in this case.

A Okay.

Q You're aware that HC&S has leased some of
 its Waihe'e-Hopoi fields to Monsanto?



Year	Tons of Sugar per Acre	Crop Age
1981	11.6	24.9
1982	12.2	25.8
1983	12.9	25.6
1984	13.1	24.6
1985	13.0	24.6
1986	13.9	24.1
1987	14.7	24.6
1988	13.9	24.6
1989	14.1	24.6
1990	13.2	23.0
1991	12.3	22.1
1992	12.3	22.6
1993	13.4	24.2
1994	12.5	24.2
1995	11.2	23.3
1996	11.7	23.3
1997	11.6	24.3
1998	12.7	23.0
1999	13.2	23.0
2000	12.2	22.7
2001	12.7	23.3
2002	13.0	25.0
2003	13.1	25.0
2004	11.8	25.0
2005	11.6	22.3
2006	10.2	21.2
2007 YTD	9.9	21.6



HC&S

HAWAIIAN COMMERCIAL SUGAR COMPANY

*Reinventing the Business of
Growing Sugarcane*

EXHIBIT E-28

13.20-78
www.hcsugar.com

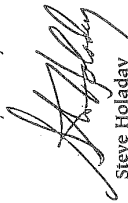
13.20-77

Aloha!

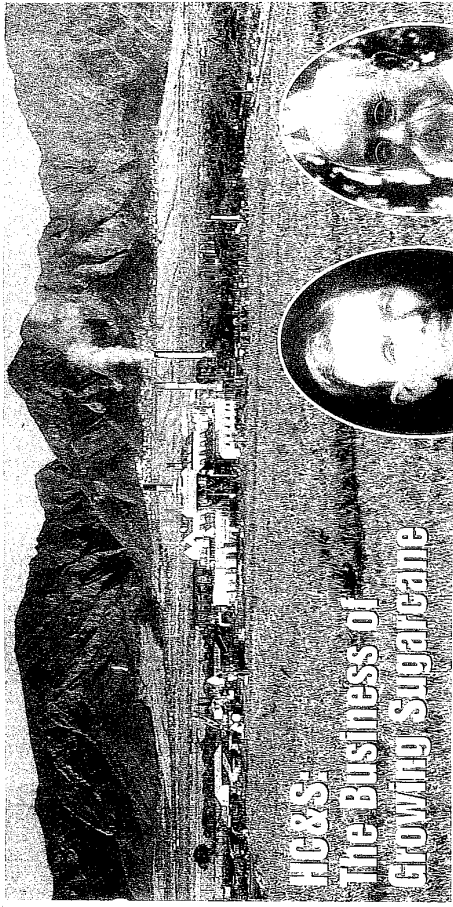
Hawaiian Commercial & Sugar Company (HC&S) is Maui's largest agricultural operation and the state's most productive sugarcane business.

The following pages will tell you about our history and role in the community; how we grow, harvest and process sugarcane and generate power with renewable resources; and about the nearly 800 employees who are dedicated to keeping 37,000 acres of Maui land in income-producing green space.

Thank you for your interest in HC&S.



Steve Holaday
Plantation General Manager
Hawaiian Commercial & Sugar Co.



HC&S: The Business of Growing Sugarcane

Sugar is alive and well on Maui.

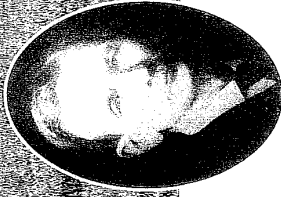
A commitment to innovation and new business strategies has helped Hawaiian Commercial & Sugar Company become Hawaii's largest sugarcane plantation and remain a competitive sugar producer. With 37,000 acres under cultivation, HC&S' production goal is 225,000 tons of raw sugar annually, accounting for approximately 80 percent of the state's total production.

HC&S and its parent company, Alexander & Baldwin, Inc., trace their roots to Samuel T. Alexander and Henry Perrine Baldwin, missionary children whose friendship as young boys grew into a sugarcane business partnership in 1870. From their original 12-acre plantation below Makawao, the partners acquired a number of neighboring plantations over the next three decades, eventually gaining control of Hawaiian Commercial Company (later re-named Hawaiian Commercial & Sugar Company) from competitor Claus Spreckles in 1898. Today, HC&S encompasses 14 predecessor plantations, including the original plantation of the founding partners.

By 1900, the company had outgrown its partnership organization and a new corporation, Alexander & Baldwin, Limited, was formed.

As Alexander and Baldwin expanded their sugar operations, they also invested in the development of essential water resources and of shipping services to bring supplies to Maui and transport their sugar to mainland markets. These business interests eventually became A&B subsidiaries: East Maui Irrigation Company, Kahului Trucking & Storage (formerly Kahului Railroad Company) and Matson Navigation Company.

13.20-79



Samuel T. Alexander (L) and Henry Perrine Baldwin (R), both born in Hawaii, to missionary families, whose friendship as young boys grew into a sugarcane business partnership in 1870.

Reinventing HC&S

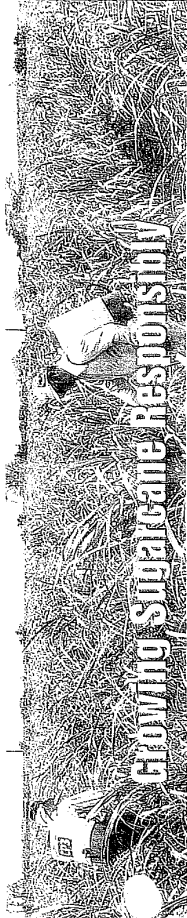
Today, Plantation General Manager Steve Holaday makes it clear that HC&S is not in the sugar business; it's in the business of growing sugarcane. That means using every part of the plant profitably to produce sucrose, molasses, fiber, energy and other co-products that add value to HC&S' core business. It also means investing in state-of-the-art technology and ongoing product research.

In short, HC&S is reinventing itself into a company that is able to weather the volatility of the commodities market through the development of new opportunities in the 21st century.

The success of HC&S is due, in large part, to its 776 employees and an excellent working relationship with the International Longshore and Warehouse Union, which has been supportive of the company's efforts to upgrade its facilities and implement flexible scheduling and cross-training to increase productivity.

Responsible stewardship of the environment and a long-standing tradition of corporate philanthropy also have helped HC&S earn the respect of the Maui community, contributing further to the company's success.

13.20-80



Growing Sugarcane Responsibly

Sugarcane is naturally environment-friendly. Similar to a rainforest, it absorbs large amounts of carbon dioxide, the most abundant of the "greenhouse" gases in our atmosphere, and also creates an attractive landscape that helps prevent flooding and soil erosion.

Environmental stewardship and wise use of natural resources are key issues for the continued success of HC&S' sugar-growing business—issues that the company takes very seriously. Using high-tech mapping tools, the company coordinates water delivery, monitors soil moisture and fertilizer use, and tracks other variables to help maintain high yields and practice sound stewardship of the land and water within a "mosaic" of fields covering 37,000 acres.

Water Resources

For more than a century, Hawaii's sugar industry has recognized the need to protect watershed areas to sustain adequate water supplies. Today, through a joint stewardship agreement with the state and private landowners, the company manages 100,000 acres of watershed lands on the slopes of East Maui.

Typically, HC&S gets over half of its irrigation water from surface sources (rain water). However, during dry months, the plantation is largely dependent on water pumped from the company's 16 brackish-water wells. The existence of this brackish groundwater lens is, according to geological evidence, due to ongoing sugarcane operations that help replenish the shallow groundwater lens.

Water use is maximized through the plantation's highly efficient drip irrigation system, which also delivers fertilizer to the fields. Some of the fields are irrigated with wash water that is recycled from the Pu'uhene Mill.

Pest Control

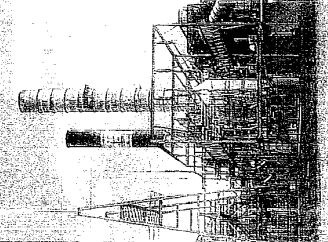
HC&S is committed to total genetic and biological control of diseases and insect pests. Along with an aggressive program of breeding disease-resistant varieties of sugarcane, plants also are screened for disease and insect susceptibility before they are introduced in the field.

Sugarcane insect pests are controlled by natural predators, not insecticides. Weeds require chemical control, but herbicides are used only during the first six months of the 24-month growing cycle, before the cane plants grow taller than competing weeds and provide shade cover that prevents further weed growth.

From Renewable crop management techniques to the application of herbicides to massive weeding and the use of natural predators to control insect pests.

The Pu'uhene Mill power plant feeds electricity to the HC&S plantation and factory and also contributes to MECO's total annual power supply.

A network of 16 automated weather stations assists in planning cane field burning locations.



Agri-Tech Sugar



Business

From field to factory, HC&S has long been an industry leader in innovation and technology. Ongoing factory modernization plays a key role in HC&S' continued success.

Behind its decades-old facade, Pu'uhene Mill hides state-of-the-art technology that has helped the company enhance production and control costs. Between 1985 and 1990, the company completely computerized its factory operations—one of the first such facilities in the industry to do so. From the crushing plant to the boiling house to the power plant, computers are used to monitor and control activities throughout the factory.

During the past seven years, HC&S invested nearly \$24 million to upgrade the Pu'uhene factory and power generating equipment. This included new technology to increase the "flow" of cane in the factory, improve sugar recovery and the processing of crystallized sugar, and the installation and upgrades to a high-speed turbo-generator capable of producing enough electricity to power 15,000 homes. Production and packaging facilities for Maui Brand® Sugar products were also expanded.

In the field, a network of 16 automated weather stations assists in planning cane field burning locations and timing while high-tech field mapping tools help HC&S manage resources and operate efficiently. Using new geographic information system (GIS) and global positioning system (GPS) technology, company agronomists track critical data such as soil types and moisture status, irrigation systems, planting schedules, and fertilizer and weed control for each cane field.

Drip irrigation is another technological milestone dating back to the 1970s when Hawaii sugar technologists introduced Israel's innovative drip

system to the state's sugar industry. Using perforated tubing buried in the plants' root zone, drip irrigation permits efficient water and fertilizer use, which has led to higher yields during normal rainfall years. In periods of drought, drip irrigation keeps sugarcane alive and HC&S in business. HC&S remains the largest privately owned drip-irrigated farm in the United States—and probably the world.

Much of this innovation developed from the need for water. More than a century ago, engineers at East Maui Irrigation Company (EMI) built a system of tunnels, ditches, siphons, flumes and reservoirs that later would help shape water reclamation and irrigation procedures used by engineers of major projects on the Mainland. The EMI system was recently designated a national landmark by the American Society of Civil Engineers, joining such other well-known landmarks as the Golden Gate Bridge, Hoover Dam and Panama Canal.

Today, EMI continues to function as one of the world's most efficient water companies. Ditchmen, who once monitored water flow within EMI's 50,000 acres of waterless land, have been replaced by a sophisticated remote radio telemetry system that transmits ditch flow data to EMI's base station in Pa'ia every eight minutes. From the base station, water flow can be adjusted at each of EMI's gauging stations so that the correct amount of water is allocated to ditches and reservoirs.



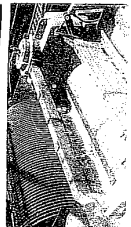
Employees are in one of three areas in the mill that monitor and control the activities throughout the factory. From left: For every acre of cane, HC&S uses five times the amount of fertilizer used one year ago. The total amount of fertilizer used on the plantation would exceed the earth's surface and a half times (left).

HC&S researchers actively select and test thousands of cane varieties in search of plants that provide greater yields and are suitable to Maui's environment.

From Field to Factory: The Process of Making Raw Sugar

From planting to harvesting,
the process of making raw sugar
takes between 22 and 24 months.

MILLING AND PROCESSING



Revolving knives chop cane, then a shredder crushes the stalks. A series of high-pressure rollers extracts about 95% of the sugar juice from the cane and sends it to the boiling house. The leftover fiber (bagasse) is used for fuel in the factory's steam generating plant.

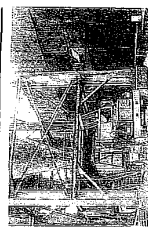


In the cane cleaner, the cane stalks are washed. Rocks and dirt are removed in a "sinkboat." Some 400 tons of this valuable topsoil are returned to the fields each day.

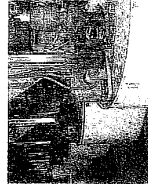


The cane is unloaded from the trailer onto a feeder table or to a storage pile.

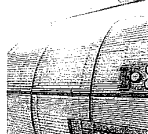
MILLING AND PROCESSING



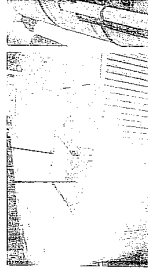
Raw sugar and molasses are hauled by A&B's subsidiary, Kahului Trucking & Storage, to the port storage facility near Kahului Harbor.



(top) Molasses is separated from the raw sugar crystals by centrifugal force.
(below) Raw sugar travels by conveyor belt to storage.



The clarified juice is condensed to syrup through an evaporation process using recycled heat. The sucrose in the syrup is forced to crystallize by heating under vacuum.



Lime - Ca(OH)₂ - is added to the juice on the way to the heaters; this change in pH begins the clarifying process and prevents the undesirable and premature conversion of sucrose to simple sugars, which cannot be crystallized.

In the clarifier, the clear juice is separated from the insoluble material. On the vacuum filters, further juice is recovered from the sediment.

FIELD PREPARATION

Only disease-resistant cane varieties are selected for commercial planting. Insect pests are controlled biologically, using natural predators. The Hawaii sugar industry has been a world leader in this area.

The soil is plowed and loosened before seed cane is planted.

PLANTING

Short pieces of cane stalks - seed billets - are planted by machines that dig the furrows, drop the cane pieces and inject the irrigation tubing. Workers occasionally assist to even out billet placement.

CROP MAINTENANCE

Workers occasionally assist to even out billet placement.

Waxes must be kept in check because they compete with cane plants for water and fertilizer. HCS uses herbicides for only the first six months of growth, while the cane is still short.

IRRIGATION

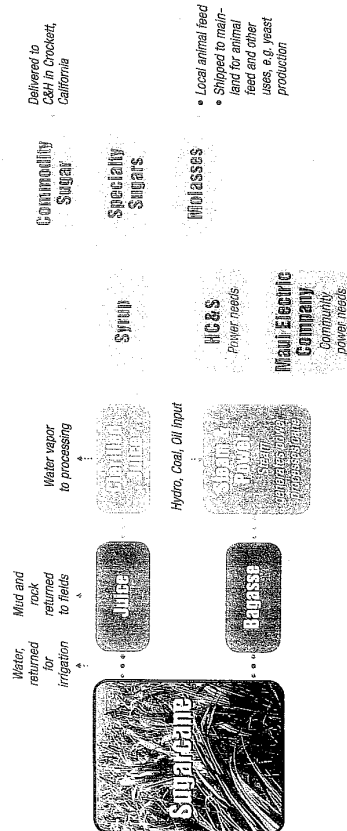
A highly efficient system of drip irrigation supplies water and fertilizer to the cane roots. Weather soil and cane-tissue monitoring determine how much water and fertilizer the plants need. HCS is strict with its water and costly fertilizers, applying only what is needed. No fertilizer is applied in the last 12 months before harvesting. Sand filters throughout the plantation ensure sediment from irrigation water to reduce plugging in the drip tubing lines.

HARVESTING

When the cane is ready to harvest, the fields are burned to remove the leaves. The juice-filled stalks do not burn, however. Burning is planned so as to minimize the impact on the plantation's neighbors.

Harvesting machines push the cane into large windrows, ripping stalks from the root system, which remains underground and can re-grow. Cane stalks are loaded into huge hauling units that can carry up to 60 tons per load. Many truckloads are required to haul the harvested cane from each field to the factory.

Diagram of Sugarcane Milling and Processing Steps

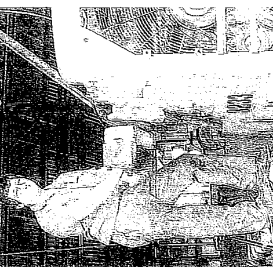




The People of HC&S

HC&S and its sister company, East Maui Irrigation Company, together employ approximately 800 people, more than 60 percent of whom have been with the company for more than 10 years. They include some 325 people who work the land, from irrigation systems to field preparation to harvest; another 163 who work in the factory, generating power and grinding cane; and

about 89 who work in the company's shops, providing support services to keep the operations running smoothly, from field to factory to offices. Mechanical, electrical and chemical engineers as well as agriculturalists work to perfect the process of growing sugarcane and producing sugar products.



HC&S has more than a dozen trades, including general mechanic, plumber, carpenter, electrician, mechanic, welder, millwright, power plant operator/mechanic, electrical technician, mechanical drafter and instrument technician.

The Apprenticeship Program

HC&S industrial and technical trades workers are trained in-house through a five-year, 7,600-hour apprenticeship program. This highly successful Trades Progression Program has provided many employees with an opportunity to learn a trade while earning a living.

The program is registered with the State and Federal Department of Labor's Bureau of Apprenticeship and Training and includes four years of text book study and on-the-job training followed by a year of on-the-job "skills refinement." Any HC&S employee 18 years or older with a high school diploma or G.E.D., and who has demonstrated ability within their selected trade, may apply for the program.

After completing a three-month pre-apprenticeship program with at least a 2.0 grade point average and a satisfactory evaluation from their supervisor, employees may pursue an apprenticeship in one of more than a dozen trades, including general mechanic, plumber, carpenter, electrician, machinist, welder, millwright, power plant operator/mechanic, electrical control technician, mechanical drafter and instrument technician. The apprenticeship wage scale in 2006 varies from \$14.36 to \$17.45 per hour, depending upon the trade and the level at



which the apprentice starts.

Journey workers are employees who have successfully completed the apprenticeship program and perform the work of their selected trade. The beginning hourly wage of a journey worker in 2006 is \$18.14. Wages can reach \$22.41 per hour, depending on the trade.

Since the program was established in the early 1960s, hundreds of individuals have completed apprenticeship training at HC&S, with many moving to other employers.



HC&S in the Community

Sponsorship of 37,000 acres of income-producing green space in Central Maui is HC&S' most visible contribution to the Maui community – and one of the island's most valuable assets. The company's economic and social contributions are equally widespread.

Each year, HC&S purchases more than \$60 million worth of goods and services from local vendors. As one of Maui's largest private employers, the company pays another \$40 million in payroll annually. Using the standard multiplier effect, the company's total contribution to the local economy is about a quarter of a billion dollars a year.

HC&S and its sister company, East Maui Irrigation Company, Ltd. (EMI) also are major providers of water and electricity to Maui consumers.

EMI is the largest privately built and operated water system in the nation with more than 74 miles of ditches, tunnels, siphons and flumes delivering surface water when the rain falls. The company delivers water to serve 36,000 residences and farms in Upcountry Maui.

Harvesting the energy of the surface water supplied by EMI, HC&S' hydroelectric plants generate approximately 20,000 megawatt-hours of electricity each year under normal rainfall conditions. The Pu'uene Mill power plant generates another 200,000 megawatt-hours from various renewable resources, including bagasse, supplemented with fossil fuel. Of the total electricity produced by HC&S, nearly 100,000 megawatt-hours are delivered to Maui Electric Company each year, providing approximately 7 percent of MECO's total power supply.

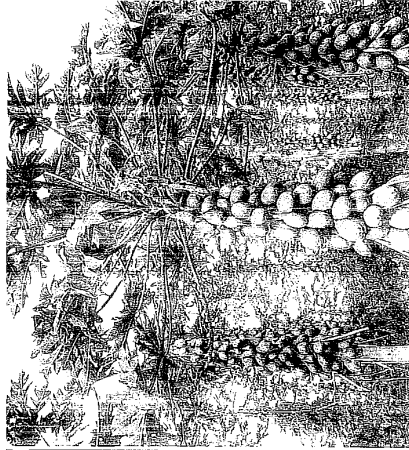
Corporate Citizenship

In addition to its significant economic contributions, HC&S and its parent company, Alexander & Baldwin, Inc., have a long tradition of supporting the communities in which they conduct business. In fact, *Fortune* magazine's annual poll of most admired companies ranked Alexander & Baldwin top in the nation for social responsibility in 2003. Corporate philanthropy is viewed not as an obligation, but as an investment in the future – an opportunity to help shape communities in which the company can continue to operate profitably and in which our employees may lead fulfilling lives. It offers the opportunity to do good with the fruits of doing well.

Each year, a portion of the profits from HC&S and other A&B subsidiaries fund the good deeds of the Alexander & Baldwin Foundation, which distributes more than \$2 million each year to organizations in Hawaii and on the Mainland. Maui charities generally receive between 25 and 30 percent of the Foundation's annual donations. These include Maui United Way, Maui Community Food Bank, 4-H and Maui County Fair, Maui's public and private schools, Maui Economic Opportunity, Big Brothers Big Sisters of Maui, and the J. Walter Cameron Center, among others.

HC&S employees also make direct donations to Maui charities, including 90 percent who support Maui United Way. Many personal contributions also are matched through the Foundation's matching gifts program.

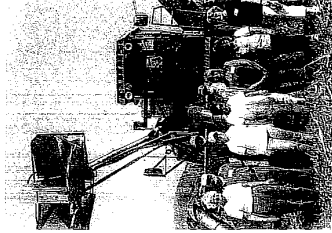
From charity boards to Little League baseball to professional, industry and trade associations, HC&S employees also are active volunteers in their communities, donating gifts of time and talent to dozens of worthwhile causes across the island.



(top left) HC&S is present at many events to educate the public about its operations, employment opportunities, and benefit to the island's economy.

(top right) Water collected by EMI is delivered by the Department of Water Supply to agriculture, industry, homes and other users throughout Maui.

Each year, HC&S employees are active in their communities through the Alexander & Baldwin Foundation's volunteer service to non-profit organizations. (bottom) HC&S offers bike rides to Maui residents who are interested in learning more about HC&S operations. Below, tour participants visit a seed cutting field.





Q&A ABOUT HC&S

1. General

Q: I've heard that sugar is a 'subsidized' crop. How does that work? Do they pay you not to grow sugar?

A: Unlike other crops that are supported by various federal programs, sugar is NOT subsidized and there is NO incentive not to grow crops. In theory, the Federal Department of Agriculture has set a minimum price per pound (a floor) at which they commit to being willing to purchase sugar from any U.S. grower; to be attractive to growers, you'd have to assume the government's (floor) price is higher than the market price. However, that floor price for raw sugar has not increased in *decades*, and actually has decreased. Various trade agreements have created demand pressures on prices—forcing them to drop below the floor price. For every one cent change in the #14/lb sugar price, HC&S is impacted by \$1 million.

Q: Why don't you replace sugarcane for an energy crop, like corn?

A: Sugarcane is one of the most efficient converters of sunlight energy into chemical energy and some believe it is the ultimate energy crop because you get two potential sources of revenue from one plant: edible sugar (a high value product) and at no additional cost, the fiber for producing energy.

Sugarcane has a very high biomass yield, a portion of which already is being converted into energy. That biomass fuel is bagasse, the fiber left over after the sucrose is squeezed from the cane. Decades ago, Hawaii's sugar industry began producing steam and electricity, known as cogeneration, making Hawaii a world leader in production of renewable energy from biomass. On Maui, electricity was originally produced by HC&S using sugarcane bagasse, just distributed by Maui Electric Co.

Fermentation, the basic process for ethanol production, uses sugar as its feedstock. Complex carbohydrates such as starches must be broken down to basic sugar units to achieve fermentation. Sugarcane in its natural form already contains high levels of sugar making it a most efficient feedstock for ethanol.

Q: Why don't you grow other crops?

A: Reference is often made to other crops that can be grown. Despite having year round sun, day-lengths in Hawaii are relatively short, with the longest day less than 14 hours. Crops such as hemp are temperate, meaning they need long hours of sunlight for maximum growth. Therefore, hemp will flower before reaching significant size, detrimental to achieving maximum biomass yield. Additionally, without a higher value co-product to share in growing costs, all production costs will need to be attributed to the energy product, making it a potentially high cost source of energy.

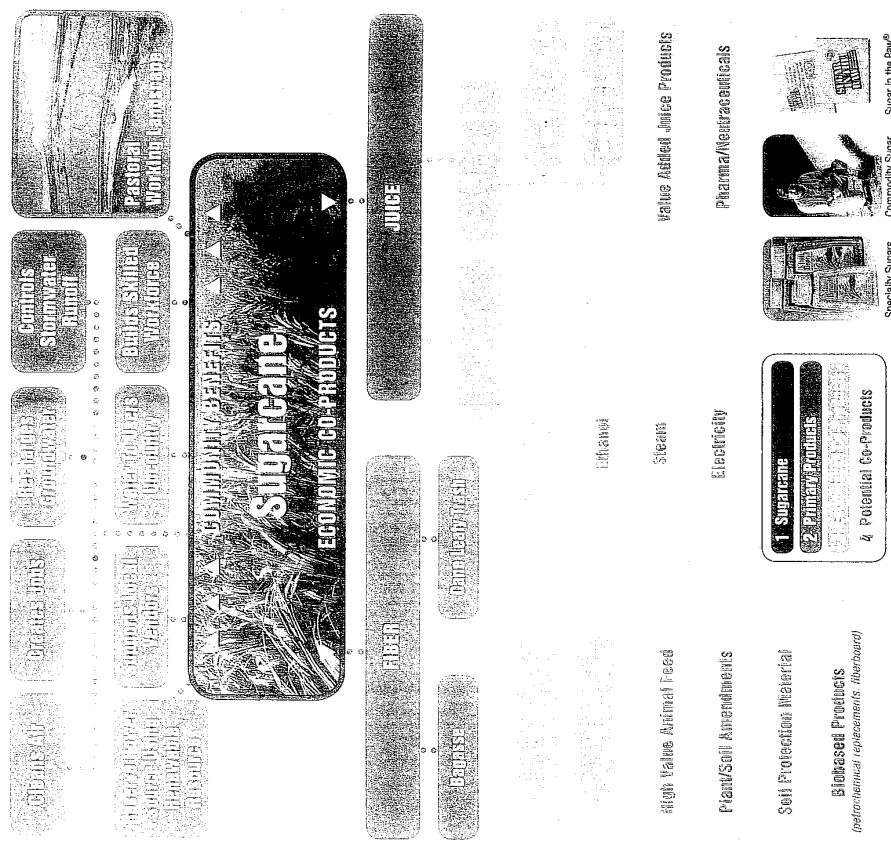
2. Field

Q: What crop protection chemicals does HC&S use? How is 'biological control' more desirable than using insecticides?

A: Beginning in the 1800s, the sugar industry committed to controlling pests via biological control: using insect predators and genetic selection. Occasionally, a crop-damaging insect or disease has appeared, such as smut in the 1970s and the lesser corn stalk borer in 1986. It may take several years to identify a natural predator that does not harm other flora and fauna, or to develop disease-resistant varieties in necessary quantities but HC&S accepts the interim losses as preferential to the regular use of insecticides or fungicides. The only exception is material

A HC&S, the business of growing sugarcane goes well beyond the production of raw sugar and molasses. The company continues to look at ways to add value to its core sugar business—and lower its susceptibility to the fluctuations of the sugar commodity market—through the development of new sugarcane co-products and markets. This includes the production of food grade specialty sugars under the company's Maui Brand® label—and hopefully more to come!

Community and economic co-products are shown in the diagram below. Some economic co-products are currently in production, others have short- and long-term development potential.



3. Harvesting

precautions include field preparation such as pushing cane away from and watering adjacent fields, irrigation equipment, and other structures such as utility poles. HC&S also contacts nearby residents who have requested pre-burn notification and written notices are distributed in advance to homes and businesses possibly affected.

Q: I've heard that you burn the irrigation tubing?

A: HC&S utilizes a black polyethylene drip tubing that is buried between, and irrigates, two rows of cane. As it is underground, the majority of the tubing is not exposed to the cane fire. Where it is exposed, the heat from the fire may cause it to melt, rather than "burn," as this tubing has a chemical composition similar to candles. If burned, it gives off an odor similar to candle wax and its byproducts are carbon dioxide and water. Our operating practice is to replace the tubing after each harvest, expecting that it may be damaged by harvesting which utilizes push rakes and bulldozers. This differs from our expectations that the rest of the irrigation system remains intact—and that includes the small, white PVC pipes (known as "risers") which the drip tubing is connected, each serving one acre, and the larger PVC pipes buried deep underground, to which the risers connect. Our harvesting crew makes every effort not to damage these as they are costly to replace.

Q: Why is some cane harvested using "chopping" machines, while most cane is not?

A: The sugarcane you may see being cut by chopper machines is "seed cane"—immature stalks that are

Q: Why does HC&S burn the cane fields?

A: Pre-harvest burning of sugarcane fields is done primarily to get rid of the dried leaves, or "trash," as it is called, which has accumulated over a growing period as long as 24 months. Where sugar has been the primary product from our fields, Stephanie A. Whalen of HARC (Hawaii Agricultural Research Center) said, "Harvesting cane without burning off the trash...increases the amount of labor and equipment needed to harvest cane, haul it to the mill and process it into raw sugar". The quality and quantity of the sugar is also negatively impacted if the leafy trash is not separated from the cane stalks before the cane is milled. HC&S is carefully evaluating technologies that will convert this "trash" into energy. However, the renewable energy produced must exceed that which is used to create it, in order for the project to have a positive energy balance.

Q: Why is an unscheduled burn/arsenal different from a pre-harvest burn?

A: An unscheduled burn is either an act of arson or, rarely, a pre-harvest fire that escaped its intended boundaries. Scheduled burns are very structured and HC&S makes every effort to minimize the impact on the community. They follow roughly 18 months of growth, punctuated by a six-month period of ripening when the cane plant is depleted of nutrients that promote growth and denied water which induces a stress forcing the plant to store sucrose rather than grow. Without ripening, sucrose content can be low. Pre-burn

expense—to convey these waters to the plantation were the very basis for the plantation's existence and survival over the past 136 years. The last ditch was constructed in 1923 (over 80 years ago) and, since then, EMI has done only maintenance and repairs to the system to protect its integrity. Yes, we do use significant quantities of stream water to irrigate our cane fields, to process our cane into sugar and to generate power from clean, renewable resources. We use, however, only a portion of the total water available in these watersheds and we believe we put them to good use—uses that benefit the entire community—enabling 37,000 acres of cultivated green, open space over 800 well-paying jobs for local residents; clean renewable energy for the community; and, importantly, water for Upcountry Maui residents and businesses.

Q: What constitutes trespassing and why is it a bad idea for the public to use the cane haul roads?

A: New laws enacted by the State Legislature have clarified and increased penalties related to trespass on private agricultural lands, which includes the cane haul roads; the mere presence of a crop (the cane) is deemed sufficient warning that the land is used for agricultural purposes. It's also imprudent to be walking, riding a bicycle or motorcycle, or driving a car on private roads that are used by large vehicles that HC&S has cooperated with the Maui Police Department on many occasions, allowing public use of cane haul roads in situation of emergency. During these times, HC&S will halt or delay its usual large vehicle traffic.

160-200 lbs of water for each pound of cane produced, which translates to about 500 lbs of water for each lb of dry matter. This compares favorably to corn, which needs 664 lb of water and to wheat, which uses 1100 lbs of water for each pound of dry matter. In the plant kingdom, sugarcane is one of the most efficient converters of sunlight energy to biomass, making it a natural as a source of renewable energy. In summary, most green plants use the same amount of water. However, sugarcane can survive periods of no water or irrigation with brackish water, which would kill most other plants.

Q: Why can't HC&S simply use water from its wells, rather than surface water from East and West Maui sources?

A: HC&S does not have enough well water available to meet the needs of the plantation. In fact, hydrologists believe that the brackish water lens that exists under the otherwise dry central Maui fields is due to irrigation practices by HC&S—nature's way of "recycling" the irrigation water. Therefore, without continued irrigation with surface water, the non-potable lens would ultimately disappear. The availability of surface water from East and West Maui sources is essential to the plantation's survival, while much of HC&S has access to well water, nearly 5,000 acres of cane fields are totally dependent on surface sources from East Maui.

Q: What should we make of claims that your plantation is "de-watering" streams on Maui?

A: HC&S is dependant on stream water for its survival. The elaborate collection and transportation systems that were built—completely at private

used for mosquito control. We work with the Department of Health to monitor mosquitoes; if populations of mosquito larvae are identified, spraying is done to keep them under control.

Sugarcane grows for 24 months in Hawaii and is grown by planting cuttings of immature cane. These "seed cane" pieces are dipped in a fungicide to prevent fungus growth on the cut surfaces, and increase the likelihood of germination. Herbicides or weed killers are used early in the crop to keep competing weeds from slowing or stopping the cane growth. Application at the correct stage of growth is emphasized to minimize the amount of material needed for control. All applications are done using ground equipment or hand sprayers. After 4 to 5 months, the tall sugarcane stalks cover the ground surface, and thereby out-compete the weeds for growth.

Other "chemicals" used are primarily nutrients (nitrogen, phosphorus, potassium and calcium) that are either applied directly to the root zone through the drip irrigation system or spread on the field, as we do with sand to add calcium. Finally, at 6-10 weeks before harvest, a growth regulator is applied to the crops to maximize sugar storage. This is done using a helicopter as it must be absorbed through the cane leaves.

Q: How much water does sugarcane use compared to other crops?

A: All crops require replacement of water that is transpired. Other than cacti, which require much less water, most plants transpire 200-1,000 lbs (90-450 kg) of water for each pound of solid material added to the plant. Under Hawaii conditions, when grown for two years, sugarcane uses about

cut at 6-8 months of age destined for use to plant fields of "commercial cane" that will be grown to maturity, for as long as 24 months. The young cane is still erect, which makes it suitable for these choppers; the fields generally utilized for growing this seed cane are flat and with minimal rocks to accommodate the harvesting equipment that uses saw blades to cut the cane. Despite extensive trials during the previous five years in hopes of a conversion to chopper-suitable cane, HC&S has regrettably concluded that these machines cannot handle Maui's rocky fields, or steep slopes which, unfortunately, is what comprises a large part of HC&S.

Q: Why do HC&S haulers get to stop traffic to cross Hawaii's highways?

A: Primarily for safety reasons. The haulers and their load together weigh more than 80 tons and it's hard to move that much weight as quickly as would be necessary if they had to wait for a break in the traffic and "dash" across. As Maui's highways grow wider and wider, it makes the "dash" across impossible. Now, however, that police officers hired to assist HC&S are paid by the company, HC&S has consistently asked for underpasses or other forms of crossing that would not impede traffic, as new highways have been built and have intersected plantation roads.

4. Factory

Q: What causes that smell near the mill?

A: Ever since its construction in 1902, the Pu unene factory was designed so all of the process water it uses would be used to grow more sugarcane. This water contains soil, as well as sugars. Every effort is made to keep the water moving, however, distances from the factory, and soil-loading can result in biological growth in the water—some of which is sulfur forming—causing that "rotten egg" smell. Timely use of this water, and adding deodorants as needed, is part of day-to-day operations that keep odors at a minimum.

Q: How does HC&S generate power from renewable and recycled sources?

A: HC&S uses biomass (bagasse) and surface water to generate power. HC&S generates electricity by burning bagasse (residual cane fiber), which accounts for a majority of electricity used at HC&S and sold to MECO. The amount of energy produced each year from bagasse alone results in an estimated 600,000 barrels of oil not being imported to Maui. Water from several of the East Maui Irrigation ditches can first pass through our hydroelectric plant, generating clean, renewable power. HC&S generates sufficient energy for internal needs, and sells excess power to MECO.

HC&S is authorized to use two types of "waste" oil—available locally—that may have otherwise been shipped away for disposal. Recycled motor oil is used for two power plant boilers instead of No. 6 fuel oil, amounting to about 10% of HC&S

total need for oil. Recycled cooking oil is also utilized at HC&S, however, at lesser quantities than the preferred used motor oil.

Q: What is really coming out of the HC&S stacks? There used to be five stacks, where did the other two go?

A: Burning of the residual cane fiber (bagasse) is similar to burning wood. If the amount of air or moisture is not right, sooty smoke will result. HC&S stacks are all equipped with "wet scrubbers" which "wash" the boiler exhaust before it exits the stack. Therefore, most of the time, the white plume is simply steam. Occasionally, upsets due to high-moisture bagasse will cause the plume to turn black, as the particulate matter overwhelms the scrubbers; however, power plant computer equipment and personnel monitor and promptly institute corrective measures. The company must monitor its emissions and is required to self-report, to the Department of Health, opacity violations that exceed a certain length of time. In the last few years, the two oldest stacks were dismantled, out of concern for the safety of employees and the public.

Q: Is Pu unene a power plant, a mill, or a refinery?

A: Pu unene is a sugarcane mill with its own power plant. And though raw sugar is made at the mill, it is not refined on Maui; rather, the raw sugar is shipped in bulk to C&H Refinery in Crockett, Calif. where it is refined. There is some "food grade" sugar made on Maui, at Pu unene: Maui Brand Raw Cane Sugars. A separate production area is utilized to make and package the Plantation White and Turbinado Sugars.

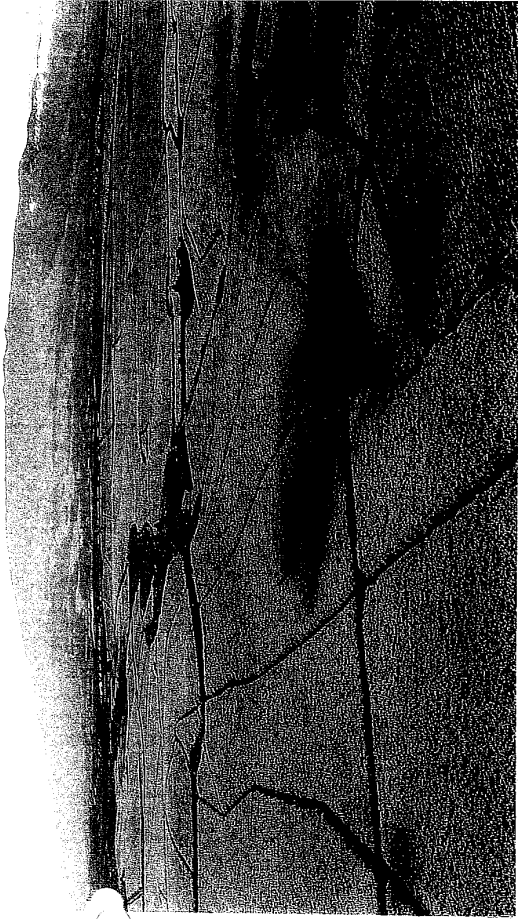
Q: Are sugarcane workers unskilled, poorly paid laborers?

A: No. Many workers deal with highly sophisticated technology and equipment and must be thoroughly trained in order to operate it. In fact, HC&S's apprenticeship program, which has been in existence since the 1960s, has offered extensive training to hundreds of people in their preferred trade—several dozen journey workers are "graduated" each year by HC&S. Field equipment operators are cross-trained to operate several machines, and often are trained to do maintenance (but generally, not repairs). Chemical, mechanical and process engineers are important to HC&S. Computer technicians and electricians are important to HC&S as there are more than 5,000 electronic sensors that help monitor and control the computerized factory and power plant processes.

Fieldworkers earn wages that are competitive and exceed most entry level jobs in the open market.

Q: What does HC&S contribute to the economy?

A: HC&S purchases more than \$60 million worth of goods and services from local vendors as well as supports a payroll of well over \$40 million dollars. The company's large-scale purchases of agricultural goods helps lower the cost of those goods for other Maui farmers. In addition, HC&S and EMI, its sister company, employ over 800 people throughout Maui, 70% of which have been with the company for over 10 years. Finally, the company's charitable giving, accomplished through the A&B Foundation, directs roughly \$400,000 in grants to Maui's charities each year and employees are generous with donations of their personal resources, both time and money.



P.O. Box 266 · Pu unene, Maui, Hawaii 96784 · (808) 877-0081 · www.hcsugar.com · www.maulibrand.com

EXHIBIT E-29



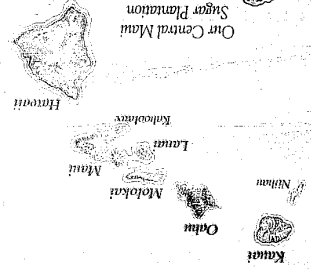
Maui Brand Evaporated Cane Juice



A Maui Brand Product from
Hawaiian Commercial & Sugar

Maui Brand®
NATURAL CANE SUGAR
A DIVISION OF ALEXANDER & BALDWIN
HAWAIIAN COMMERCIAL & SUGAR COMPANY
POST OFFICE BOX 266
PUUNENE, MAUI HAWAII 96784
TEL: 1-800-735-9348
FAX: 1-808-871-7189
EMAIL: INFO@MAUIBRAND.COM

NO KA 'OI
(the best)



THE ONLY
100% PURE
FOOD-GRADE
CANE SUGAR
FROM HAWAII

- is "no ka oi"; there is nothing better!
1. Maui Brand ECU, like the island of Maui, is a high-quality product in the market.
 2. Maui Brand ECU is the most consistent, high-quality product in the market.
 3. Maui Brand ECU is processed 10 months out of the year.
 4. Maui Brand ECU is processed 10 months out of the year.
 5. Maui Brand ECU is an American product.
 6. Maui Brand ECU adds value as a Hawaii-grown ingredient brand.
 7. Maui Brand ECU is a genetically modified product (GMO).
 8. Maui Brand ECU products are free of any genetically modified organisms (GMO).
 9. Maui Brand ECU is kosher certified.
 10. Maui Brand ECU meets the highest food safety standards.
 11. Maui Brand ECU is better than other sweeteners.
 12. Maui Brand ECU is a natural sweetener.

Top Ten Reasons to Use Maui Brand Evaporated Cane Juice





What is Evap...d Cane Juice (ECJ)?

Maui Brand Natural Evaporated Cane Juice (ECJ) is the color of the near white sands on our Maui beaches and contains just a hint of molasses to enhance flavor. It retains the old fashioned pure taste of sugarcane not found in refined sweeteners. ECJ is a free flowing, easily soluble sweetener and a natural substitute wherever refined white sugar is used.

Maui Brand Evaporated Cane Juice is crystallized juice from the first pressing of sun-ripened sugarcane (single crystallization). ECJ is unbleached and there is minimal processing. Single crystallization sugars retain more of the character of the juice from which they are recovered than do more processed (refined) sugars.

The process is as follows:

- Juice from the sugarcane is clarified, filtered and evaporated to make a thick golden syrup.
- The concentrated juice is crystallized to form a mixture of sugarcane crystals and molasses.
- The mixture is spun at high speed to separate and remove the excess molasses.
- The sugar crystals are dried and packaged on the plantation for shipment.

Maui Brand ECJ contains no artificial additives or preservatives, is vegan and is certified Kosher. All Maui Brand products are free of any insecticides and genetically modified organisms (GMO's).

What are the benefits of Maui Brand ECJ?

Maui Brand meets the highest food standards. The most vital questions in the food industry today are about safety, traceability and standards. Hawaii Commercial and Hawaiian Commercial and Sugar Company (HC&S) products from Hawaii's largest sugar company, Maui Brand ECJ is the latest in a line of sugarcane products from Hawaii's largest sugar company, HC&S has 37,000 acres of sugar cane under cultivation in central Maui on the slopes of Mt. Haleakala. We process our crops locally in our historic Puunene Mill.

Maui Brand's Turbado sugar is familiar to millions of consumers as "Sugar in the Raw"™ - served in individual serving packets in restaurants the worldwide.

Maui Brand ECJ is available in 50-pound bags and 2,000 pound super sacks for industrial users. Maui Brand ECJ is also available in liquid form

Maui Brand Natural ECJ is processed 10 months out of the year. A major constraint companies are experiencing is the lack of a reliable commercial source of Natural ECJ. Year round production at HC&S minimizes the risk of delivery delays.

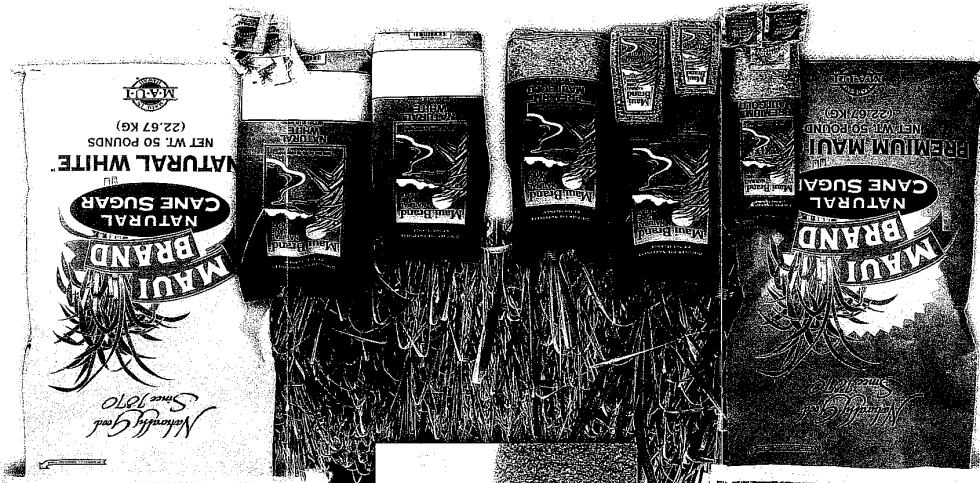
Hawaii is the only state where sugar can be grown and harvested year round. Other cane producers have limited growing timeframes. HC&S grows and harvests sugar 10 months each year, minimizing risk for purchasers of HC&S Sugar - specifically, Maui Brand ECJ. In addition, Maui Brand is a domestic source for natural ECJ and not subject to import quotas. Being aware of these factors, and of the growing importance of ECJ as a replacement for non-natural sugars, manufacturers of healthy products can rely on Maui Brand as proven supplier.

Maui Brand: Naturally Good Since 1870.

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The natural alternative all-purpose sweetener, our light in color Natural White cane sugar lends just a hint of old-fashioned molasses flavor. Unlike refined sweeteners that can mask flavors, Natural White enhances the taste of beverages and recipes.

NATURAL WHITE

It takes time and handcrafting to achieve the lustrous crystals and rich sugarcane taste that make our Premium Maui Gold the choicest, unrefined gourmet sugar available. Use PMG to enrich the taste of your favorite foods and beverages.

PREMIUM MAUI GOLD

DISCOVER THE SWEETNESS OF THE ISLANDS



13.20-98

MAUI BRAND
NATURAL CANE SUGAR

FROM OUR FIELDS TO YOUR TABLE

MAUI BRAND
NATURAL CANE SUGAR

MAUI
Our Central Maui Sugar Plantation

NO KA 'OI
(the best)

MAUI BRAND
NATURAL CANE SUGAR

HAWAIIAN COMMERCIAL & SUGAR COMPANY
A DIVISION OF ALEXANDER & BALDWIN
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EMAIL: INFO@HAWAIIIBRAND.COM

EXHIBIT E-30



THE ONLY
100% PURE
FOOD-GRADE
CANE SUGAR
FROM HAWAII

Sugarcane has been grown and milled at Maui Brand Natural Cane Sugars are the result of years of experience, technology and craftsmanship. Handcrafted one batch at a time, our unrefined sugars retains some of the molasses that gives them their natural color and rich flavor. Kosher certified, we add nothing artificial or synthetic, insuring you of a naturally sweet product. Use Maui Brand wherever you would normally use refined sugar and enjoy the distinctively delicious difference.

NATURALLY GOOD SINCE 1870



ALEXANDER & BALDWIN, INC.
2008 Annual Report
Form 10K

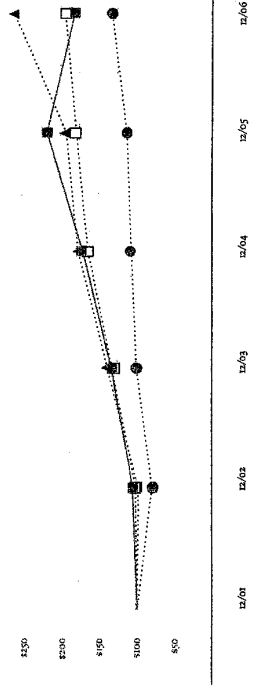
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13.20-99

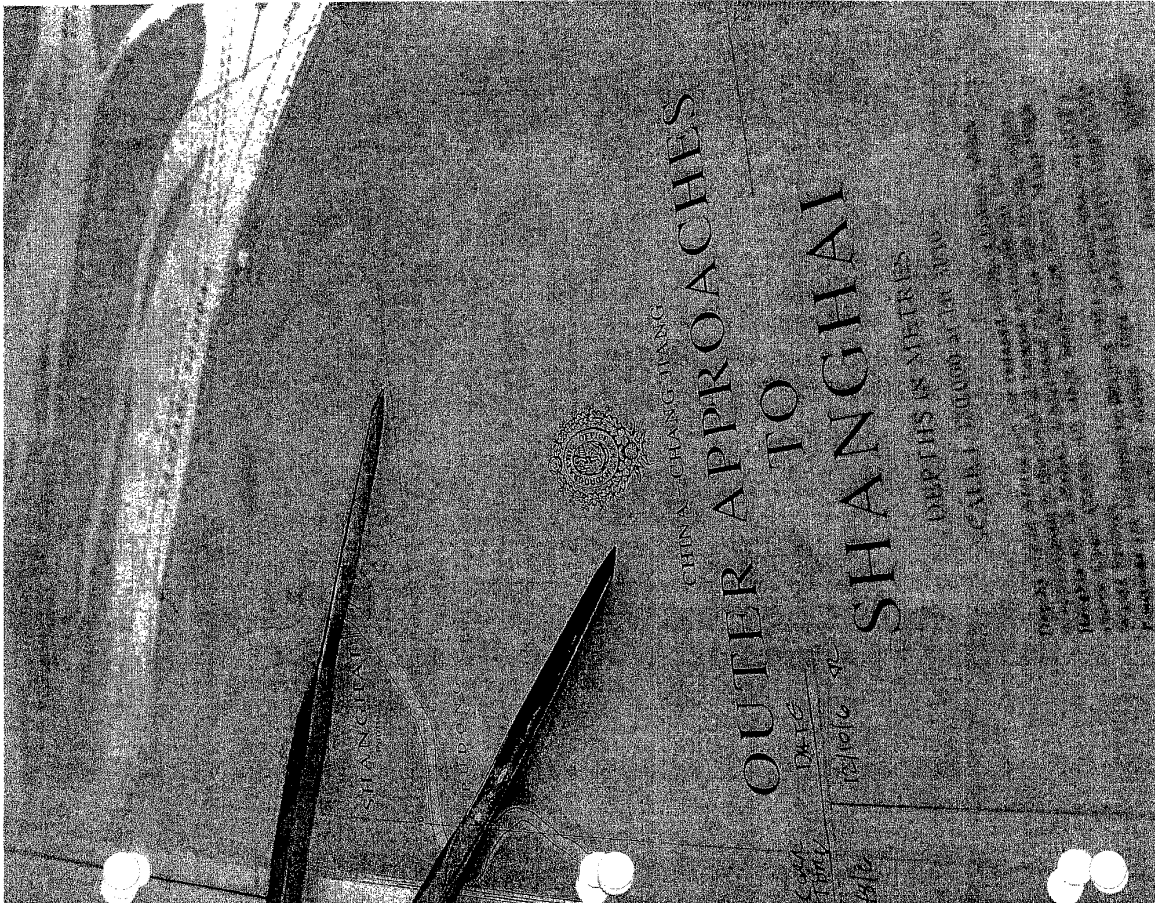
FINANCIAL HIGHLIGHTS

	2006	2005	Change
Revenue	\$ 160,700,000	\$ 160,900,000	0%
Net Income	\$ 122,500,000	\$ 126,000,000	-3%
Per Fully Diluted Share	\$ 2.81	\$ 2.90	-3%
Cash Dividends	\$ 42,000,000	\$ 39,400,000	7%
Per Share	\$ 0.94	\$ 0.90	5%
Diluted Average Shares Outstanding	43,600,000	44,000,000	-3%
Total Assets	\$ 2,527,000,000	\$ 2,070,900,000	22%
Shareholders' Equity	\$ 1,027,000,000	\$ 1,014,200,000	1%
Per Share	\$ 23.08	\$ 23.03	0%
Return on Beginning Shareholders' Equity	12.1 %	13.9 %	-1.8 %
Book Value Per Share	\$ 26.43	\$ 26.43	0%

COMPARISON OF 5-YEAR CUMULATIVE TOTAL RETURN*

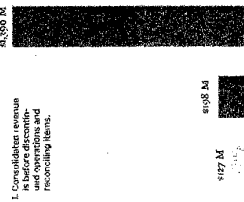


Alexander & Baldwin, Inc. ● S & P 500 ▲ Dow Jones US Real Estate □ Dow Jones US Industrial Transformation
* 1000 Invested on 12/31/01 in Stock of Index/Company. Reinvestment of Dividends. Fiscal Year Ending December 31.



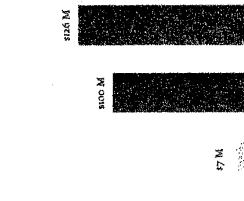
REVENUE¹

\$1.61 BILLION



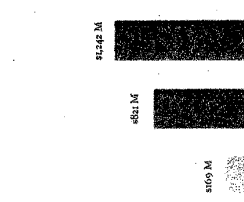
OPERATING PROFIT

\$233 MILLION



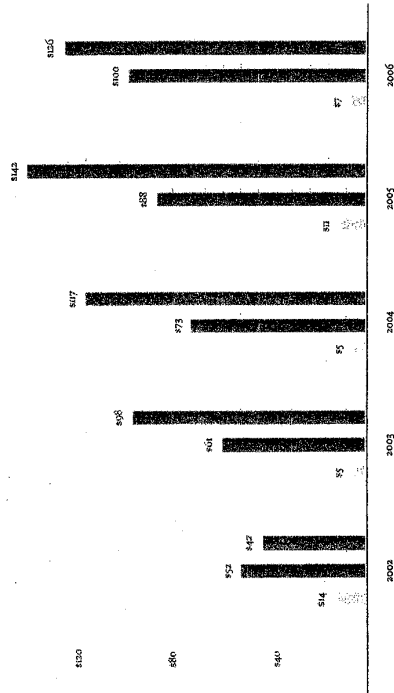
IDENTIFIABLE ASSETS

\$2.25 BILLION



1. Consolidated revenue from operations and operations and recurring items.

OPERATING PROFIT BY INDUSTRY (IN MILLIONS)



New Ways & New Places

As a result of our strategic focus on new ways and new places, we have achieved significant growth in our operations and assets. Our focus on new ways and new places has resulted in a strong performance across all segments, with a particular emphasis on the transportation and real estate sectors. This strategic approach has allowed us to expand our market presence and increase our operational efficiency, leading to a steady increase in revenue and operating profit over the period shown.

2006 Milestones

January 2006

A&B Properties concluded sales of all 247 units at the Hokuia joint venture luxury condominium on the Island of Oahu

February 2006

Matson Navigation launched a weekly expedited shipping service from Shanghai to Long Beach, California

April 2006

The company increased its quarterly dividend to 25 cents and extended the payment of dividends to shareholders to 104 consecutive years

June 2006

The company initiated share repurchases that returned \$72 million to shareholders by November 2006

July 2006

Matson Navigation took delivery of the M.V. *Kaunaloa*, completing an historic fleet modernization program that lowered its average fleet age from 25 years to 14 years

October 2006

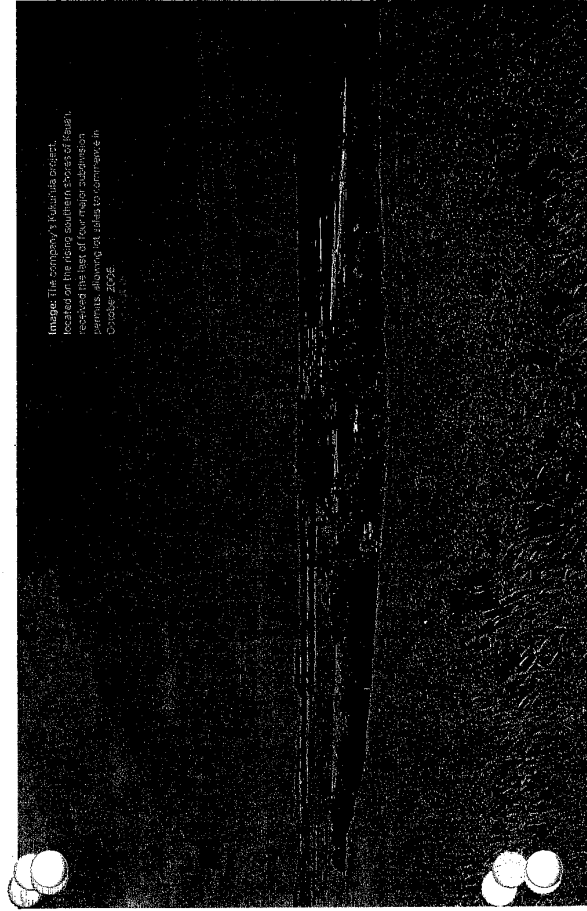
A&B Properties began closings of lot sales at the lifestyle destination resort of Kukuiula on the island of Kauai and at its 150-unit development Kai Malu at Wailea

2006

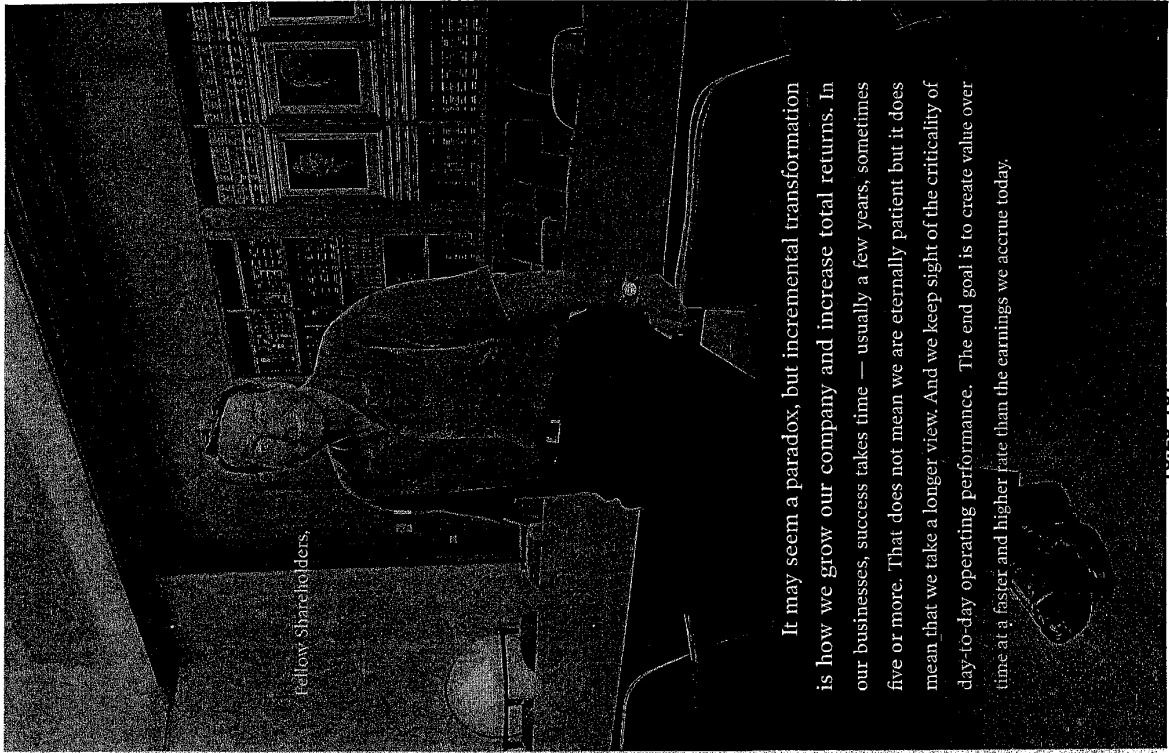
For the year, A&B Properties reached \$100 million in operating profit, and achieved a compounded annual growth rate of 14 percent over five years

2006

Matson Integrated Logistics exceeded \$20 million in operating profit for the first time in its history and achieved a compounded annual growth rate of 67 percent over five years



Images: The company's facilities present a view of the island of Kauai, Hawaii, as seen from the air. The image shows the island's coastline and the surrounding ocean. The image is a black and white photograph.



Fellow Shareholders,

It may seem a paradox, but incremental transformation is how we grow our company and increase total returns. In our businesses, success takes time — usually a few years, sometimes five or more. That does not mean we are eternally patient but it does mean that we take a longer view. And we keep sight of the criticality of day-to-day operating performance. The end goal is to create value over time at a faster and higher rate than the earnings we accrue today.

In 2006, we earned \$22.5 million in net income, which was 3 percent less than we made in 2005. Yet we are pleased by this outcome. Why? Our entrance into the China shipping market this year provided significant long-term potential and intermediate profitability. The same is true for the real estate investments we made in 2006 in Hawaii, California, and throughout the West. These are prime examples of incremental transformation, and a fundamental reason to invest in Alexander & Baldwin.

We understand that the industries we are in have modest historical growth rates, yet we are confident in our ability to earn returns at a higher rate. The value we create is rarely seen in our quarterly financial statements. Annual, and in particular, multi-year performance, is a better gauge. It is therefore heartening to note that A&B has achieved more than a 15 percent compounded annual shareholder return over the past 8 years.

And we are not done. We are fully committed to growing our company by exploring new ways to improve profitability and new places to extend our business knowledge. Matson Integrated Logistics' explosive growth to become a national multimodal service provider is illustrative of these principles. Some of that growth was through small, but highly attractive, acquisitions. But more of that growth was internally generated by combining product and marketing acumen with information technologies to open new markets. A&B Properties' growth is equally telling. Over the last five years, with investments in joint ventures and in land assets outside of its core holdings, Properties has transformed itself into one of the premier real estate companies in Hawaii, and perhaps the Pacific. Not surprisingly, Properties has doubled its operating profit.

We are discovering new ways to extend our reputation and experience. At any one time, we have five to ten strategic initiatives under consideration. Of this number, only a few will survive and be implemented. Currently, we are evaluating several smaller China related transportation and logistics opportunities, geographical expansions for our real estate business, and energy alternatives in agriculture. Why not the big transformational deal? Because we are not enamored with large acquisitions, as most of these, upwards of 75 percent, destroy shareholder value. We prefer to grow on a more incremental basis, doing what we do best, maybe doing it even better, and, of course, doing it in new places. Taken together, these initiatives and strategies allow us to continue to create strong shareholder returns.

Letter to Shareholders

This should not imply we are risk-averse—in fact, our recent history in real estate and shipping shows this is not the case. What it does mean, however, is that we deploy strategies to grow only where we believe the risk-return ratio is favorable for our shareholders. That may be an uncommon discipline in a world awash in liquidity, but it's a philosophy that is basic to all we do.

Our capital structure is as important to the value we create as any of our strategies. Given the strong performance and cash flows of our businesses, we can certainly carry a higher level of debt than currently exists. We realize this is in the interest of our shareholders, and we expect to increase debt in proportion to our total capital base. In 2006, we put two new credit facilities in place and these are important incremental steps to improve our operational leverage. At the same time, our favorite source of capital is deferred taxes. Unlike debt and equity, there is no discernable cost of this capital. Our continuing use of Section 1031 reinvestments to defer tax on the sale of real property and the use of the Capital Construction Fund to acquire ships have been beneficial to our businesses and our shareholders.

We think regularly about how to return cash to our shareholders. The repurchase of the company's stock is both a capital structure and a capital use issue. We have had two major share repurchase campaigns during my tenure and both were well timed. We repurchase company shares when that's the best way to create value and when that value surpasses our ability to invest in other company operations. Dividends are another subject of great importance. The company has a phenomenal record of 104 years of continuous dividends. We are reliable and we are dedicated to building a record of dividend growth. The 11 percent increase in the annual rate of the dividend in 2006 was a key step in that direction.

Let me conclude with a few comments on our future.

A decade from now, 2006 will be remembered for Matson Navigation's entrance into the China market. Although we have clear ideas on how we may grow with this most dynamic economy, there is no way to assess today what our future in China will ultimately mean. What can be stated with absolute certainty is the excitement we feel about our launch, our first year of operational excellence, and especially what lies ahead.

13.20-109

Earnings Per Diluted Share (2002-2006)



Matson Integrated Logistics has gone from being a small, but important, part of A&B to one of our growth engines. The last three years have been great ones for our logistics business, which now has a footprint across the United States. Of all of our businesses, MIL has tangible, beneficial and direct connections to our ocean transportation business as well as less obvious but potentially significant links with our real estate business. This is a new opportunity just beginning to unfold.

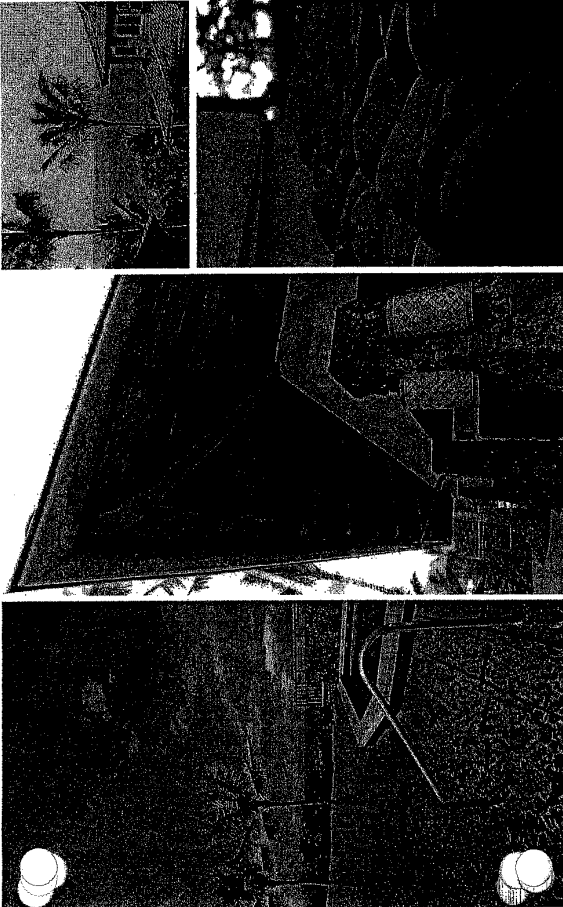
Our real estate business continues to grow admirably—14 percent compounded annually over the last five years. And while there is no doubt about the current cyclical downturn in residential real estate, we are prepared. The ability to sustain value creation means managing well through economic cycles, knowing when and how much to invest and seizing the opportunities the market inevitably offers. We are confident of our ability to invest wisely and to sustain our record of growth.

We have made many commitments to our customers, employees, and the communities where we live and do business. By and large, we have met or exceeded these commitments. Ultimately, however, everything comes back to our employees and their collective commitment to the company, its growth and success. Let me express my appreciation to the 2,997 employees who are Alexander & Baldwin. At the same time, our Board of Directors continues to provide exceptional guidance to the company. For this we are grateful.

I thank you, our shareholders, for your support.

W. Allen Doane
Chairman of the Board,
President and Chief Executive Officer

13.20-110



Above: Details of the Mahealani Waialeale infinity pool, featuring cast iron, ocean vistas and traditional Hawaiian stonework.



Real Estate

www.abprop.com

Strategy

A&B Properties is a leading Hawaii-based real estate company.

We own 89,440 acres of land and approximately 53 million leasable square feet of commercial income property. We utilize these historic landholdings to realize their intrinsic value. We develop these lands with residential, mixed-use, retail and commercial projects in growing and supply-constrained communities. Where we don't own the right property for our development, we acquire it. If we don't possess the requisite skill set, we partner with developers with unique and specific expertise. We use efficient tax-deferral mechanisms to capture considerable appreciation in our commercial portfolio in Hawaii and throughout the U.S. And we recycle these investment dollars in rapidly growing markets to improve the future value of our portfolio.

We are active real estate developers and our ability to consistently grow earnings is a reflection of our market knowledge and relationships; our disciplined underwriting approach; the depth of our underlying landholdings; the strength of the markets we serve; and our ability to allocate assets and capital to best and highest uses.

Execution
We earned \$100 million in operating profit in 2006, a significant milestone.

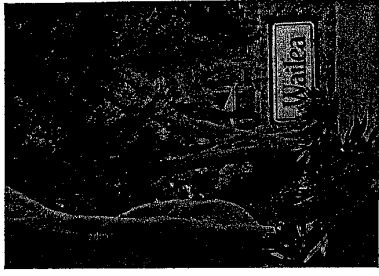
Commercial Property
During the year, our commercial property portfolio achieved exceptional occupancy levels which, combined with increases in asking rents and four acquisitions, propelled earnings. We added over 860,000 square feet of office space in the burgeoning communities of Salt Lake City,

Sacramento, Phoenix and Plano, Texas. Each of these acquisitions illustrates a core investment thesis: to acquire income properties in strengthening markets that are supported by favorable demographics and strong regional economies, and offer attractive entry prices. In addition to these acquisitions, we completed sales of three retail centers, one in Hawaii and two in Arizona, and an office building funded all of our acquisitions for the year utilizing Section 1031 exchanges.

Sales and Development
The strong results reflect the benefit of a concentrated strategic shift to augment our core operations through investments in larger, longer-term projects, joint venture partnerships, acquisitions in mainland growth markets and development projects utilizing acquired lands. The results of these efforts were visible at two key joint venture projects: Hobua and Kai Maui. In January 2006,

our joint venture sold all 247 units at Hobua, a luxury high-rise condominium along Oahu's south shore. In the fourth quarter, we commenced closings at Kai Maui at Wailea, Maui. In partnership with Armstrong Builders, we closed 23 of the project's 190 high-end multi-family units at an average price of \$1.3 million. Most of the balance will close in 2007 and all of the units are under binding contract.

In addition to the operational and financial excellence achieved during the year, we made significant progress in our development pipeline at several projects in Hawaii and California. On Oahu, our 42-story downtown Honolulu Keolu La1 condominium has met with strong market acceptance, with over 80 percent of the project's 332 units under binding contract, and our vertical construction continues



Above: Chye Marashige, Vice President of A&B Wailea LLC.



For more information about the company's real estate business, refer to the following pages:

Business Description: pages 6-11
Risk Factors: pages 20-21
2006 Results: pages 38-40

AB A&B PROPERTIES, INC.
A MEMBER OF CHRYSLER FINANCIAL GROUP

Transportation

www.matson.com

MATSON NAVIGATION Strategy

Matson Navigation and Matson Integrated Logistics are leaders in ocean container and auto shipping throughout the Pacific, and in multimodal logistics services throughout North America.

We provide customers with reliable and frequent sailings to ensure superior flexibility for the transport of their goods. We invest in operating assets to improve our efficiency and productivity.

We invest in information technologies to ensure seamless, visible transport of goods on an expedited basis. We invest in human capital to extend our value chain and to qualitatively respond to market dynamics and customer needs.

Our ships are U.S.-built, U.S.-crewed and U.S.-operated, which provides significant advantage in the integrated trade lanes we serve. Our marine terminals in Hawaii, Seattle, Oakland and Long Beach are dedicated to serve

A significant gap in earnings for the year was created by the expiration of our two-year operating alliance with American President Lines, Ltd. in February 2006. This charter alliance was the base for our trans-Pacific service to Guam and Micronesia. To best serve these island markets, where we had established a strong sales and operational presence during the preceding decade, we launched a new, five-vessel service in February with ports of call in Long Beach, Hawaii, Guam and in the fast growing China ports of Ningbo and Shanghai. The China-Long Beach Express service represents our first international service in four decades and with the delivery of the M.V. *Maunaloa* in July 2006, we successfully integrated four new ships into this profitable string. We also established market-leading transit times from Shanghai to Long Beach, and were

only Matson customers, making us unique in our industry. Our innovative logistics bring people and systems together for the cost-effective delivery of goods. We apply strict environmental standards in our operations and we continually seek to extend our leadership in new markets with new products.

We are the commercial lifeline to Hawaii and Guam and we are an important niche in an expanding global network chain.

Execution
2006 was a challenging but ultimately transformational year. Matson Navigation earned \$05.6 million in operating profit which was 18 percent below 2005.

recently recognized as the world's best on-time shipper by Drewry Shipping Consultants. The accolade offers proof that our expedited shipping service from Asia was prescient. During the nine full months of operation in 2006, we transported nearly 33,000 containers from China.

In early 2006, in recognition and anticipation of changing market conditions, we initiated a series of cost reduction and margin improvement programs. These efforts included adjusting vessel schedules more frequently to match current demand, recovering indirect energy costs, imposing an open head count freeze and accelerating the purchase of operating equipment to make us more efficient. This hard work resulted in significant improvements to our margins, and ameliorated the profit

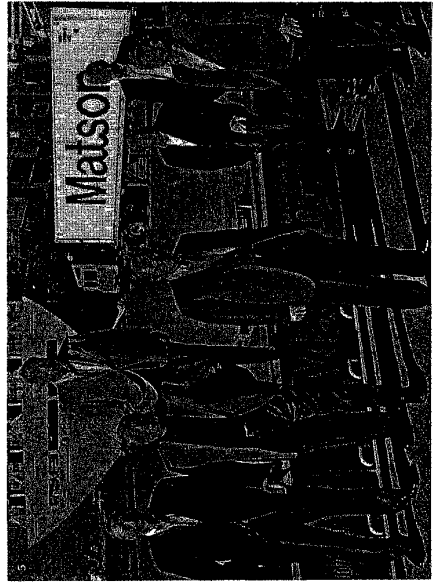
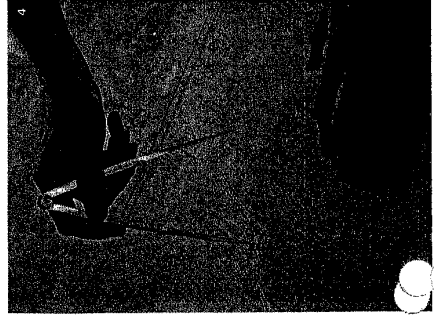
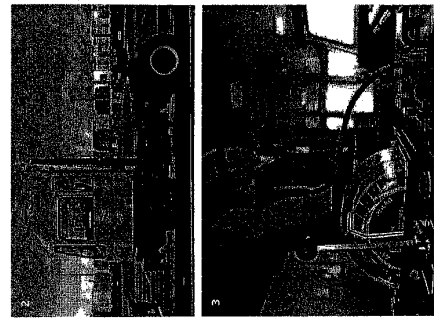
impact of the transition in all services. We implemented a general rate increase of nearly 4 percent in January 2006 and have subsequently implemented an additional increase of 3.3 percent for 2007.

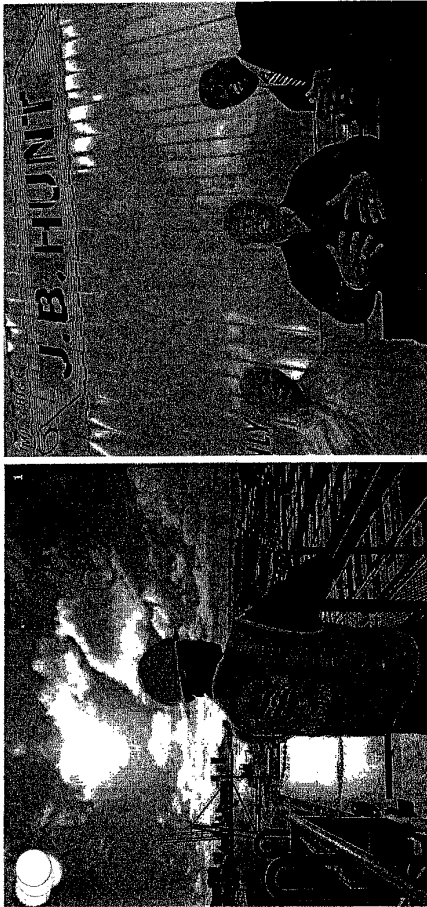
We made several adjustments to our fuel surcharge throughout the year to better match the rise, and fall, of our energy costs. It is important to note that the fuel surcharge includes recovery of not only vessel bunker oil and diesel costs, but also indirect fuel costs associated with terminal handling, drayage and other supporting services, all of which surged in 2006. Our average cost per barrel of bunker fuel increased by nearly 27 percent in 2006.

Total Hawaii's container carriage was 1 percent lower than 2005, which reflects a moderation in the economic growth

Below: (1) Matson workers assist cruise operators in preparing the deck of the *ALP Maunaloa*; (2) Drivers queue alongside cargo Crewford; (4) Chief Mate steers a course for Honolulu Harbor; (5) Matson Navigation management team; (6) SVP Ranaida J. Fowett, President of Matson Integrated Logistics; (7) Robert C. Papworth, SVP Gary J. North, SVP; (8) Chief Executive Officer James S. Ahniaser; (9) SVP David L. Hoppes; SVP and General Counsel Kevin C. O'Rourke; EVP and Chief Operating Officer Matthew J. Coy.

For more information about the company's transportation business, refer to the following pages:
Business Descriptions: pages 1-6
Risk Factors: pages 19-20
2006 Results: pages 36-38





of the islands, manifested primarily by lower construction materials volume, fewer military deployments, and a decline in the volume of related household goods. Our service to Guam showed a similar, though relatively greater, reduction in volume, though its impact to earnings was nominal due to the scale of that market. Our automobile carriage service was adversely impacted by a reduction in the number of new automobiles sold in Hawaii, as well as by decisions made by rental car fleet managers to extend the service life of vehicles in their Hawaii operations, and competitive pressures. For the year, auto carriage was down by 20 percent.

Our current deployment consists of 11 long-haul vessels with our 4 newest ships assigned to our Guam-China service string. In 2006, we continued to make investments in our ships to produce greater efficiencies. The M.V.

Mokilma, which began a conversion to a combination roll-on/roll-off container vessel late in the year, is expected to return to service in mid-2007. The topside garage will significantly increase the capacity for efficient auto carriage and thereby improve margins in this profitable segment.

In addition to our shipping services, Matson Navigation owns Matson Terminals, which operates our 105-acre Sand Island container terminal in Honolulu. The terminal is a primary hub for the Hawaii trade and is an important transshipment center for goods moving to Guam. We also have a 33 percent joint venture interest in SSA Terminals, LLC, which manages our West Coast terminals. This investment yielded strong operational results in 2006, contributing to our operating profit for the year.

Execution
 Matson Integrated Logistics earned a record \$20.8 million operating profit, a 44 percent increase from 2005 and a thirteen-fold increase since 2001.

Our multimodal services, which include rail services for domestic and international-originated cargo, long-haul and regional highway brokerage, and expedited air services, continued to grow throughout 2006. We expanded our national footprint to over 40 cities and increased the number of internal sales agents. We are in the process of improving our information technology systems for greater visibility into key business drivers and to strengthen our customer relationships.

We also increased our capability and capacity to service volume originated in Asia and carried by Matson Navigation.

Our highway business drove earnings in 2006, with yields improving significantly as customers shifted more goods to truck routes to take advantage of favorable pricing. Gross margins in all segments increased, particularly in the 4th quarter of the year and our expedited services, while still nascent, provide clear direction moving forward.

Outlook
 With the growing China service established, we expect to realize an improved rate structure and increased volume, which will result in greater operational efficiency and profitability. Countering this, we expect flat to marginal volume growth in our Hawaii and Guam markets as we continue to advance cost efficiency initiatives. With our significant fleet modernization program now concluded, our ship deployment is more efficient and strengthens our competitive positioning for 2007. We expect that our logistics business will leverage its national presence through well-placed acquisitions of regional providers and/or extend its current product slate to broaden the universe of potential customers.

The outlook for 2007 is for modest growth at Matson Navigation and for strong, tempered growth at Matson Integrated Logistics.



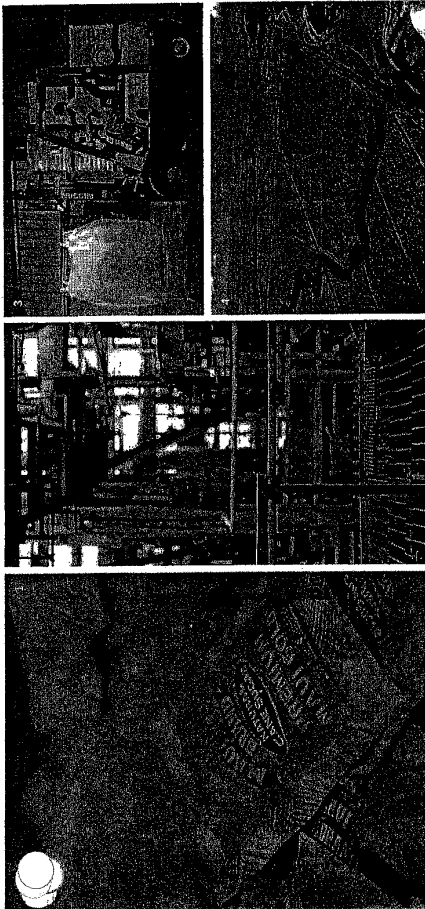
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Matson Integrated Logistics

Above: (L) Lark Fink, Manager, Terminal Operations, surveys yard operations atop one of Matson Navigation's Sand Island cranes. (R) President of Matson Integrated Logistics Robert C. Papworth (center) is joined by J.B. Hunt National Account Manager Scott O. Woodall (left) and Assistant Vice President of Operations Ken Miller (right). Mill and J.B. Hunt are teaming up to provide domestic intermodal and highway brokerage services.

13.20-118



Agribusiness

www.hcsugar.com | www.maulbrand.com | www.kauicoffee.com

Strategy

A&B is a major agribusiness company in Hawaii and our operations consist of three segments: Hawaiian Commercial & Sugar Company (HC&S), Kauai Coffee Company, and trucking and commercial services.

We cultivate approximately 37,000 acres for the production of raw cane sugar, of which a growing portion is dedicated to higher-margin, branded specialty sugars. We use state-of-the-art agricultural practices to drive production in our fields, among the highest yielding in the world. An additional 16,000 acres of our land are used as pristine watersheds to irrigate the land we work. We are virtually energy independent and sell the excess energy we generate to local utilities, filling an essential infrastructure gap. We are a producer of estate grown coffee, with approximately

year, and resulted from dry weather conditions during key growing months, less than optimal fertilizer application, and a lower crop age. We were, however, able to increase sales of specialty sugars with the addition of new customers and with extended sales of the familiar Sugar in the Raw brand, for which we are the sole supplier.

Power revenue resulting from sales of excess energy generated by our cogeneration facility at our Punahoa Mill, as well as hydroelectric plants on Kauai and Maui, accounted for 20 percent of our revenue for the year. This increase can be attributed to greater energy demands, primarily on Maui, and higher prices, which are based on an "avoided cost" formula from the local utilities we serve.

We are stewards of the land, and our commitment to Hawaii's is 196 years strong.

Execution
We earned \$6.9 million in operating profit in 2006, which, excluding a one-time \$55 million disaster relief payment received in 2005, increased 21 percent for the year.

In 2006, HC&S produced 173,600 tons of raw cane sugar with a crop yield of 10.2 tons sugar per acre. Total sugar production, which was disappointing to us, was 10 percent lower than the prior



Outlook

Roughly 90 percent of our HC&S production is sold to C&H Sugar Company at commodity prices. Therefore, and until we successfully transition a greater percentage of our sugar production into higher margin specialty sugars, we are vulnerable to fluctuations in commodity sugar prices. We do expect that as we expand our customer base for the specialty Maui Brant[®], Sugar in the Raw and Natural White brands we will have greater visibility into future prospects. We expect continued growth at Kauai Coffee, at our trucking operations, and will explore further expansion of our energy-related operations.

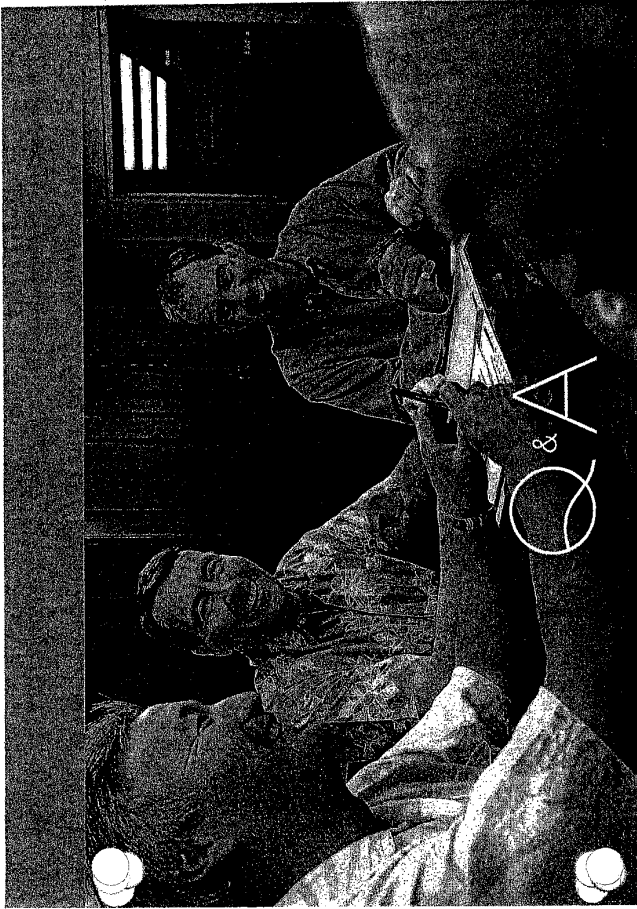
The outlook for 2007 for our Agribusiness operations is nominal profitability.

Kauai Coffee's 2006 production totaled 2.7 million pounds, 50 percent higher than 2005 volume. We benefited from better quality yields and a more favorable mix of specialty-grade versus commodity-grade green beans, which we attribute to improved plant nutrition, reduced insect infestation and favorable weather. Our trucking and commercial services produced strong sales and earnings in 2006 due to the growth in our shop services on the island of Hawaii and greater container trucking activity on Maui.

For more information about the company's Agribusiness operations, refer to the following pages:

2006 Results: pages 41-42
Business Description: pages 11-15
Risk Factors: pages 21-22

Alexis: (1) A report of Maui Brant[®] Sugar (2) Dates within the century, 600 sugar factories on Maui, 43 & 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000



I see the convergence of our shipping, logistics and real estate expertise as an additional source of value.

W. Allen Doane
Chairman of the Board,
President & Chief Executive Officer

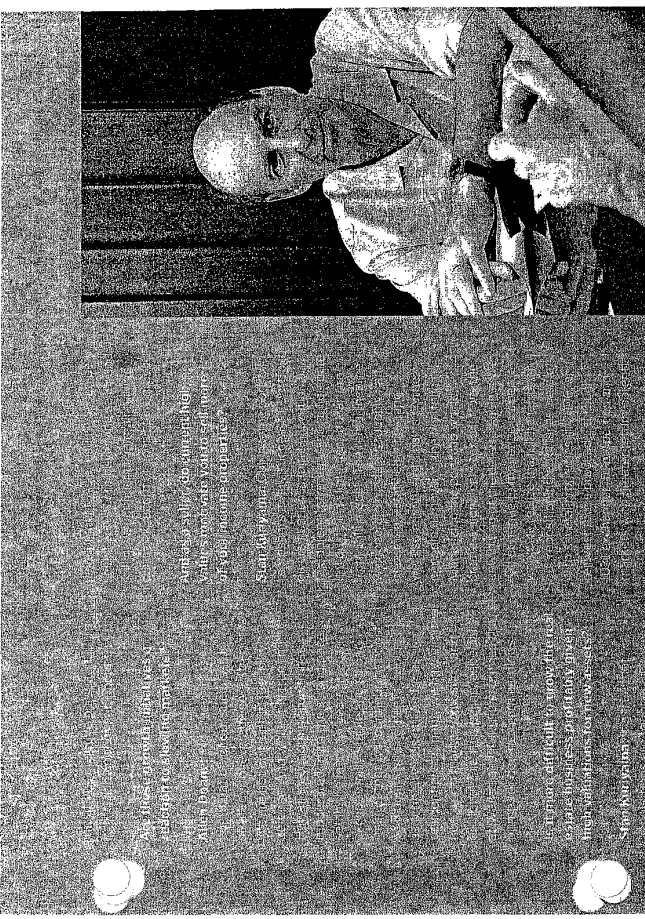


Our focus on making solid investments in the new economy and business sectors, along with our...

Does A&B believe that it can continue to aggressively grow its businesses?

Allen Doane: Yes. If you look at the past several years, we've grown our bottom line the most in the fastest growing markets we serve. We've achieved a 114 percent increase in operating income over the past five years by expanding our reach, not only in key markets but in our product offerings. Our real estate, shipping, logistics and real estate holdings, investment in partnerships and expanded our shipping and... in California. Our income...

publicly traded companies in the U.S. We've built a strong reputation for our financial performance. Our focus is on growth, profitability and... in China. It allows us to grow faster than we have the... and capability to identify... Going forward, we're investing in... the relationship between... As an example... the value of our... shipping, logistics and real estate... as an additional source of... which we're investing in the shipping... and we have a lot of...



As these markets stabilize, it's important to have a portfolio of investments that can weather the volatility of these markets.

Allen Doane

Chairman of the Board,
President & Chief Executive Officer

It's important to have a portfolio of investments that can weather the volatility of these markets.

Allen Doane

Chairman of the Board,
President & Chief Executive Officer

Turning to shipping, can you talk about Mason's purchase of four new vessels at a total cost of \$500 million?

Jim Adams: Sure.

As importantly, the last two ships we purchased were essential to our entry into the China market. That trade lane is already profitable for us.

James S. Adams
President and
Chief Executive Officer
Mason Navigation Company



"We look at structural options and we believe that we have an effective structure that is aligned with our core business models. Financial engineering has an important place, but not to the extent it fundamentally impacts your operating models."

Christopher J. Benjamin
Senior Vice President
Chief Financial Officer and Treasurer

"I think that capital structure is a source of value creation."

Chris Benjamin

"When you make an investment decision like that, how do you weigh alternatives—subsidies, currency, cash, debt, equity holders."

Chris Benjamin

Jim Andristick: One of the things that we're looking for is that you're able to move up the value chain. We're looking for companies that are able to move up the value chain. We're looking for companies that are able to move up the value chain.

Chris Benjamin: There's a question about how you're going to move up the value chain. We're looking for companies that are able to move up the value chain. We're looking for companies that are able to move up the value chain.

What is the endgame for the logistics business?

Jim Andristick: One of the things that we're looking for is that you're able to move up the value chain. We're looking for companies that are able to move up the value chain.

China sounds like a great play, but can Matson compete against larger, better capitalized global shipping companies with lower operating cost structures?

Jim Andristick: One of the things that we're looking for is that you're able to move up the value chain. We're looking for companies that are able to move up the value chain.

Allen Dobano: That's a fair point, but we can't ignore the fact that we're a US shipping company and we're looking for companies that are able to move up the value chain.



"Sugar is the heritage of our company and it is a tremendous asset to the Maui community. We're optimistic about the continued viability of the business thanks to our specialty sugar sales and the potential we see in energy."

Stanley M. Kuriyama
President and Chief Executive Officer, Land Group

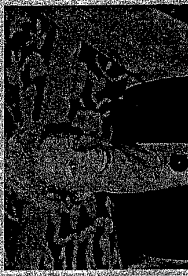
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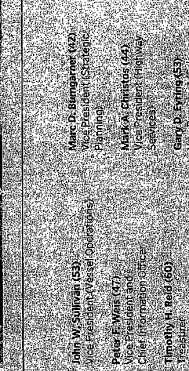
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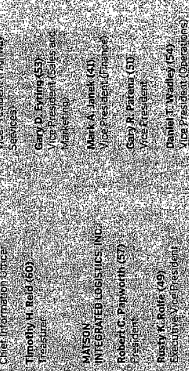
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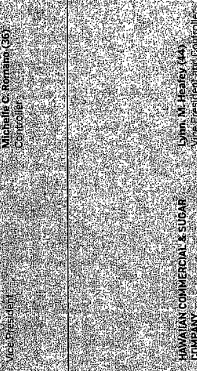
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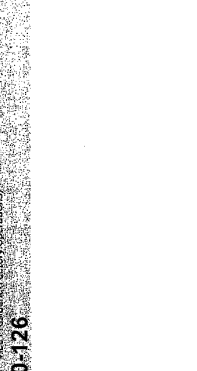
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2006

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____
Commission file number 0-565

ALEXANDER & BALDWIN, INC.

(Exact name of registrant as specified in its charter)

Hawaii
(State of incorporation or organization)

99-0021630
(IRS Employer
Identification No.)

822 Bishop Street
Post Office Box 3440, Honolulu, Hawaii 96801
(Address of principal executive offices and zip code)

808-525-6611
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Name of each exchange
on which registered
NASDAQ

Title of each class
Common Stock, without par value

Securities registered pursuant to Section 12(g) of the Act:
None

Number of shares of Common Stock outstanding at February 16, 2007:
42,877,919

Aggregate market value of Common Stock held by non-affiliates at June 30, 2006
\$1,870,984,515

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for each shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of "accelerated filer" and "large accelerated filer" in Rule 12b-2 of the Exchange Act. (Check one): Large accelerated filer
Accelerated filer Non-accelerated filer

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

Documents Incorporated By Reference

Portions of Registrant's Proxy Statement dated March 12, 2007 (Part III of Form 10-K)

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ALEXANDER & BALDWIN, INC.

FORM 10-K

Annual Report for the Fiscal Year
Ended December 31, 2006

PART I

ITEMS 1 & 2. BUSINESS AND PROPERTIES

Alexander & Baldwin, Inc. ("A&B") is a diversified corporation with most of its operations centered in Hawaii. It was founded in 1870 and incorporated in 1900. Ocean transportation operations, related shore-side operations in Hawaii, and intermodal, truck brokerage and logistics services are conducted by a wholly-owned subsidiary, Matson Navigation Company, Inc. ("Matson") and two Matson subsidiaries. Property development and agribusiness operations are conducted by A&B and certain other subsidiaries of A&B.

The business industries of A&B are generally as follows:

- A. *Transportation* - carrying freight, primarily between various U.S. Pacific Coast, Hawaii, Guam, other Pacific island, and China ports; chartering vessels to third parties; arranging domestic and international rail intermodal service, long-haul and regional highway brokerage, specialized hauling, flat-bed and project work, less-than-truckload and expedited/air freight services; and providing terminal, stevedoring and container equipment maintenance services in Hawaii.
- B. *Real Estate* - purchasing, developing, selling, managing, leasing and investing in commercial (including retail, office and industrial) and residential properties, in Hawaii and on the U.S. mainland.
- C. *Agribusiness* - growing sugar cane and coffee in Hawaii; producing bulk raw sugar, specialty food-grade sugars, molasses and green coffee; marketing and distributing roasted coffee and green coffee; providing sugar, petroleum and molasses hauling, general trucking services, mobile equipment maintenance and repair services, and self-service storage in Hawaii; and generating and selling, to the extent not used in A&B's factory operations, electricity.

For information about the revenue, operating profits and identifiable assets of A&B's industry segments for the three years ended December 31, 2006, see Note 13 ("Industry Segments") to A&B's financial statements in Item 8 of Part II below.

DESCRIPTION OF BUSINESS AND PROPERTIES

- A. **Transportation**
- (1) **Freight Services**

Matson's Hawaii Service offers containerized freight services between the ports of Long Beach, Oakland, Seattle, and the major ports in Hawaii on the islands of Oahu, Kauai, Maui and Hawaii. Roll-on/roll-off service is provided between California and the major ports in Hawaii.

Matson is the principal carrier of ocean cargo between the U.S. Pacific Coast and Hawaii. In 2006, Matson carried approximately 173,200 containers (compared with 175,800 in 2005) and 118,700 automobiles (compared with 148,100 in 2005) between those destinations. Principal westbound cargoes carried by Matson to Hawaii include dry containers of mixed commodities, refrigerated commodities, building materials, automobiles and

packaged foods. Principal eastbound cargoes carried by Matson from Hawaii include automobiles, household goods, refrigerated containers of fresh pineapple, canned pineapple and dry containers of mixed commodities. The majority of Matson's Hawaii Service revenue is derived from the westbound carriage of containerized freight and automobiles.

Matson's Guam Service provides containerized freight services between the U.S. Pacific Coast and Guam and certain islands in Micronesia. In 2006, Matson carried approximately 15,100 containers (compared with 16,600 in 2005) and 3,200 automobiles (compared with 4,500 in 2005) in the Guam Service.

Matson replaced its prior Guam Service upon termination of its alliance with American President Lines, Ltd. ("APL") with an integrated Hawaii/Guam/China service that began in February 2006. The service employs five Matson container ships in a five-ship string that carries cargo from the U.S. Pacific Coast to Honolulu, then to Guam. The vessels continue to China, where they are loaded with cargo to be discharged in Long Beach.

Matson's Mid-Pacific Service offers container and conventional freight services between the U.S. Pacific Coast and the ports of Kwajalein, Ebeyo and Majuro in the Republic of the Marshall Islands. This service was improved and Matson's costs were reduced in August 2006 when Matson replaced its monthly barge service to these islands with a bi-weekly ship service operating from Guam. Cargo originating on the Pacific Coast and in Hawaii is sent to Guam on the weekly Guam vessel and transferred to a ship chartered by Matson that sails every two weeks to Kwajalein, Ebeyo and Majuro. This ship also calls at ports on the islands of Chuuk, Pömpot and Kosrae in the eastern part of the Federated States of Micronesia.

See "Rate Regulation" below for a discussion of Matson's freight rates.

(2) **Vessels**

Matson's fleet consists of 12 container ships, including one container ship time-chartered from a third party that serves Micronesia; three combination container/trawlerships, including a combination ship time-chartered from a third party; one roll-on/roll-off barge and two container barges equipped with cranes that serve the neighbor islands of Hawaii; and one container barge equipped with cranes that is available for charter. The 17 Matson-owned vessels in the fleet represent an investment of approximately \$1.1 billion expended over the past 28 years. The majority of vessels in the Matson fleet have been acquired with the assistance of withdrawals from a Capital Construction Fund ("CCF") established under Section 607 of the Merchant Marine Act, 1936, as amended.

Matson has actively pursued a vessel renewal program. In 2002, Matson contracted with Aker Philadelphia Shipyard, Inc. ("Aker") for two new container ships for the Hawaii Service, each at a project cost of approximately \$107 million. The first ship was delivered in the third quarter of 2003, and the second was delivered in the third quarter of 2004.

Matson entered into agreements in February 2005 with Aker to purchase two additional new container ships at a contract price of \$144.4 million each. The first ship, the *MP Mamulani*, was delivered in May 2005, and the second ship, the *MP Maunalei*, was delivered in July of 2006. The purchase price for the *MP Maunalei* also included approximately \$3.2 million of interest incurred by Aker during construction, which, together with other adjustments, resulted in a total purchase price to \$146.6 million. The purchase of the *MP Maunalei* was funded with the CCF, operating cash flows and a secured revolving credit facility that was executed on June 28, 2005. No progress payments were required under the contract; accordingly, payment in full was made upon delivery. Also, in February 2005, Matson entered into a right of first refusal agreement with Aker, which provides that, after the *MP Maunalei* was delivered to Matson, Matson has the right of first refusal to purchase each of the next four container ships of similar design built by Aker that are deliverable before June 30, 2010. Matson may either exercise its right of first refusal and purchase the ship at an 8 percent discount from a third party's proposed contract price, or decline to exercise its right of first refusal and be paid by Aker 8 percent of such price. Notwithstanding the above, if Matson and Aker agree to a construction contract for a vessel to be delivered before June 30, 2010, Matson shall receive an 8 percent discount.

Ships owned by Matson are described on page 4.

As a complement to its fleet, Matson owns approximately 26,200 containers, 11,700 container chassis, 1,100 auto-frames and miscellaneous other equipment. Capital expenditures incurred by Matson in 2006 for vessels, equipment and systems totaled approximately \$222 million.

In July 2005, Matson entered into two agreements with the United States Maritime Administration ("Marad") to manage three of Marad's ready reserve vessels. The contract for two of the vessels was canceled at the convenience of Marad, and not as a result of any fault of Matson, effective July 29, 2006, with the payment of a cancellation fee to Matson. The third vessel is a break bulk vessel in full operating status with the U.S. Navy Military Sealift Command and is based in the Marianas. This contract was extended for one year, with the possibility of an additional one-year extension, and the per dem rate was increased.

(3) Terminals

Matson Terminals, Inc. ("Matson Terminals"), a wholly-owned subsidiary of Matson, provides container stevedoring, container equipment maintenance and other terminal services for Matson and other ocean carriers at its 105-acre marine terminal in Honolulu. Matson Terminals owns and operates seven cranes at the terminal, which handled approximately 421,500 containers in 2006 (compared with 417,500 in 2005). The facility can accommodate three vessels at one time. Matson Terminals' lease with the State of Hawaii runs through September 2016. Matson Terminals also provides container stevedoring and other terminal services to Matson and other vessel operators at ports on the island of Hawaii.

SSA Terminals, LLC ("SSAT"), a joint venture of Matson and SSA Marine, Inc. ("SSA"), provides terminal and stevedoring services at U.S. Pacific Coast terminal facilities to Matson and numerous international carriers, which include Mediterranean Shipping Company ("MSC"), OOCL, NYK Line and China Shipping. SSAT operates seven terminals: two in Seattle, three in Oakland/Richmond and two in Long Beach, one of which is operated by SSA Terminals (Long Beach), LLC ("SSAT (LB)"), a joint venture shared equally between SSAT and MSC. The volume for the combined SSAT and SSAT (LB) operations during 2006 was 1.7 million lifts.

Capital expenditures incurred by Matson Terminals in 2006 for terminals and equipment totaled approximately \$2 million.

(4) Logistics and Other Services

Matson Integrated Logistics, Inc. ("Matson Integrated Logistics"), a wholly-owned subsidiary of Matson, arranges rail, highway, air, ocean and other surface transportation and provides other third-party logistics services for North American shippers. Through volume purchases of rail, motor carrier, air and ocean transportation services, augmented by such services as shipment tracking and tracing and single-vendor invoicing, Matson Integrated Logistics is able to reduce transportation costs for its customers. Matson Integrated Logistics operates seven regional operating centers, has 30 sales offices, and operates through a network of agents throughout the U.S. mainland.

(5) Competition

Matson's Hawaii Service and Guam Service have one major container-ship competitor that serves Long Beach, Oakland, Tacoma, Honolulu and Guam. The Hawaii Service also has one additional liner competitor that operates a pure car carrier ship, specializing in the carriage of automobiles and large pieces of rolling stock such as trucks and buses.

Other competitors in the Hawaii Service include two common carrier barge services, unregulated proprietary and contract carriers of bulk cargoes, and air cargo service providers. Although air freight competition is intense for time-sensitive and perishable cargoes, inroads by such competition in terms of cargo volume are limited by the amount of cargo space available in passenger aircraft and by generally higher air freight rates.

Vessel Name	Official Year	Recon-structed	Length	Speed (Knots)	Deadweight (Long Tons)	Containers		Stowage (45' x 20')	Stowage (45' x 45')	Autos	Trailers	Short Tons
						Maximum	Minimum					
R. J. PEPPER	1992	713'	6"	23.0	27,100	48	171	988	300	2,229	408	2,824
MOKHANA	1983	860'	2"	23.0	30,167	182	1,340	-	408	2,824	408	2,824
MANJILANI	2005	712'	-	23.0	29,517	4	1,294	-	300	2,592	408	2,824
MAHIMAH	1982	860'	2"	23.0	30,167	182	1,340	-	408	2,824	408	2,824
MANOA	1982	860'	2"	23.0	30,187	182	1,340	-	408	2,824	408	2,824
MANUKAI	2003	711'	9"	23.0	29,517	4	1,359	-	300	2,592	408	2,824
MANAWAHEI	2004	711'	9"	23.0	29,517	4	1,359	-	300	2,592	408	2,824
MANATEI	2006	681'	11"	22.1	33,771	4	1,188	-	300	2,400	-	-
KAUAI	1980	720'	5-1/2"	22.5	26,308	-	210	779	300	1,626	44	2,600
MAUI	1978	720'	5-1/2"	22.5	26,623	-	458	538	300	1,626	56	4,300
MATSONIA	1973	760'	0"	21.5	22,301	50	94	771	300	1,712	450	4,300
LURLINE	2003	826'	6"	21.5	22,213	6	-	-	865	38	910	2,100
LIHUÉ	1971	787'	8"	21.0	18,656	286	276	681	188	1,979	-	-
WAI'ALEALE (2)	1991	345'	0"	-	5,621	-	-	-	35	-	230	45
MAVNA KEA (3) (4)	1988	372'	0"	-	6,937	-	276	24	-	-	-	-
MAVNA LOA (3)	1984	350'	0"	-	4,658	-	144	72	-	-	-	-
HALEKALUA (3)	1984	350'	0"	-	4,658	-	144	72	-	-	-	-

(1) "Twenty-foot Equivalent Units" (including trailers). TEU is a standard measure of cargo volume correlated to the volume of a standard 20-foot dry cargo container.
 (2) Roll-on/Roll-off Barge.
 (3) Container Barge.
 (4) Formerly named "Islander."

OWNED FLEET
MATSON NAVIGATION COMPANY, INC.

Matson vessels are operated on schedules that make available to shippers and consignees regular day-of-the-week sailings from the U.S. Pacific Coast and day-of-the-week arrivals in Hawaii. Matson operates over 200 sailings per year, double the westbound voyages of its nearest competitor, and arranges additional sailings when cargo volume requires additional capacity. One westbound sailing each week continues on to Guam and China, so the number of eastbound sailings from Hawaii to the U.S. mainland is over 150 per year with the potential for additional sailings. This service is attractive to customers because more frequent arrivals permit customers to reduce inventory costs. Matson also competes by offering a more comprehensive service to customers, supported by the scope of its equipment, its efficiency and experience in handling containerized cargo, and competitive pricing.

The carriage of cargo between the U.S. Pacific Coast and Hawaii on foreign-built or foreign-located vessels is prohibited by Section 27 of the Merchant Marine Act, 1920, commonly referred to as the Jones Act. However, foreign-flag vessels carrying cargo to Hawaii from non-U.S. locations provide indirect competition for Matson's Hawaii Service. Far East countries, Australia, New Zealand and South Pacific islands have direct foreign-flag services to Hawaii.

In response to coordinated efforts by various interests to convince Congress to repeal the Jones Act, in 1995 Matson joined other businesses and organizations to form the Maritime Cboilage Task Force, which supports the retention of the Jones Act and other cabotage laws, which regulate the transport of goods between U.S. ports. Repeal of the Jones Act would allow foreign-flag vessel operators, which do not have to abide by U.S. laws and regulations, to sail between U.S. ports in direct competition with Matson and other U.S. operators, which must comply with such laws and regulations. The Task Force seeks to inform elected officials and the public about the economic, national security, commercial, safety and environmental benefits of the Jones Act and similar cabotage laws.

Simultaneous with the phase-out of the APL alliance, Matson commenced its China Long Beach Express Service on February 1, 2006. Matson provides weekly container service between the ports of Shanghai and Ningbo and the port of Long Beach. Enroute to China, the ships carry cargo to the ports of Honolulu and Guam. Each ship continues to the ports of Ningbo and Shanghai, and returns directly to Long Beach. Major competitors in the China Service include well-known international carriers such as Maersk, Cosco, Evergreen, Hanjin, APL, China Shipping, Hyundai, NYK Line and Yang Ming. Matson competes by offering the fastest freight availability from Shanghai to Long Beach, providing fixed Sunday arrivals in Long Beach and next-day cargo availability, offering a dedicated Long Beach terminal providing fast truck turn times, an off-dock container yard and one-stop intermodal connections, using its newest and most fuel efficient U.S. flag ships and providing state-of-the-art technology and world-class customer service. Matson opened offices in Shanghai and Ningbo in October 2005, and has hired agents and has contracted with terminals in both locations.

Matson Integrated Logistics competes for freight with a number of large and small companies that provide surface transportation and third-party logistics services.

(6) Labor Relations

The absence of strikes and the availability of labor through hiring halls are important to the maintenance of profitable operations by Matson. Until 2002, when International Longshore and Warehouse Union ("ILWU") workers were locked out for ten days on the U.S. Pacific Coast, Matson's operations had not been disrupted significantly by labor disputes in over 30 years. See "Employees and Labor Relations" below for a description of labor agreements to which Matson Terminals are parties and information about certain unfunded liabilities for multiemployer pension plans to which Matson and Matson Terminals contribute.

(7) Rate Regulation

Matson is subject to the jurisdiction of the Surface Transportation Board with respect to its domestic rates. A rate in the noncontiguous domestic trade is presumed reasonable and will not be subject to investigation if the aggregate of increases and decreases is not more than 7.5 percent above, or more than 10 percent below, the rate in effect one year before the effective date of the proposed rate, subject to increase or decrease by the percentage change in the U.S. Producer Price Index ("Zone of reasonableness"). Effective January 1, 2006, Matson increased its rates in its Hawaii Service by \$125 per westbound container and \$75 per eastbound container, and its terminal

handling charge by \$60 per westbound container and \$30 per eastbound container. Matson also announced increases to its rates in its Hawaii Service effective January 1, 2007, by \$100 per westbound container and \$50 per eastbound container, and its terminal handling charge by \$150 per westbound container and \$75 per eastbound container. Due to increases in fuel costs in the first half of 2006, Matson increased its fuel surcharge in its Hawaii and Guam Services from 13 percent to 15 percent, effective January 1, 2006; to 18.5 percent, effective April 2, 2006; and to 21.25 percent, effective June 4, 2006. As a result of subsequent declines in fuel costs, Matson decreased its fuel surcharge to 19.75 percent, effective October 1, 2006, to 18.75 percent, effective November 5, 2006, and to 17.5 percent, effective January 28, 2007. In mid-February, due to increases in fuel costs, Matson announced an increase in its fuel surcharge to 19.5 percent, effective March 11, 2007. Matson's new China Service is subject to the jurisdiction of the Federal Maritime Commission ("FMC"). No such zone of reasonableness applies under FMC regulation.

B. Real Estate

(1) General

As of December 31, 2006, A&B and its subsidiaries, including A&B Properties, Inc., owned approximately 89,440 acres, consisting of approximately 89,195 acres in Hawaii and approximately 245 acres elsewhere, as follows:

Location	No. of Acres
Mani	68,650
Kauai	20,515
Oahu	30
TOTAL HAWAII	89,195
California	80
Texas	50
Washington	15
Arizona	30
Nevada	20
Colorado	15
Utah	35
TOTAL MAINLAND	245

As described more fully in the table below, the bulk of this acreage currently is used for agricultural, pasture, watershed and conservation purposes. A portion of these lands is used or planned for development or other urban uses. An additional 2,870 acres on Mani and Kauai are leased from third parties, and approximately 1,000 acres on Kauai have been transferred to a joint venture, consisting of A&B and DMB Associates, Inc., an Arizona-based developer, for the development of a master-planned resort residential community. Such acreage is not included in the table above.

Current Use	No. of Acres
Hawaii	605
Fully entitled Urban (defined below)	59,320
Agricultural, pasture and miscellaneous	29,270
Watershed/conservation	—
U.S. Mainland	245
Fully entitled Urban	89,440
TOTAL	89,440

A&B and its subsidiaries are actively involved in the entire spectrum of real estate development and ownership, including planning, zoning, financing, constructing, purchasing, managing and leasing, selling and exchanging, and investing in real property.

(2) **Planning and Zoning**

The entitlement process for development of property in Hawaii is both time-consuming and costly, involving numerous State and County regulatory approvals. For example, conversion of an agriculturally-zoned parcel to residential zoning usually requires the following three approvals:

- amendment of the County general plan to reflect the desired residential use;
- approval by the State Land Use Commission ("SLUC") to reclassify the parcel from the Agricultural district to the Urban district; and
- County approval to rezone the property to the precise residential use desired.

The entitlement process is complicated by the conditions, restrictions and exactions that are placed on these approvals, including, among others, the construction of infrastructure improvements, payment of impact fees, restrictions on the permitted uses of the land, provision of affordable housing and mandatory fee sale of portions of the project.

A&B actively works with regulatory agencies, commissions and legislative bodies at various levels of government to obtain zoning reclassification of land to its highest and best use. A&B designates a parcel as "fully entitled" or "fully zoned" when the three land use approvals described above have been obtained.

(3) **Residential Projects**

A&B is pursuing a number of residential projects in Hawaii, including:

Maui:

(a) *Wailea*. In October 2003, A&B acquired 270 acres of fully-zoned, undeveloped residential and commercial land at the Wailea Resort on Maui, planned for up to 1,200 homes, for \$67.1 million. A&B was the original developer of the Wailea Resort, beginning in the 1970s and continuing until A&B sold the Resort to the Shweta Golf Group in 1989.

In 2004 and 2005, A&B sold 29 single-family homesites at Wailea's Golf Villas subdivision and four bulk parcels: MF-4 (10.5 acres), MF-15 (9.4 acres), MF-5 (8.4 acres) and MF-9 (30.2 acres). In 2006, A&B continued planning, design and permitting work on three parcels (30.3 acres): MF-11 (10.6 acres), MF-19 (6.7 acres) and MF-7 (13.0 acres). In 2006, a three-acre business parcel at MF-11 was sold and construction of 12 single-family lots are expected to commence in 2007. The MF-19 parcel is planned for nine half-acre estate lots, and the MF-7 parcel is planned for 80 multi-family units. During 2006, A&B also proceeded with a joint venture development on MF-8 (Kai Mahi), as described below.

(b) *Kai Mahi at Wailea*. In April 2004, A&B entered into a joint venture with Armstrong Builders, Ltd. for development of the 25-acre MF-8 parcel at Wailea into 150 duplex units, averaging 1,800 square feet per unit. In 2006, all 150 units were sold under binding contracts at an average price of \$1.3 million. Vertical construction commenced in October 2005 and the first units closed in October 2006. A total of 22 units closed in 2006.

(c) *Haliimaui Subdivision*. A&B's application to rezone 63 acres and amend the community plan for the development of a 150- to 200-lot residential subdivision in Haliimaui (Upounou, Maui) was approved by the Maui County Council in September 2005. In 2006, onsite infrastructure design work was submitted to county agencies and preliminary large lot subdivision approval was granted in August. A&B continues to work on the development of a water source.

Kauai:

(d) *Kukui 'aie*. In April 2002, A&B entered into a joint venture with an affiliate of DMB Associates, Inc., an Arizona-based developer of master planned communities, for the development of Kukui 'aie, a 1,000-acre master planned resort residential community located in Poipu, Kauai, planned for approximately 1,200 high-end residential units. In 2004, A&B exercised its option to contribute to the joint venture up to 40 percent of the project's future capital requirements. Several key construction and subdivision plan approvals were obtained in 2006 for major roadways and subdivision parcels Y (88 lots) and M-1/M-4 (35 lots). Civil construction of roadways, subdivision improvements and water systems occurred in 2006. Closings commenced in the fourth quarter of 2006, with 17 lots closing at an average price of \$1.9 million.

(e) *Port Allen*. This project covers 17 acres in Port Allen, Kauai, and is planned for 75 condominium units and 60 single-family homes. Final county subdivision approval was obtained in the first quarter of 2006. However, unusually heavy rains in early 2006 and county-required changes to the elevation of the condominium project resulted in construction delays. Civil construction commenced in November 2005 and vertical construction of the single-family homes commenced in October 2006. As of mid-February 2007, there were 55 binding contracts for the 58 released homes and 44 non-binding contracts for the 48 released condominium units. The first homes are expected to close in mid-2007.

Oahu:

(f) *Hohua*. Construction of the 247-unit high-rise luxury condominium project, a joint venture development with MK Management LLC, was completed in January 2006. The sale of all 247 units closed in January 2006 at an average price of \$1.1 million.

(g) *Keola La'i*. In August 2004, A&B acquired a 2.7-acre fee simple development site near downtown Honolulu, Oahu, for the development of a high-rise condominium project consisting of 352 residential units, averaging 970 square feet, located on 37 residential floors above a five-story parking garage. As required by the State, 63 of the units ("Reserve Units") have been designated for sale to buyers earning not more than 140 percent of the Honolulu median income. Sales and marketing commenced for the market-priced units ("Market Units") in mid-2005 and for the Reserve Units in late-2006. As of the middle of February 2007, 227 Market Units and 58 of the Reserve Units were under binding contracts, with the remaining Reserve Units under non-binding contracts.

(h) *Waianoa*. In August 2006, A&B closed a joint venture agreement with an affiliate of Century Investment Properties (Waana Development LLC), for the development of 550 residential-zoned acres in Central Oahu. The venture will act as the master developer for the project, planned for 5,000 residential units, and will be selling parcels to homebuilders. Construction plans are progressing on the project's major offsite infrastructure and parcel subdivisions, with construction expected to commence in 2008.

(i) *Kakaako Waterfront*. In September 2005, A&B was selected by the Hawaii Community Development Authority, a state agency, to be the developer of its Kakaako Waterfront project. In early 2006, legislation was passed prohibiting residential development within the project, causing A&B to withdraw as the developer of the project.

Big Island of Hawaii:

(j) *Ka Moku at Mauna Lani*. In April 2004, A&B entered into a joint venture with Brookfield Homes Hawaii Inc. to acquire and develop a 30.5-acre residential parcel in the Mauna Lani Resort on the island of Hawaii. The project is planned for 37 single-family units (averaging 2,330 square feet) and 100 duplex townhouses (averaging 2,040 square feet). Mass grading began in October 2005. The project's model home was completed in September 2006. Construction has commenced on the first phase of 24 units, where, as of mid-February 2007, there were 15 binding contracts at an average price of \$1.3 million.

(4) Commercial Properties

An important source of property revenue is the lease rental income A&B receives from its portfolio of commercial income properties, currently consisting of approximately 5.3 million leasable square feet of commercial building space.

(a) Hawaii Properties

A&B's Hawaii commercial properties portfolio consists of retail, office and industrial properties, comprising approximately 1.5 million square feet of leasable space. Most of the commercial properties are located on Maui and Oahu, with smaller holdings in the area of Port Allen, on the island of Kauai. The average occupancy for the Hawaii portfolio was 98 percent in 2006, compared to 93 percent in 2005. In March 2006, A&B sold One Main Plaza, an 82,000-square-foot office building in Waihaku, Maui. In December 2006, A&B sold Lanikai Shopping Center, an 88,200-square-foot retail center, and option rights to 23 acres of adjacent vacant commercial-zoned land in Kona, Hawaii. In November 2006, A&B completed the construction of two single-tenant buildings at Triangle Square in Kahului, Maui.

The primary Hawaii commercial properties are as follows:

Property	Location	Type	Leasable Area (sq. ft.)
Maui Mall	Kahului, Maui	Retail	191,500
Mililani Shopping Center	Mililani, Oahu	Retail	180,500
Pacific Guardian Complex	Honolulu, Oahu	Office	143,200
Kaunoe Bay Shopping Center	Kaunoe, Oahu	Retail	124,500
F&L Warehouse	Kahului, Maui	Industrial	104,100
Port Allen	Port Allen, Kauai	Industrial/Retail	87,900
Hawaii Business Park	Pearl City, Oahu	Industrial	85,200
Triangle Square	Kahului, Maui	Retail	65,400
Wakana Business Center	Kahului, Maui	Industrial/Retail	61,500
Kaia Shopping Center	Waipahu, Oahu	Retail	60,600
Kahului Office Building	Kahului, Maui	Office	56,700
Kahului Shopping Center	Kahului, Maui	Retail	56,600
Napili Plaza	Napili, Maui	Retail	45,200
Fairway Shops at Kaanapali	Kaanapali, Maui	Retail	35,000
Kahului Office Center	Kahului, Maui	Office	32,800
Stangenwald Building	Honolulu, Oahu	Office	27,100
Judd Building	Honolulu, Oahu	Office	20,200

Other commercial projects are discussed below:

(f) *Maui Business Park*. In April 2004, A&B filed a zoning change application with the County of Maui for the re-zoning of 179 acres in Kahului, Maui, representing the second phase of its Maui Business Park project, from agriculture to light industrial. Since May 2005, the zoning change application has been with the County Council, but due to a large backlog of projects pending before the Council's Land Use Committee, a hearing was not scheduled in 2006.

(h) *Mill Town Center*. Located in Waipahu, Oahu (approximately 12 miles from Honolulu), the Mill Town Center is a light-industrial subdivision consisting of 27.5 saleable acres, developed between 1999 and 2002. The property was subdivided into 61 lots, having an average size of 29,100 square feet. In 2006, the last three lots were sold.

(b) U.S. Mainland Properties

On the U.S. mainland, A&B owns a portfolio of commercial properties, acquired primarily by way of tax-deferred exchanges under Internal Revenue Code Section 1031. In June 2006, A&B completed the sales of Carefree Marketplace, an 85,000-square-foot retail center in Carefree, Arizona, and Mesa South Shopping Center, a 135,700-square-foot retail center in Phoenix, Arizona. In January 2006, A&B acquired Ninigret Office Park X and XI, a 183,200-square-foot office complex in Salt Lake City, Utah. In June 2006, A&B acquired Gateway Oaks, a 58,700-square-foot office building in Sacramento, California and 1800 and 1820 Preston Park, a 198,500-square-foot, two-building office complex in Plano, Texas. In December 2006, A&B completed the acquisition of Concorde Commerce Center, a 138,500-square-foot office building in Phoenix, Arizona. A&B's Mainland portfolio currently includes approximately 3.85 million square feet of leasable area, comprising six retail centers, nine office buildings and six industrial properties, as follows:

Property	Location	Type	Leasable Area (sq. ft.)
Ontario Distribution Center	Ontario, CA	Industrial	898,400
Sparks Business Center	Sparks, NV	Industrial	396,100
Centennial Plaza	Salt Lake City, UT	Industrial	244,000
Valley Freeway Corporate Park	Kent, WA	Industrial	228,200
1800 and 1820 Preston Park	Plano, TX	Office	198,500
Ninigret Office Park X and XI	Salt Lake City, UT	Office	185,200
Boardwalk Shopping Center	Round Rock, TX	Retail	184,600
San Pedro Plaza	San Antonio, TX	Office	171,800
2868 Prospect Park	Sacramento, CA	Office	162,900
Arbor Park Shopping Center	San Antonio, TX	Retail	139,500
Concorde Commerce Center	Phoenix, AZ	Office	138,500
Dear Valley Financial Center	Phoenix, AZ	Office	126,600
San Jose Avenue Warehouse	City of Industry, CA	Industrial	126,000
Southbank II	Phoenix, AZ	Office	120,900
Village at Indian Wells	Indian Wells, CA	Retail	104,600
2450 Venture Oaks	Sacramento, CA	Office	100,000
Broadlands Marketplace	Broomfield, CO	Retail	97,900
Marina Shores Shopping Center	Long Beach, CA	Retail	67,700
2890 Gateway Oaks	Sacramento, CA	Office	58,700
Vista Controls Building	Valencia, CA	Industrial/Office	51,100
Wilshire Center	Greeley, CO	Retail	46,500

A&B's Mainland commercial properties maintained an average occupancy rate of 98 percent in 2006, compared to 95 percent in 2005.

In 2002, A&B began development activities in Valencia, California, a fast growing region north of Los Angeles with favorable demographics and strong economic growth. A&B will continue its search for Mainland expansion opportunities in other growing markets. The following development projects are currently under development in Valencia:

(i) *Crossroads Plaza*. In June 2004, A&B entered into a joint venture with Intertex Hasley, LLC, for the development of a 60,000-square-foot mixed-use neighborhood retail center on 6.5 acres. The property was acquired in August 2004. Site work commenced in 2006. The retail space is substantially pre-leased, and construction is progressing.

(ii) *Centre Pointe Marketplace*. In April 2005, A&B entered into a joint venture with Intertex Centre Pointe Marketplace, LLC for the development of a 104,700-square-foot retail center on a 10.2-acre parcel. The project is substantially pre-leased, and vertical construction is underway.



(fii) **Bridgeport Marketplace.** In July 2005, A&B entered into a joint venture with Intertec Bridgeport Marketplace, LLC for the development of a 27.8-acre parcel. The property is planned to be subdivided into a 5-acre parcel for a public park, a 7.3-acre parcel for a church, and a 15.5-acre parcel for the development of a 128,600-square-foot retail center. Mass grading is complete and the retail center is substantially pre-leased.

In October 2004, a joint venture between A&B and Intertec Properties, LLC acquired a 5.4-acre parcel in Valencia for the development of an 82,000-square-foot office building. Prior to commencing development of the property, the joint venture sold the property, and the sale closed on January 25, 2006.

In November 2006, A&B expanded its development activities to Bakersfield, California and entered into a joint venture with Intertec P&G Retail, LLC for the development of a 600,000-square-foot retail center on a 57.3-acre parcel. Design and pre-leasing activities are underway and a preliminary site plan was submitted to the Bakersfield Planning Department.

C. Agribusiness

(1) Production

A&B has been engaged in the production of cane sugar in Hawaii since 1870, and the production of coffee in Hawaii since 1987. A&B's current agribusiness and related operations consist of: (1) a sugar plantation on the island of Maui, operated by its Hawaiian Commercial & Sugar Company ("HC&S") division, (2) a coffee farm on the island of Kauai, operated by its Kauai Coffee Company, Inc. ("Kauai Coffee") subsidiary, and (3) its Kahului Trucking & Storage, Inc. ("KT&S") and Kauai Commercial Company, Incorporated ("KCCC") subsidiaries, which provide all types of trucking services, including sugar and molasses hauling on Maui and Kauai, mobile equipment maintenance and repair services on Maui, Kauai, and the Big Island, and self-service storage facilities on Maui and Kauai.

HC&S is Hawaii's largest producer of raw sugar, producing approximately 173,600 tons of raw sugar in 2006, or about 81 percent of the raw sugar produced in Hawaii for the year (compared with 192,700 tons, or about 76 percent, in 2005). The decrease in production was primarily due to yield losses from a drought during growing months, a lower crop age, and fertilizing and other farming issues. Total Hawaii sugar production amounted to approximately 3 percent of total U.S. sugar production in 2006. HC&S harvested 16,950 acres of sugar cane in 2006 (compared with 16,639 in 2005). Yields averaged 10.2 tons of sugar per acre in 2006 (compared with 11.6 in 2005). As a by-product of sugar production, HC&S also produced approximately 55,900 tons of molasses in 2006 (compared with 57,100 in 2005).

In 2006, approximately 15,500 tons of sugar (compared with 18,900 tons in 2005) were processed by HC&S into specialty food-grade raw sugars that were sold under HC&S's Maui Brand™ trademark or repackaged by distributors under their own labels. A further expansion of the production facilities for these sugars commenced in 2006.

During 2006, Kauai Coffee had approximately 3,100 acres of coffee trees under cultivation. The 2006 harvest yielded approximately 2.7 million pounds of green coffee (compared with 1.8 million pounds in 2005). In addition to higher yields, the mix of green coffee resulted in a higher percentage of specialty and mid-grade green beans and a lower percentage of commodity grade green beans. The higher yield and favorable green bean mix are attributable to improved plant nutrition and reduced insect infestation.

HC&S and McBryde Sugar Company, Limited ("McBryde"), a subsidiary of A&B on Kauai and the parent company of Kauai Coffee, produce electricity for internal use and for sale to the local electric utility companies. HC&S's power is produced by burning bagasse (the residual fiber of the sugar cane plant), by hydroelectric power generation and, when necessary, by burning fossil fuels, whereas McBryde produces power solely by hydroelectric generation. The price for the power sold by HC&S and McBryde is equal to the utility companies' "avoided cost" of not producing such power themselves. In addition, HC&S receives a capacity payment to provide a guaranteed power generation capacity to the local utility. See "Energy" below for power production and sales data.

(2) Marketing of Sugar and Coffee

Substantially all of the bulk raw sugar produced in Hawaii is purchased, refined and marketed by C&H Sugar Company, Inc. ("C&H"), in which A&B divested its remaining equity position in 2005. C&H processes the raw cane sugar at its refinery at Crockett, California, and markets the refined products primarily in the western and central United States. As mentioned above, approximately 9 percent of the raw sugar is used by HC&S to produce specialty food-grade raw sugars, which is sold by HC&S to food and beverage producers and to retail stores under its Maui Brand™ label, and to distributors that repackage the sugars under their own labels. HC&S's largest food-grade raw sugar customers are Cumberland Packing Corp. and Sugar Foods Corporation, which repackage HC&S's turbinado sugar for their "Sugar in the Raw" products.

Hawaiian Sugar & Transportation Cooperative ("HS&TC"), a cooperative consisting of two sugar cane growers in Hawaii (including HC&S), has a supply contract with C&H ending in December 2008. Pursuant to the supply contract, the growers sell their raw sugar to C&H at a price equal to the New York No. 14 Contract settlement price, less a discount and less costs of sugar vessel discharge and stevedoring. This price, after deducting the marketing, operating, distribution, transportation and interest costs of HS&TC, reflects the gross revenue to the Hawaii sugar growers, including HC&S. Notwithstanding the supply contract, HC&S arranged directly with C&H for the forward pricing of a portion of its 2006 harvest, as described in Item 7A ("Quantitative and Qualitative Disclosures About Market Risk") of Part II below.

At Kauai Coffee, coffee marketing efforts are directed toward developing a market for premium-priced, estate-grown Kauai green coffee. Most of the coffee crop is being marketed on the U.S. mainland and in Asia as green (unroasted) coffee. In addition to the sale of green coffee, Kauai Coffee produces and sells roasted, packaged coffee under the Kauai Coffee™ trademark. Kauai Coffee's customers include specialty and commodity brokers, hotels, and large regional roasters.

(3) Sugar Competition and Legislation

Hawaii sugar growers produce more sugar per acre than most other major producing areas of the world, but that advantage is offset by Hawaii's high labor costs and the distance to the U.S. mainland market. Hawaiian refined sugar is marketed primarily west of Chicago. This is also the largest beet sugar growing and processing area and, as a result, the only market area in the United States that produces more sugar than it consumes. Sugar from sugar beets is the greatest source of competition in the refined sugar market for the Hawaiian sugar industry.

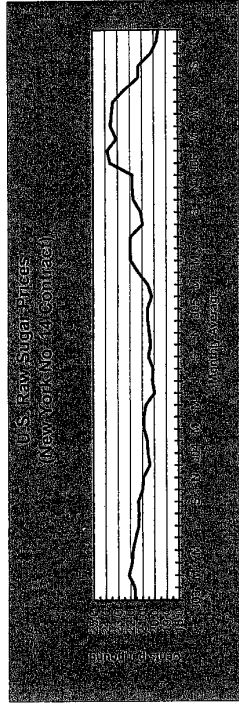
The U.S. Congress historically has sought, through legislation, to assure a reliable domestic supply of sugar at stable and reasonable prices. The current protective legislation is the Farm Security and Rural Investment Act of 2002 ("2002 Farm Bill"). The two main elements of U.S. sugar policy are the tariff-rate quota ("TRQ") import system and the price support loan program. The TRQ system limits imports by allowing only a quota amount to enter the U.S. after payment of a relatively low tariff. A higher, over-quota tariff is imposed for imported quantities above the quota amount.

The 2002 Farm Bill reauthorized the sugar price support loan program, which supports the U.S. price of sugar by providing for commodity-secured loans to producers. Unlike most other commodity programs, sugar loans are made to processors and not directly to producers. HC&S is both a producer and a processor. To qualify for loans, processors must agree to provide a part of the loan payment to producers. Loans may be repaid either in cash or by forfeiture without penalty. The 2002 Farm Bill eliminated the former loan forfeiture penalty and marketing assessments, which increased the effective support level.

Under the 2002 Farm Bill, the government is required to administer the loan program at no net cost by avoiding sugar loan forfeitures. This is accomplished by reestablishing marketing allotments, which provides each processor or producer a specific limit on sales for the year, above which penalties would apply. It is also accomplished by adjusting fees and quotas for imported sugar to maintain the domestic price at a level that discourages producers from defaulting on loans. A loan rate (support price) of 18 cents per pound for raw cane sugar is in effect for the 2003 through 2007 crops. The supply agreement between HS&TC and C&H allows HS&TC to place sugar under loan pursuant to the loan program, but prohibits forfeiting sugar under loan while providing a "floor" price.

In 2005, the U.S. approved a trade pact with Central America and the Dominican Republic, known as the United States Free Trade Agreement ("CAFTA-DR"). In 2006, the first year of the agreement, additional sugar market access for participating countries amounted to about 1.2 percent of current U.S. sugar consumption (107,000 metric tons), growing to about 1.7 percent (151,000 metric tons) in its fifteenth year.

U.S. domestic raw sugar prices remain volatile. The pricing situation continues to be challenging, even to efficient producers like HC&S. A chronological chart of the average U.S. domestic raw sugar prices, based on the average daily New York No. 14 Contract settlement price for domestic raw sugar, is shown below:



Liberalized international trade agreements, such as the General Agreement on Tariffs and Trade, or GATT, include provisions relating to agriculture that can affect the U.S. sugar or sweetener industries materially. Recent negotiations under the U.S.-Central America Free Trade Agreement, or CAFTA, as well as other trade discussions, have resulted in lower U.S. sugar prices.

(4) Coffee Competition and Prices

Kauai Coffee competes with coffee growers located worldwide, including in Hawaii. Coffee commodity prices have largely recovered from near record lows.

The market for specialty coffee in the United States is very competitive. Because of its quality and branding, Kauai Coffee has been successful at selling most of its coffee at a premium above commodity market prices. Kauai Coffee has long-term, repeat customers that account for the bulk of its sales, though there is strong competition and the contracts are subject to renegotiation each year.

Approximately one-fifth of Kauai Coffee's production is off-grade coffee, which are loosely tied to world commodity market prices. Kauai Coffee engages in short-term contracts with established customers to ensure that it receives the best price possible for these coffees. These prices are subject to price adjustments on an annual basis.

Kauai Coffee's business is dependent upon the supply of green coffee. Green coffee production volume and unit costs vary each year depending upon farming conditions. The unit cost per pound impacts the cost of goods for Kauai Coffee's wholesale roasted and retail programs.

(5) Properties and Water

The HC&S sugar plantation, the largest in Hawaii, consists of approximately 43,300 acres, including a small portion of leased lands. Approximately 35,100 acres are under cultivation, and the balance is leased to third parties, not suitable for cultivation, or used for plantation purposes, such as roads, reservoirs, ditches and plant sites.

On Kauai, approximately 3,100 acres are under cultivation by Kauai Coffee.

The Hawaii Legislature, in 2005, passed Important Agricultural Lands ("IAL") legislation to protect agricultural lands, promote diversified agriculture, increase the State's agricultural self-sufficiency, and assure the availability of agriculturally suitable lands, and is currently considering a package of incentives whose passage is necessary to trigger the IAL system of land designation. Under the 2005 legislation, either the landowners or the counties may propose lands to be designated as IAL, subject to the approval of the SLUC. If a majority of a landowner's landholdings (excluding conservation lands) are designated as IAL pursuant to the voluntary landowner petition process, no additional lands may be so designated by the SLUC, unless otherwise proposed by the landowner. Lands designated IAL shall not be reclassified by the State or rezoned by the counties unless such lands meet the standards and criteria established by the Legislature, and such reclassification or rezoning is approved by the State or applicable county, respectively, by a two-thirds vote. Lands designated IAL shall also be eligible for certain incentives, intended to support agricultural activity on these lands. The IAL incentives, which are currently being considered by the Legislature, may include tax credits for agricultural investments and regulatory relief. The IAL system will not take effect until the Legislature has established the agricultural incentives to be provided to IAL. A&B continues to work with the Legislature, as well as other farmers and landowners, to ensure a satisfactory package of agricultural incentives is provided for IAL.

It is crucial for HC&S and Kauai Coffee to have access to reliable sources of water supply and efficient irrigation systems. A&B's plantations conserve water by using a "drip" irrigation system that distributes water to the roots through small holes in plastic tubes. All but a small area of the cultivated cane land farmed by HC&S is drip irrigated. All of Kauai Coffee's fields are drip irrigated.

A&B owns 16,000 acres of watershed lands on Maui that supply a portion of the irrigation water used by HC&S. A&B also holds four water licenses to another 38,000 acres owned by the State of Hawaii on Maui, which over the years has supplied approximately one-third of the irrigation water used by HC&S. The last of these water license agreements expired in 1986, and all four agreements were then extended as revocable permits that were renewed annually. In 2001, a request was made to the State Board of Land and Natural Resources to replace these revocable permits with a long-term water lease. Pending the conclusion of a contested case hearing before the Board on the request for the long-term lease, the Board has renewed the existing permits on a holdover basis. For further information regarding the contested case hearing and other legal proceedings affecting A&B's use of or access to irrigation water, see "Legal Proceedings" below.

D. Employees and Labor Relations

As of December 31, 2006, A&B and its subsidiaries had approximately 2,197 regular full-time employees. About 1,014 regular full-time employees were engaged in the agribusiness segment, 1,061 were engaged in the transportation segment, 51 were engaged in the real estate segment, and the balance was in administration. Approximately 49 percent were covered by collective bargaining agreements with unions.

At December 31, 2006, the active Matsun fleet employed seagoing personnel in 275 billets. Each billet corresponds to a position on a ship that typically is filled by two or more employees because seagoing personnel rotate between active sea duty and time ashore. Approximately 22 percent of Matsun's regular full-time employees and all of the seagoing employees were covered by collective bargaining agreements.

Historically, collective bargaining with longshore and seagoing unions has been complex and difficult. However, Matsun and Matsun Terminals consider their relations with these unions, other unions and their non-union employees generally to be satisfactory.

Matsun's seagoing employees are represented by six unions, three representing unlicensed crew members and three representing licensed crew members. Matsun negotiates directly with these unions. Matsun's agreements with the Seafarer's International Union and shore-based units of the Sailors Union of the Pacific and the Marine Firemen's Union were renewed in mid-2005 through June 2008 without service interruption.

SSAT, the previously-described joint venture of Matsun and SSA, provides stewarding and terminal services for Matsun vessels calling at U.S. Pacific Coast ports. Matsun, SSA and SSAT are members of the Pacific Maritime Association ("PMA") which, on behalf of its members, negotiates collective bargaining agreements with the ILWU on the U.S. Pacific Coast. The current six-year PMA/ILWU Master Contract, which covers all West

Coast longshore labor, will expire on June 30, 2008. Matson Terminals provides stevedoring and terminal services to Matson vessels calling at Honolulu and on the island of Hawaii. Matson Terminals is a member of the Hawaii Stevedore Industry Committee which, on behalf of its members, negotiates with the ILWU in Hawaii.

During 2004, Matson renewed its collective bargaining agreement with ILWU clerical workers at Long Beach through June 2007 without service interruption.

During 2006, Matson contributed to multiemployer pension plans for vessel crews. If Matson were to withdraw from or significantly reduce its obligation to contribute to one of the plans, Matson would review and evaluate data, actuarial assumptions, calculations and other factors used in determining its withdrawal liability, if any. In the event that any third parties materially disagree with Matson's determination, Matson would pursue the various means available to it under federal law for the adjustment or removal of its withdrawal liability. Matson Terminals participates in a multiemployer pension plan for its Hawaii ILWU non-electrical employees. For a discussion of withdrawal liabilities under the Hawaii Longshore and Seagang plans, see Note 9 ("Employee Benefit Plans") to A&B's financial statements in Item 8 of Part II below.

Bargaining unit employees of HC&S are covered by two collective bargaining agreements with the ILWU. The agreements with the HC&S production unit employees and clerical bargaining unit employees will expire January 31, 2008. The bargaining unit employees at KT&S are also covered by two collective bargaining agreements with the ILWU. The agreement with the bulk sugar employees will expire June 30, 2008, while the agreement with all other employees was renegotiated in 2006 and will expire March 31, 2009. There are two collective bargaining agreements with KCC employees represented by the ILWU. The agreement covering the production unit employees will expire April 30, 2007. The agreement covering the clerical employees will expire April 30, 2007. The collective bargaining agreement with the ILWU for the production unit employees of Kanai Coffee expired January 31, 2007, and Kanai Coffee is in the process of renegotiations.

E. Energy

Matson and Matson Terminals purchase residual fuel oil, lubricants, gasoline and diesel fuel for their operations. Residual fuel oil is by far Matson's largest energy-related expense. In 2006, Matson vessels used approximately 2.2 million barrels of residual fuel oil (compared with 1.8 million barrels in 2005).

Residual fuel oil prices paid by Matson started in 2006 at \$48.70 per barrel and ended the year at \$45.86. The low for the year was \$41.52 per barrel in January and the high was \$62.78 in October. Sufficient fuel for Matson's requirements is expected to be available in 2007.

As has been the practice with sugar plantations throughout Hawaii, HC&S uses bagasse, the residual fiber of the sugar cane plant, as a fuel to generate steam for the production of most of the electrical power for sugar milling and irrigation pumping operations. In addition to bagasse, HC&S uses coal, diesel, fuel oil, and recycled motor oil to generate power during factory shutdown periods when bagasse is not being produced. To the extent it is not used in A&B's factory operations, HC&S sells electricity. In 2006, HC&S produced and sold, respectively, approximately 208,000 MWH and 98,000 MWH of electric power (compared with 219,000 MWH produced and 96,300 MWH sold in 2005). The increase in power sold was due to management's effort to increase power sales in order to take advantage of higher power prices and help offset increases in operating costs from petroleum-based products. HC&S increased its use of oil from 10,800 barrels in 2005 to 28,500 barrels in 2006, most of which was low-cost, recycled motor oil. Coal use for power generation was 59,700 short tons, slightly more than that used in 2005.

In 2006, McBryde produced approximately 35,100 MWH of hydroelectric power (about the same as that in 2005). To the extent it is not used in A&B's coffee operations, McBryde sells electricity to Kanai Electric. Power sales in 2006 amounted to approximately 27,100 MWH (compared with 27,500 MWH in 2005).

F. Available Information

A&B files reports with the Securities and Exchange Commission (the "SEC"). The reports and other information filed include: annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and other reports and information filed under the Securities Exchange Act of 1934 (the "Exchange Act").

The public may read and copy any materials A&B files with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet website that contains reports, proxy and information statements, and other information regarding A&B and other issuers that file electronically with the SEC. The address of that website is www.sec.gov.

A&B makes available, free of charge on or through its Internet website, A&B's annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after it electronically files such material with, or furnishes it to, the SEC. The address of A&B's Internet website is www.alexanderleib.com.

ITEM 1A. RISK FACTORS

The business of A&B and its subsidiaries (collectively, the "Company") faces numerous risks, including those set forth below or those described elsewhere in this Form 10-K or in the Company's filings with the SEC. The risks described below are not the only risks that the Company faces, nor are they necessarily listed in order of significance. Other risks and uncertainties may also impact its business operations. Any of these risks may have a material adverse effect on the Company's business, financial condition, results of operations and cash flows. All forward-looking statements made by the Company or on the Company's behalf are qualified by the risks described below.

GENERAL

An economic decline or decrease in market demand for the Company's services and products in Hawaii, the U.S. mainland, Guam or Asia may adversely affect the Company's operating results and financial condition.

A weakening of the economic drivers in Hawaii, which include tourism, military spending, construction starts and employment, or a decrease in market demand may adversely impact the level of freight volumes and real estate activity in Hawaii. A decline in the overall economy or market demand in the U.S. mainland may reduce the demand for goods from Hawaii and Asia, travel to Hawaii and domestic transportation of goods, adversely affecting inland and ocean transportation volumes, the sale of Hawaii real estate to Mainland buyers, and the Hawaii real estate markets generally. A change in the cost of goods or currency exchange rates may decrease the freight volume from Asia to the United States.

The Company may face new or increased competition.

The Company's transportation segment may face new competition by other established or start-up shipping operators that enter the Company's markets. The entry of a new competitor or the addition of ships or capacity by existing competition on any of the Company's routes could result in a significant increase in available shipping capacity that could have an adverse effect on the Company's business. See also discussion under "Business and Properties - Transportation - Competition" above.

The Company's real estate segment operates in highly competitive markets. There are numerous other developers, managers and owners of commercial and residential real estate and undeveloped land that compete or may compete with the Company for management and leasing revenues, land for development, properties for acquisition and disposition, and for tenants and purchasers for properties. Such competition could have an adverse effect on the Company's business.

The Company's significant operating agreements and leases could be replaced.

The significant operating agreements and leases of the Company in its various businesses expire at various points in the future and could be replaced, thereby adversely affecting future revenue generation. For example, the Company's agribusiness segment sells substantially all of its bulk raw sugar through the cooperative HS&TC, which has a supply contract with C&H Sugar Company, Inc., ending in December 2008. Replacement of this supply contract on less favorable terms to the Company may adversely affect the Company's sugar business.

Rising fuel prices and availability may adversely affect the Company's profits.

Fuel is a significant operating expense for the Company's shipping and agribusiness operations. The price and supply of fuel is unpredictable and fluctuates based on events beyond the Company's control. Increases in the price of fuel may adversely affect the Company's results of operations based on market and competitive conditions. Increases in fuel costs also can lead to other expense increases, through, for example, increased costs of energy, petroleum-based raw materials and purchased transportation services. In the Company's ocean transportation and logistics segments, the Company is able to utilize fuel surcharges to partially recover increases in fuel expense, although increases in the fuel surcharge may adversely affect the Company's competitive position and may not correspond exactly with the timing of increases in fuel expense. Changes in the Company's ability to collect fuel surcharges may adversely affect its results of operations. Rising fuel prices may also increase the cost of construction, including delivery costs to Hawaii, thus affecting the Company's development projects, as well as the cost of producing and transporting sugar. In addition, rising fuel prices may suppress economic activity generally.

Changes to federal, state or local law or regulations may adversely affect the Company's business.

The Company is subject to federal, state and local laws and regulations, including government rate regulations, land use regulations, government administration of the U.S. sugar program, environmental regulations relating to air quality initiatives at port locations, and cabotage laws. Changes to the laws and regulations governing the Company's business could impose significant additional costs on the Company and adversely affect the Company's financial condition. For example, if the Jones Act and the regulations promulgated thereunder were repealed, amended, or otherwise modified, non-U.S. competitors with significantly lower costs may consequently enter any of the Jones Act routes or the Company's business may be significantly altered, all of which may have an adverse effect on the Company's shipping business.

Work stoppages or other labor disruptions by the unionized employees of the Company or other companies in related industries may adversely affect the Company's operations.

As of December 31, 2006, the Company had approximately 2,197 regular full-time employees, of which approximately 49 percent were covered by collective bargaining agreements with unions. The Company's transportation, real estate and agribusiness segments may be adversely affected by actions taken by employees of the Company or other companies in related industries against efforts by management to control labor costs, restrain wage increases or modify work practices. Strikes and disruptions may occur as a result of the failure of the Company or other companies in its industry to negotiate collective bargaining agreements with such unions successfully. For example, in its real estate segment, the Company may be unable to complete construction of its projects if building materials or labor is unavailable due to labor disruptions in the relevant trade groups.

The loss of or damage to key vendor and customer relationships may adversely affect the Company's business.

The Company's business is dependent on its relationships with key vendors and customers. The ocean transportation business relies on its relationships with freight forwarders, large retailers and consumer goods and automobile manufacturers, as well as other larger customers. Relationships with railroads and shipping companies are important in the Company's intermodal business. The loss of or damage to any of these key relationships may affect the Company's business adversely.

Interruption or failure of the Company's information technology and communications systems could impair the Company's ability to operate and adversely affect its business.

The Company is highly dependent on information technology systems. For example, in the transportation segment, these dependencies primarily include accounting, billing, disbursement, cargo booking and tracking, vessel scheduling and stowage, equipment tracking, customer service, banking, payroll and employee communication systems. All information technology and communication systems are subject to reliability issues, integration and compatibility concerns, and security-threatening intrusions. The Company may experience failures caused by the occurrence of a natural disaster, or other unanticipated problems at the Company's facilities. Any failure of the Company's systems could result in interruptions in its service or production, reducing its revenue and profits and damaging its reputation.

The Company is susceptible to weather and natural disasters.

The Company's transportation operations are vulnerable to disruption as a result of weather and natural disasters such as bad weather at sea, hurricanes, typhoons, tsunamis and earthquakes. Such events will interfere with the Company's ability to provide on-time scheduled service, resulting in increased expenses and potential loss of business associated with such events. In addition, severe weather and natural disasters can result in interference with the Company's terminal operations, and may cause serious damage to its vessels, loss or damage to containers, cargo and other equipment, and loss of life or physical injury to its employees, all of which could have an adverse effect on the Company's business.

For the real estate segment, the occurrence of natural disasters, such as hurricanes, earthquakes, tsunamis, floods, fires and unusually heavy or prolonged rain, could have a material adverse effect on its ability to develop and sell properties or realize income from its projects. The occurrence of natural disasters could also cause increases in property insurance rates and deductibles, which could reduce demand for, or increase the cost of owning or developing, the Company's properties.

For the agribusiness segment, drought, greater than normal rainfall, hurricanes, earthquakes, tsunamis, floods, fires, other natural disasters or agricultural pestilence may have an adverse effect on the sugar and coffee planting, harvesting and production, and the agribusiness segment's facilities, including dams and reservoirs.

Heightened security measures, war, actual or threatened terrorist attacks, efforts to combat terrorism and other acts of violence may adversely impact the Company's operations and profitability.

War, terrorist attacks and other acts of violence may cause consumer confidence and spending to decrease, or may affect the ability of tourists to get to Hawaii, thereby adversely affecting the Company. Additionally, future terrorist attacks could increase the volatility in the U.S. and worldwide financial markets. Acts of war or terrorism may be directed at the Company's shipping operations, or may cause the U.S. government to take control of Malson's vessels for military operation. Heightened security measures are likely to slow the movement of freight through U.S. or foreign ports, across borders or on U.S. or foreign railroads or highways and could adversely affect the Company's business and results of operations.

Loss of the Company's key personnel could adversely affect its business.

The Company's future success will depend, in significant part, upon the continued services of its key personnel, including its senior management and skilled employees. The loss of the services of key personnel could adversely affect its future operating results because of such employee's experience and knowledge of its business and customer relationships. If key employees depart, the Company may have to incur significant costs to replace them and its ability to execute its business model could be impaired if it cannot replace them in a timely manner. The Company does not expect to maintain key person insurance on any of its key personnel.

The Company is involved in joint ventures and is subject to risks associated with joint venture relationships.

The Company is involved in joint venture relationships, and may initiate future joint venture projects. A joint venture involves certain risks such as:

- the Company may not have voting control over the joint venture;
- the Company may not be able to maintain good relationships with its joint venture partners;
- the venture partner at any time may have economic or business interests that are inconsistent with the Company's;
- the venture partner may fail to fund its share of operations and development activities, or to fulfill its other commitments, including providing accurate and timely accounting and financial information to the Company; and
- the joint venture or venture partner could lose key personnel.

In connection with its real estate joint ventures, the Company is sometimes asked to guarantee completion of a joint venture's construction and development of a project, or to indemnify a third party serving as surety for a joint venture's bonds for such completion. If the Company were to become obligated under such arrangement, the Company may be adversely affected.

The Company is subject to, and may in the future be subject to, disputes, or legal or other proceedings, that could have a material adverse effect on the Company.

The nature of the Company's business exposes it to the potential for disputes, or legal or other proceedings, relating to labor and employment matters, personal injury and property damage, environmental matters, construction litigation, and other matters, as discussed in the other risk factors disclosed in this section or in other Company filings with the SEC. In addition, Matson is a common carrier, whose tariffs, rates, rules and practices in dealing with its customers are governed by extensive and complex foreign, federal, state and local regulations, which may be the subject of disputes or administrative and/or judicial proceedings. These disputes, individually or collectively, could harm the Company's business by distracting its management from the operation of its business. If these disputes develop into proceedings, these proceedings, individually or collectively, could involve significant expenditures by the Company, or result in significant changes to Matson's tariffs, rates, rules and practices in dealing with its customers, all of which could have an adverse effect on the Company's future operating results, including profitability, cash flows, and financial condition. For a description of significant legal proceedings involving the Company, see "Legal Proceedings" below.

TRANSPORTATION

The Company is subject to risks associated with conducting business in a foreign shipping market.

In February 2006, Matson launched its Hawaii/Guam/China service. The Company is subject to risks associated with conducting business in a foreign shipping market, which include:

- challenges in operating in a foreign country and doing business and developing relationships with foreign companies;
- difficulties in staffing and managing foreign operations;
- legal and regulatory restrictions;
- decreases in shipping rates;
- competition with established and new shippers;
- difficulties in developing and establishing brand recognition;
- currency exchange rate fluctuations;
- political and economic instability; and
- challenges caused by cultural differences.

Any of these risks has the potential to adversely affect the Company's operating results.

Acquisitions may have an adverse effect on the Company's business.

The Company's growth strategy, especially in logistics services, includes expansion through acquisitions. Acquisitions may result in difficulties in assimilating acquired companies, and may result in the diversion of the Company's capital and its management's attention from other business issues and opportunities. The Company may not be able to integrate companies that it acquires successfully, including their personnel, financial systems, distribution, operations and general operating procedures. The Company may also encounter challenges in achieving appropriate internal control over financial reporting in connection with the integration of an acquired company.

The Company's logistics services are dependent upon third parties for equipment, capacity and services essential to operate their business, and if they fail to secure sufficient third party services, their business could be adversely affected.

The Company's logistics services are dependent upon rail, truck and ocean transportation services provided by independent third parties. If they cannot secure sufficient transportation equipment, capacity or services from these third parties at a reasonable rate to meet their customers' needs and schedules, customers may seek to have their transportation and logistics needs met by other third parties on a temporary or permanent basis. As a result, the Company's business, consolidated results of operations and financial condition could be adversely affected.

The loss of several of the Company's logistics services major customers could have an adverse effect on the Company's revenue and business.

The Company's logistics services derive a significant portion of their revenues from their largest customers. For 2006, the Company's logistics services' largest ten customers accounted for approximately 37% of the Company's logistics services' revenue. A reduction in or termination of the Company's logistics services by several of their largest customers could have an adverse effect on the Company's revenue and business.

REAL ESTATE

The Company is subject to risks associated with real estate construction and development.

The Company's development projects are subject to risks relating to the Company's ability to complete its projects on time and on budget. Factors that may result in a development project exceeding budget or being prevented from completion include:

- an inability to secure sufficient financing or insurance on favorable terms, or at all;
- construction delays or cost overruns, either of which may increase project development costs;
- an increase in commodity or construction costs;
- the discovery of hazardous or toxic substances, or other environmental problems; and
- an inability to obtain zoning, occupancy and other required governmental permits and authorizations;
- an inability or difficulty in complying with local, city, county and state rules and regulations regarding permitting, zoning, subdivision, utilities and water quality as well as federal rules and regulations regarding air and water quality and protection of endangered species and their habitats;
- an inability to have access to reliable sources of water;
- an inability to secure tenants necessary to support the project;
- failure to achieve or sustain anticipated occupancy or sales levels; and
- an inability to sell the Company's constructed inventory.

Any of these risks has the potential to adversely affect the Company's future operating results.

A decline in leasing rental income could adversely affect the Company.

The Company owns a portfolio of commercial income properties. Factors that may adversely affect the Company's profitability include:

- a significant number of the Company's tenants are unable to meet their obligations;
- operating and ownership costs are materially higher than anticipated;
- the Company is unable to lease space at its properties when the space becomes available;
- the rental rates upon a renewal or a new lease are significantly lower than expected; or
- the discovery of hazardous or toxic substances, or other environmental problems.

Governmental entities have adopted or may adopt regulatory requirements that may restrict the Company's development activity.

The Company is subject to extensive and complex laws and regulations that affect the land development process, including laws and regulations related to zoning and permitted land uses. Government entities have adopted or may approve nonbuilding regulations or laws that could negatively impact the availability of land and building opportunities within those areas. In December 2006, Maui County adopted a Residential Workforce Housing Policy, which requires developers of residential developments of five or more units to sell or rent 40% to 50% of the total number of units at below market rates, or pay significant fees or contribute property to the County for low-income housing. These requirements could make the cost of developing new projects prohibitive. It is possible that increasingly stringent requirements will be imposed on developers in the future that could adversely affect the Company's ability to develop projects in the affected markets or could require that the Company satisfy additional administrative and regulatory requirements, which could delay development progress or increase the development costs of the Company. Any such delays or costs could have an adverse effect on the Company's revenues and earnings.

AGRBUSINESS

The unavailability of water for agricultural irrigation could adversely affect the Company.

It is crucial for the Company's agribusiness segment to have access to reliable sources of water for the irrigation of sugar cane and coffee. As further described in "Legal Proceedings" below, there are two administrative hearing processes challenging the Company's ability to divert water from streams in Maui. If the Company is not permitted to divert stream waters for its use, it would have an adverse effect on the Company's sugar operations.

A decline in raw sugar or coffee prices will adversely affect the Company's business.

The business and results of operations of the Company's agribusiness segment are substantially affected by market factors, principally the domestic and international prices for raw cane sugar. These market factors are influenced by a variety of forces, including prices of competing crops, weather conditions, and United States farm and trade policies. If the price for sugar or coffee were to drop, the Company's agribusiness segment would be adversely affected. See also discussion under "Business and Properties - Agribusiness - Competition and Sugar Legislation" above.

The Company is subject to risks associated with raw sugar and coffee production.

The Company's raw sugar and coffee production are subject to risks, which include:

- weather;
- disease;
- poor farming practices;
- increases in costs, including, but not limited to fertilizer, fuel, and drip tubing;
- water availability (see risk factor above regarding unavailability of water);
- equipment failures in factory or power plant; and
- labor, including labor availability (see risk factor above regarding labor disruptions).

Any of these risks has the potential to adversely affect the Company's future agribusiness operating results.

OTHER

Earnings on pension assets, or a change in pension law and on key assumptions, may adversely affect the Company's financial performance.

The amount of the Company's employee retirement benefit costs and obligations are calculated on assumptions used in the relevant actuarial calculations. Adverse changes in any of these assumptions due to economic or other factors, or lower returns on plan assets, may adversely affect the Company's operating results, cash flows, and financial condition. In addition, a change in federal law, including changes to the Employee Retirement Income Security Act and Pension Benefit Guaranty Corporation premiums, may adversely affect the Company's single-employer and multiemployer pension plans and plan funding.

The Company may have exposure under its multiemployer plans in which it participate that extends beyond its funding obligation with respect to the Company's employees.

The Company contributes to various multiemployer pension plans. In the event of a partial or complete withdrawal by the Company from any plan which is underfunded, the Company would be liable for a proportionate share of such plan's unfunded vested benefits. Based on the limited information available from plan administrators, which the Company cannot independently validate, the Company believes that its portion of the contingent liability in the case of a full withdrawal or termination may be material to its financial position and results of operations. In the event that any other contributing employer withdraws from any plan which is underfunded, and such employer (or any member in its controlled group) cannot satisfy its obligations under the plan at the time of withdrawal, then the Company, along with the other remaining contributing employer, would be liable for its proportionate share of such plan's unfunded vested benefits. In addition, if a multiemployer plan fails to satisfy the minimum funding requirements, the Internal Revenue Service will impose certain penalties and taxes.

The Company is required to evaluate its internal controls over financial reporting under Section 404 of the Sarbanes-Oxley Act of 2002, and any adverse results from such evaluation could result in a loss of investor confidence in the Company's financial reports and have an adverse effect on the Company's stock price.

Section 404 of the Sarbanes-Oxley Act requires that publicly reporting companies cause their managements to perform annual assessments of the effectiveness of their internal controls over financial reporting and their independent auditors to prepare reports that address such assessments. Although the Company has concluded that its internal controls over financial reporting were effective as of December 31, 2006, there can be no assurances that the Company will reach the same conclusion at the end of future years. If the Company is unable to assert that its internal control over financial reporting is effective, or if the Company's auditors are unable to attest that its management's report is fairly stated or if they are unable to express an opinion on the effectiveness of the Company's internal controls, the Company could lose investor confidence in the accuracy and completeness of its financial reports, which would have an adverse effect on the Company's stock price.

The foregoing should not be construed as an exhaustive list of all factors that could cause actual results to differ materially from those expressed in forward-looking statements made by the Company or on its behalf.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 3. LEGAL PROCEEDINGS

See "Business and Properties - Transportation - Rate Regulation" above for a discussion of rate and other regulatory matters in which Matson is routinely involved.

On September 14, 1998, Matson was served with a complaint filed by the Government of Guam with the Surface Transportation Board (the "Board"), alleging that Sea-Land Services, Inc. (APL) and Matson have charged unreasonable rates in the Guam trade since January 1991. Matson did not begin its Guam Service until February 1996. In 2002, APL was dismissed as a defendant based on the statute of limitations. On April 23, 2002, the parties filed initial briefs addressing the appropriate rate reasonableness methodology to be applied. The parties filed reply briefs on June 17, 2002. The Board heard oral argument on November 16, 2005. On February 2, 2007, the Board issued a decision, setting a briefing schedule to determine whether there is effective competition in the Guam trade as requested by Matson. If the Board determines that there is effective competition, it will dismiss the complaint. Otherwise, the Board will proceed to investigate the reasonableness of the challenged rates using the Board's Constrained Market Pricing methodology used in rate cases, rather than the methodology proposed by the Government of Guam.

In August 2001, HC&S self-reported to the State of Hawaii Department of Health (the "DOH") possible violations of state and federal air pollution control regulations relating to a boiler at HC&S's Maui sugar mill. The boiler was constructed in 1974 and HC&S thereafter operated the boiler in compliance with the permits issued by the DOH. Because the boiler is fueled with less than 50 percent fossil fuels and is therefore a "biomass boiler" under state air pollution control rules, the DOH initially concluded, and the DOH permits reflected, that the boiler was not subject to the more stringent regulations applicable to "fossil fuel-fired" boilers. In 2001, HC&S identified federal regulatory guidance that provides that a boiler that burns any amount of fossil fuel may be a "fossil fuel-fired boiler." HC&S then voluntarily reported the possible compliance failures to the DOH. In September 2003, the DOH issued to HC&S a Notice and Finding of Violation and proposed penalty of \$1.98 million. In June 2006, the DOH proposed to HC&S a Consent Order in which HC&S would pay \$60,000 and implement a two-phase Supplemental Environment Project totaling at least \$305,000. Following a public comment period, HC&S and the DOH signed the Consent Order in December 2006.

In January 2004, a petition was filed by the Native Hawaiian Legal Corporation, on behalf of four individuals, requesting that the State of Hawaii Board of Land and Natural Resources (the "BLNR") declare that A&B and its subsidiaries (collectively, the "Company") have no current legal authority to continue to divert water from streams in East Maui for use in the Company's sugar growing operations, and to order the immediate full restoration of these streams until a legal basis is established to permit the diversions of the streams. The Company objected to the petition, asked the BLNR to conduct administrative hearings on the matter and requested that the matter be consolidated with the Company's currently pending application before the BLNR for a long-term water license.

Since the filing of the petition, the Company has been working to make improvements to the water systems of the petitioner's four clients so as to improve the flow of water to their taro patches. An interim agreement was entered into during the first quarter of 2004 between the parties to allow the improvements to be completed, deferring the administrative hearing process. That agreement, however, has since expired without renewal by the petitioners. Nevertheless, the Company has continued to make improvements to the water systems.

The administrative hearing process on the petition is continuing, and the Company continues to object to the petition. The effect of this claim on the Company's sugar-growing operations cannot currently be estimated. If the Company is not permitted to divert stream waters for its use, it would have a significant adverse effect on the Company's sugar-growing operations.



On October 19, 2004, two community-based organizations filed a Citizen Complaint and a Petition for a Declaratory Order with the Commission on Water Resource Management of the State of Hawaii ("Water Commission") against both an unrelated company and HC&S, to order the companies to leave all water of four streams on the west side of Maui that is not being put to "actual, reasonable and beneficial use" in the streams of origin. The complainants had earlier filed, on June 25, 2004, with the Water Commission a petition to increase the interim in-stream flow standards for those streams. The Company objects to the petitions. If the Company is not permitted to divert stream water for its use to the extent that it is currently diverting, it may have an adverse effect on the Company's sugar-growing operations.

On November 16, 2006, the Shipbuilders Council of America, Inc. and Pasha Hawaii Transport Lines LLC filed a complaint against the U.S. Department of Homeland Security, the U.S. Coast Guard and the National Vessel Documentation Center in the U.S. District Court for the Eastern District of Virginia. The complaint seeks review of a ruling by the National Vessel Documentation Center that work to be performed on Matson's C9 vessels in foreign and U.S. shipyards would not result in loss of coastwise trading privileges of the vessels. The Coast Guard believes its ruling is correct and intends to vigorously defend its decision. Matson is not named as a defendant, but Matson's motion to intervene has been granted. In a separate but related matter, the same plaintiffs have asked Marad to investigate the continued eligibility of nine of Matson's vessels, including the three C9 vessels, to participate in the Capital Construction Fund and cargo preference programs as a result of modifications performed, or to be performed, in foreign shipyards. Marad is compiling a record of the views submitted by the parties in interest, but has not made a decision as to whether to conduct such an investigation. Matson believes that it has conducted its activities in compliance with the law, long-standing precedents, policies and regulations of the Coast Guard and Marad.

A&B and its subsidiaries are parties to, or may be contingently liable in connection with, other legal actions arising in the normal conduct of their businesses, the outcomes of which, in the opinion of management after consultation with counsel, would not have a material adverse effect on A&B's results of operations or financial position.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

Not applicable.

EXECUTIVE OFFICERS OF THE REGISTRANT

For the information about executive officers of A&B required to be included in this Part I, see section B ("Executive Officers") in Item 10 of Part III below, which is incorporated herein by reference.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

A&B common stock is listed on The Nasdaq Stock Market and trades under the symbol "ALEX." As of February 16, 2007, there were 3,521 shareholders of record of A&B common stock. In addition, Cole & Co., which appears as a single record holder, represents the holdings of thousands of beneficial owners of A&B common stock.

A summary of daily stock transactions is listed in the NASDAQ Global Market Issues section of major newspapers. Trading volume averaged 300,185 shares a day in 2006, compared with 298,182 shares a day in 2005 and 220,300 in 2004.

The quarterly high and low sales prices and closing prices, as reported by The NASDAQ Stock Market, and cash dividends paid per share of common stock, for 2006 and 2005, were as follows:

	Dividends Paid	Market Prices		
		High	Low	Close
2006				
First Quarter	\$ 0.225	\$ 54.86	\$ 46.60	\$ 47.68
Second Quarter	\$ 0.250	\$ 51.06	\$ 40.50	\$ 44.27
Third Quarter	\$ 0.250	\$ 45.01	\$ 39.29	\$ 44.37
Fourth Quarter	\$ 0.250	\$ 47.70	\$ 42.73	\$ 44.34

2005				
First Quarter	\$ 0.225	\$ 47.14	\$ 40.78	\$ 41.20
Second Quarter	\$ 0.225	\$ 46.82	\$ 36.82	\$ 46.35
Third Quarter	\$ 0.225	\$ 56.10	\$ 46.12	\$ 53.24
Fourth Quarter	\$ 0.225	\$ 55.50	\$ 45.48	\$ 54.24

Although A&B expects to continue paying quarterly cash dividends on its common stock, the declaration and payment of dividends in the future are subject to the discretion of the Board of Directors and will depend upon A&B's financial condition, results of operations, cash requirements and other factors deemed relevant by the Board of Directors. A&B strives to pay the highest possible dividends commensurate with operating and capital needs. A&B has paid cash dividends each year since 1993. The most recent increase in the quarterly dividend rate was effective the second quarter of 2006, and was increased from 22.5 cents per share to 25.0 cents per share. In 2006, dividend payments to shareholders totaled \$42.4 million which was 35 percent of reported net income for the year. The following dividend schedule for 2007 has been set, subject to final approval by the Board of Directors:

Quarterly Dividend	Declaration Date	Record Date	Payment Date
First	January 25	February 16	March 1
Second	April 26	May 10	June 7
Third	June 28	August 2	September 6
Fourth	October 25	November 8	December 6

A&B common stock is included in the Dow Jones U.S. Transportation Average, the Russell 1000 Index, the Russell 3000 Index, the Dow Jones U.S. Composite Average, and the S&P MidCap 400.

The Company has share ownership guidelines for non-employee Directors. At present, all Directors own A&B stock, and it is expected that each Director will meet the guidelines within the specified five-year period. Stock ownership guidelines also are in place for senior executives of the Company.

A&B has a Shareholder Rights Plan, designed to protect the interests of shareholders in the event an attempt is made to acquire the Company. The rights initially will trade with A&B's outstanding common stock and will not be exercisable absent certain acquisitions or attempted acquisitions of specified percentages of such stock. If exercisable, the rights generally entitle shareholders (other than the acquiring party) to purchase additional shares of A&B's stock or shares of an acquiring company's stock at prices below market value.

Securities authorized for issuance under equity compensation plans as of December 31, 2006, included:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
	(a)	(b)	(c)
Equity compensation plans approved by security holders	1,557,056	\$34.47	1,463,588*
Equity compensation plans not approved by security holders	--	--	101,577**
Total	1,557,056	\$34.47	1,565,165

* Under the 1998 Stock Option/Stock Incentive Plan, 1,283,682 shares may be issued either as restricted stock grants or option grants.

** A&B has two compensation plans under which its stock is authorized for issuance and that were adopted without the approval of its security holders. (1) Under A&B's Non-Employee Director Stock Retainer Plan adopted on June 25, 1998, each outside Director is issued a stock retainer of 300 A&B shares after each year of service on A&B's Board of Directors. Those 300 shares vest immediately and are free and clear of any restrictions. These shares are issued in January of the year following the year of the Director's service to A&B. Directors that retire during the year may be awarded a prorated number of shares based on the time served. (2) Under A&B's Restricted Stock Bonus Plan restated effective April 28, 1988, the Compensation Committee identifies the executive officers and other key employees who participate in one- and three-year performance improvement incentive plans and formulates performance goals to be achieved for the plan cycles. At the end of each plan cycle, results are compared with goals, and awards are made accordingly. Participants may elect to receive awards entirely in cash or up to 50 percent in shares of A&B stock and the remainder in cash. If a participant elects to receive a portion of the award in stock, an additional 50 percent stock bonus may be awarded. In general, shares issued under the Restricted Stock Bonus Plan may not be traded for three years following the award date, special vesting provisions apply for the death, termination or retirement of a participant.

Of the 101,577 shares that were available for future issuance, 2,975 shares were available for future issuance under the Non-Employee Director Stock Retainer Plan and 98,602 shares were available for issuance under the Restricted Stock Bonus Plan.

During 2006, the Company repurchased 1,653,795 shares of its stock for an average price of \$43.34. There were no shares of A&B common stock repurchased by the Company during 2005. During 2004, A&B repurchased 76,200 shares of its stock for an average price of \$29.95 per share. In October 2006, A&B's Board of Directors authorized A&B to repurchase up to two million shares of its common stock. The new authorization will expire on

December 31, 2008. The shares repurchased in 2006 were made under a previous share repurchase authorization that expired on December 31, 2006.

During 2006, 5,629 shares were returned to the Company in connection with the exercise of options to purchase shares of the Company's stock. The fair value of these shares averaged \$53.61 per share. None of these shares were returned to the Company during the fourth quarter.

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
Oct 1 - 31, 2006	--	--	--	--
Nov 1 - 30, 2006	108,453 (1)	-(1)	108,453 (1)	2,346,205 (2)
Dec 1 - 31, 2006	--	--	--	--

(1) On June 27, 2006, A&B entered into an accelerated share repurchase agreement ("ASR") with Goldman, Sachs & Co. ("Goldman") to repurchase shares of A&B's common stock for an aggregate purchase price of approximately \$63 million. Under the ASR, 984,000 and 361,342 shares were delivered on June 30, 2006 and July 12, 2006, respectively. On November 15, 2006, upon the termination of the ASR agreement, the Company received an additional 108,453 shares based upon the volume weighted average price of A&B's common stock from July 8, 2006 through November 15, 2006. No additional cash payment was required in connection with the receipt of these shares. During 2006, the Company's total share repurchases under its share repurchase program, which included purchases under the ASR and open market purchases, totaled 1,653,795 shares for \$71.7 million at an average price of \$43.34 per share.

(2) In October 2006, A&B's Board of Directors authorized A&B to repurchase up to two million shares of its common stock. The new authorization will expire on December 31, 2008. The shares repurchased in 2006 were made under a previous share repurchase authorization that expired on December 31, 2006.

ITEM 6. SELECTED FINANCIAL DATA

The following financial data should be read in conjunction with Item 8, "Financial Statements and Supplementary Data," and Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" (dollars and shares in millions, except per-share amounts):

	2006	2005	2004	2003	2002
Revenues:					
Transportation:					
Ocean transportation	\$ 945.8	\$ 878.3	\$ 850.1	\$ 776.3	\$ 686.9
Logistics services	444.2	431.6	376.9	237.7	195.1
Real Estate:					
Leasing	100.6	89.7	83.8	80.3	73.1
Sales	97.3	148.9	82.3	63.8	93.0
Less amounts reported in discontinued operations	(84.1)	(60.5)	(13.4)	(50.0)	(64.8)
Agribusiness	107.4	127.8	172.6	112.9	112.7
Reconciling items ⁶	(14.2)	(8.4)	(6.3)	--	--
Total revenues	\$ 1,607.0	\$ 1,602.8	\$ 1,486.8	\$ 1,221.0	\$ 1,076.0
Operating Profit:					
Transportation:					
Ocean transportation	\$ 105.6	\$ 128.0	\$ 108.3	\$ 93.2	\$ 49.4
Logistics services	20.8	14.4	8.9	4.3	3.1
Real Estate:					
Leasing	50.3	43.7	38.8	37.0	32.9
Sales	49.7	44.1	34.6	23.9	19.4
Less amounts reported in discontinued operations ⁷	(42.7)	(18.6)	(6.3)	(23.4)	(24.0)
Agribusiness ⁸	6.9	11.2	4.8	5.1	3.8
Total operating profit	190.6	222.8	189.1	140.1	87.6
Write-down of long-lived assets ⁹	(15.0)	(13.3)	(12.7)	(7.7)	--
Interest expense, net ¹⁰	(22.3)	(24.1)	(20.3)	(15.2)	(11.7)
General corporate expenses					
Income from continuing operations	153.3	183.1	156.1	105.6	62.7
before income taxes	(57.3)	(68.7)	(59.3)	(33.8)	(19.2)
Income taxes	36.8	14.4	96.8	68.8	43.0
Identifiable Assets:					
Transportation ⁴	\$ 1,241.7	\$ 1,183.3	\$ 953.4	\$ 891.9	\$ 880.1
Real Estate ⁵	820.5	705.9	661.0	612.8	500.3
Agribusiness	168.7	159.0	152.8	154.4	163.4
Other	20.3	22.7	11.0	10.5	8.9
Total assets	\$ 2,251.2	\$ 2,070.9	\$ 1,778.2	\$ 1,759.6	\$ 1,552.7
Capital Additions:					
Transportation ⁴	\$ 218.8	\$ 175.2	\$ 128.7	\$ 133.4	\$ 10.5
Real Estate ⁵	94.3	79.0	10.9	107.7	83.7
Agribusiness	15.0	13.0	10.2	12.6	9.9
Other	1.5	1.4	1.4	1.7	0.9
Total capital additions	\$ 329.6	\$ 268.6	\$ 151.2	\$ 255.4	\$ 105.0
Depreciation and Amortization:					
Transportation ⁴	\$ 69.6	\$ 60.9	\$ 58.0	\$ 51.9	\$ 51.0
Real Estate ⁵	14.2	12.3	12.0	11.3	9.1
Agribusiness	10.1	9.4	9.0	8.2	8.1
Other	0.9	0.5	0.4	0.3	0.4
Total depreciation and amortization	\$ 94.8	\$ 83.1	\$ 79.4	\$ 71.5	\$ 69.6

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

FORWARD-LOOKING STATEMENTS AND RISK FACTORS

The Company, from time to time, may make or may have made certain forward-looking statements, whether orally or in writing, such as forecasts and projections of the Company's future performance or statements of management's plans and objectives. These statements are "forward-looking" statements as that term is defined in the Private Securities Litigation Reform Act of 1995. Such forward-looking statements may be contained in, among other things, SEC filings, such as the Forms 10-K, 10-Q and 8-K, the Annual Report to Shareholders, press releases made by the Company, the Company's Internet Web sites (including Web sites of its subsidiaries), and oral statements made by the officers of the Company. Except for historical information contained in these written or oral communications, such communications contain forward-looking statements. These include, for example, all references to 2007 or future years. New risk factors emerge from time to time and it is not possible for the Company to predict all such risk factors, nor can it assess the impact of all such risk factors on the Company's business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. Accordingly, forward-looking statements cannot be relied upon as a guarantee of future results and involve a number of risks and uncertainties that could cause actual results to differ materially from those projected in the statements, including, but not limited to the factors that are described in Part I, Item 1A under the caption of "Risk Factors" of this Form 10-K, which section is incorporated herein by reference. The Company is not required, and undertakes no obligation, to revise or update forward-looking statements or any factors that may affect actual results, whether as a result of new information, future events, or circumstances occurring after the date of this report.

OVERVIEW

Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") is designed to provide a discussion of the Company's financial condition, results of operations, liquidity and certain other factors that may affect its future results from the perspective of management. The discussion that follows is intended to provide information that will assist in understanding the changes in the Company's financial statements from year to year, the primary factors that accounted for those changes, and how certain accounting principles, policies and estimates affect the Company's financial statements. MD&A is provided as a supplement to, and should be read in conjunction with, the consolidated financial statements and the accompanying notes to the financial statements. MD&A is presented in the following sections:

- Business Overview
- Critical Accounting Estimates
- Consolidated Results of Operations
- Analysis of Operating Revenue and Profit by Segment
- Liquidity and Capital Resources
- Contractual Obligations, Commitments, Contingencies and Off-Balance-Sheet Arrangements
- Economic & Business Outlook
- Other Matters

BUSINESS OVERVIEW

Alexander & Baldwin, Inc. ("A&B"), founded in 1870, is a Hawaii diversified corporation headquartered in Honolulu that operates in five segments in three industries—Transportation, Real Estate, and Agribusiness (formerly Food Products).

Transportation: The Transportation industry is comprised of ocean transportation and integrated logistics service segments. The Ocean Transportation segment is an asset-based business that derives its revenue primarily through the carriage of containerized freight between various U.S., Pacific Coast, Hawaii, Guam, other Pacific island, and China ports. The Ocean Transportation segment also has a 35 percent interest in an entity that provides terminal and stevedoring services at U.S. Pacific Coast facilities to Malson and numerous international carriers.

	2006	2005	2004	2003	2002
Earnings per share:					
From continuing operations:					
Basic	\$ 2.22	\$ 2.63	\$ 2.27	\$ 1.61	\$ 1.05
Diluted	\$ 2.20	\$ 2.60	\$ 2.24	\$ 1.59	\$ 1.04
Net Income	\$ 1.84	\$ 2.89	\$ 2.37	\$ 1.95	\$ 1.42
Basic	\$ 2.81	\$ 2.86	\$ 2.33	\$ 1.94	\$ 1.41
Diluted					
Return on beginning equity	12.1%	13.9%	12.4%	11.2%	8.2%
Cash dividends per share	\$ 0.975	\$ 0.90	\$ 0.90	\$ 0.90	\$ 0.90
At Year End					
Shareholders of record	3,506	3,628	3,792	3,959	4,107
Shares outstanding	42.6	44.0	43.3	42.2	41.3
Long-term debt - non-current	\$ 401	\$ 296	\$ 214	\$ 330	\$ 248

1. Prior year amounts restated for amounts treated as discontinued operations.

2. The 2005 and 2006 write-downs were for an "other than temporary" impairment in the Company's investment in C&H. The Company's investment in C&H was sold on August 3, 2005 at the then approximate carrying value.

3. Includes tax-deferred property purchases that are considered non-cash transactions in the Consolidated Statements of Cash Flows; excludes capital expenditures for real estate developments held for sale.

4. Includes both Ocean Transportation and Logistic Services. As of December 31, 2006, assets for Logistic Services comprised less than five percent of the total assets for the transportation industry.

5. Includes Leasing, Sales and Development activities. Assets that are leased to third parties comprised approximately 61 percent of the 2006 included real estate portfolio. The 2006 real estate portfolio was primarily comprised of land parcels. The 2006 real estate portfolio was included with the sales of property development for segment reporting rather than reported with the leasing segment. The free cash flow from operations for the leasing segment was approximately \$19 million for 2006. Free cash flow is defined as net income (computed in accordance with GAAP) for the segment plus depreciation and amortization and certain non-cash items that in the Company's view are not reflective of the underlying operations, reduced by required capital expenditures. Free cash flow is a non-GAAP measure, and may differ from similar measures reported by other companies. Free cash flow does not represent cash generated from operations with GAAP. The free cash flow from operations for the leasing segment is not intended to be used as a measure of the leasing segment's financial performance or to cash flow from operating activities (determined in accordance with GAAP) as a measure of the leasing segment's liquidity, nor is it indicative of funds available to fund the leasing segment's cash needs. Free cash flow is commonly used in evaluating the performance and understanding the operations of businesses that invest in real estate. It is sometimes used as a percentage of assets under management to evaluate the performance of an income-earning real estate portfolio.

6. Includes lease segment revenue, interest income, and other income classified as revenue for segment reporting purposes. Amounts for 2002 and 2003 were not material.

7. Includes Ocean Transportation interest expense of \$13.3 million for 2006, \$9.6 million for 2005, \$5.7 million for 2004, \$2.6 million for 2003, and \$2.4 million for 2002. Substantially all other interest expense was at the parent company.

Additionally, the Ocean Transportation segment provides terminal, stevedoring and container equipment management services in Hawaii.

The Logistics Services segment is a non-asset based business that is a provider of domestic and international rail intermodal service, long-haul and regional highway brokerage, specialized hauling, flat-bed and project work, less-than-truckload, and expedited/air freight services. As a non-asset based business, the Logistics Services segment does not own transportation assets. Rather, the Logistics Services segment generates its revenues by purchasing transportation services from direct (asset-based) carriers and reselling those services to its customers. By concentrating its buying power and/or consolidating shipments from multiple customers, the Logistics Services segment is able to negotiate favorable rates from the direct carriers, while at the same time offering lower rates than customers would otherwise be able to negotiate themselves.

The Transportation industry accounted for 87 percent, 66 percent, and 55 percent of the revenue, operating profit, and identifiable assets, respectively, in 2006 on a consolidated basis.

Real Estate: The Real Estate business is comprised of two segments that have operations in Hawaii and on the U.S. mainland. The Real Estate Sales segment is a developer headquartered in the State of Hawaii, generates its revenues through the development and sale of commercial and residential properties. The Real Estate Sales segment seeks to diversify its investments by entering into long-term, large projects as well as shorter-term development projects, partnering with other developers to leverage expertise, developing newly purchased landholdings in Hawaii and on the U.S. mainland, in addition to developing the Company's core landholdings in Hawaii, and adhering to strict underwriting requirements.

The Real Estate Leasing segment owns, operates, and manages commercial properties. The Real Estate Leasing segment focuses on acquiring high-quality retail, office, and industrial properties in good locations, primarily with tax-deferred 1031 proceeds, and on effectively managing those properties to increase margins through higher occupancies and cost management. The Real Estate Leasing segment's assets are well-diversified by geography and product-type.

The Real Estate industry accounted for 5 percent, 30 percent, and 36 percent of the revenue, operating profit, and identifiable assets, respectively, in 2006 on a consolidated basis.

Agribusiness: The Agribusiness industry, which contains one segment, is the largest grower of sugar cane and coffee in the State of Hawaii. The segment produces bulk raw sugar, specialty food-grade sugars, molasses and green coffee; markets and distributes roasted coffee and green coffee; provides sugar, petroleum and molasses hauling, general trucking services, mobile equipment maintenance and repair services, and self-service storage in Hawaii; and generates and sells, to the extent not used in the Company's factory operations, electricity.

The Agribusiness industry accounted for 8 percent, 4 percent, and 7 percent of the revenue, operating profit, and identifiable assets, respectively, in 2006 on a consolidated basis.

CRITICAL ACCOUNTING ESTIMATES

The Company's significant accounting policies are described in Note 1 to the Consolidated Financial Statements. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America, upon which the Management's Discussion and Analysis is based, requires that management exercise judgment when making estimates and assumptions about future events that may affect the amounts reported in the financial statements and accompanying notes. Future events and their effects cannot be determined with absolute certainty and actual results will, inevitably, differ from those critical accounting estimates. These differences could be material.

The Company considers an accounting estimate to be critical if: (i) the accounting estimate requires the Company to make assumptions that are difficult or subjective about matters that were highly uncertain at the time that the accounting estimate was made, and (ii) changes in the estimate that are reasonably likely to occur in periods subsequent to the period in which the estimate was made, or use of different estimates that the Company could have used in the current period, would have a material impact on the financial condition or results of operations. The

most significant accounting estimates inherent in the preparation of the Company's financial statements are described below.

Asset Impairments: The Company's long-lived assets, investments, and inventory are reviewed for impairment if events or circumstances indicate that the carrying amount of the long-lived asset may not be recoverable, an other-than-temporary loss in investment value has occurred, or the carrying cost of inventory declines below its net realizable value. These asset impairment loss calculations contain uncertainties because they require management to make assumptions and apply judgments to, among others, estimates of future cash flows, asset fair values, useful lives of the assets, and discount rates that reflect the risk inherent in future cash flows. These factors depend on a number of conditions, including uncertainty about future events, and thus the accounting estimates may change from period to period. If management uses different assumptions or if different conditions occur in future periods, the Company's financial condition or its future operating results could be materially impacted.

Revenue Recognition for Certain Long-term Real Estate Developments: As discussed in Note 1 to the Consolidated Financial Statements, revenues from real estate sales are generally recognized when sales are closed and title passes to the buyer. For certain real estate sales, the Company and its joint venture partners account for long-term real estate development projects that have material continuing post-closing involvement, such as Kula'u, using the percentage-of-completion method. Following this method, the amount of revenue recognized is based on the percentage of development costs that have been incurred through the reporting period in relation to total expected development cost associated with the subject property. Accordingly, if material changes to total expected development costs occur, the Company's financial condition or its future operating results could be materially impacted.

Self-insured Liabilities: The Company is self-insured for certain losses related to, including, but not limited to, employee health, workers' compensation, general liability, real and personal property, and real estate construction defect claims. However, the Company obtains third-party insurance coverage to limit its exposure to these claims. When estimating its self-insured liabilities, the Company considers a number of factors, including historical claims experience, demographic factors, and valuations provided by independent third-parties. Periodically, management reviews its assumptions and the valuations provided by independent third-parties to determine the adequacy of the Company's self-insured liabilities. The Company's self-insured liabilities contain uncertainties because management is required to apply judgment and make long-term assumptions to estimate the ultimate cost to settle reported claims and claims incurred but not reported as of the balance sheet date. If management uses different assumptions or if different conditions occur in future periods, the Company's financial condition or its future operating results could be materially impacted.

Equity Method Accounting: All of the unconsolidated entities held by the Company are accounted for by the equity method of accounting because the criteria for consolidation set forth in FASB Interpretation No. 46 (revised December 2003), "Consolidation of Variable Interest Entities" (FIN 46R) or AICPA Accounting Research Bulletin No. 51, Consolidated Financial Statements ("ARB 51"), and its related interpretations, have not been met. In determining whether an unconsolidated entity is a variable interest entity, and if the entity is determined to be a variable interest entity, whether the Company is the primary beneficiary, the Company is required to use various assumptions, including cash flow estimates and related probabilities for different cash flow scenarios. To the extent that these assumptions change as a result of new or additional information or changes in market conditions, the conclusion to apply the equity method may change and the Company's financial condition or its future operating results could be materially impacted.

Share-Based Compensation: The Company provides a share-based compensation plan, which includes non-qualified stock options and non-vested share awards. (Refer to Note 11 to the Consolidated Financial Statements for a complete discussion of the Company's share-based compensation programs.) The Company determines the fair value of its non-qualified stock option awards at the date of grant using the Black-Scholes option-pricing model, which requires management to make assumptions and to apply judgment to determine the fair value of the awards. These assumptions and judgments include estimating the future volatility of the Company's stock price, expected dividend yield, future employee turnover rates, and future employee stock option exercise behaviors. Performance-based, non-vested share awards require management to make assumptions regarding the

likelihood of achieving company or personal performance goals. Accordingly, changes in some or all of these assumptions could materially affect the Company's financial condition or its future operating results.

Environmental Reserves: The estimated costs for environmental remediation are recorded by the Company when the environmental liability has been incurred and can be estimated. An environmental liability has been incurred when both of the following conditions have been met: (i) litigation has commenced or a claim or an assessment has been asserted, or based on available information, commencement of litigation or assertion of a claim or an assessment is probable, and (ii) based on available information, it is probable that the outcome of such litigation, claim, or assessment will be unfavorable. If a range of probable loss is determined, the Company will record the obligation at the low end of the range unless another amount in the range better reflects the expected loss. These estimates are developed, depending on the circumstances, by internal analysis or the use of third-party specialists. Changes in assumptions used in these analyses could materially affect the Company's financial condition or its future operating results.

Pension and Post-retirement Estimates: The estimation of the Company's pension and postretirement obligations, costs and liabilities requires that the Company make use of estimates of the present value of the projected future payments to all participants, taking into consideration the likelihood of potential future events such as salary increases and demographic experience. These assumptions may have an effect on the amount and timing of future contributions.

The assumptions used in developing the required estimates include the following key factors:

- Discount rates
- Expected return on pension plan assets
- Salary growth
- Inflation
- Retirement rates
- Mortality rates
- Expected contributions

The effects of actual results differing from the above assumptions by the Company could materially affect the Company's financial condition or its future operating results. The effects of changing assumptions are included in unauthorized net gains and losses, which directly affect accumulated other comprehensive income. Unauthorized gains and losses are amortized and reclassified to income (loss) over future periods.

The 2006 net periodic cost for qualified pension and post-retirement obligations was determined using a discount rate of 5.75 percent and the qualified pension and post-retirement obligations as of December 31, 2006 were determined using a discount rate of 6.0 percent. For the Company's non-qualified benefit plans, the 2006 net periodic cost was determined using a discount rate of 5.25 percent and the December 31, 2006 obligation was determined using a discount rate of 5.75 percent. The discount rate used for determining the year-end benefit plan obligation was calculated using a weighting of expected benefit payments and rates associated with high-quality corporate bonds for each year of expected payment to derive an estimated rate at which the benefits could be effectively settled at December 31, 2006, rounded to the nearest quarter percent.

The estimated return on plan assets of 8.5 percent was based on historical trends combined with long-term expectations, the mix of plan assets, asset class returns, and long-term inflation assumptions. One-, three-, and five-year pension returns were 15.6 percent, 13.2 percent, and 8.6 percent, respectively. The Company's long-term investment return has averaged approximately 10.5 percent.

Historically, the health care cost trend rate experienced by the Company has been approximately 9 percent. For 2006, its post-retirement obligations were measured using 9 percent health care cost trend rate, decreasing by 1 percent annually until the ultimate rate of 5 percent rate is reached in 2011.

Lowering the expected long-term rate of return on the Company's qualified plan assets from 8.5 percent to 8 percent would have increased pre-tax pension expense for 2006 by approximately \$1.5 million. Lowering the discount rate assumption by one-half of one percentage point would have increased pre-tax pension expense by \$1.5

million. Additional information about the Company's benefit plans is included in Note 9 of the Consolidated Financial Statements.

Income Taxes: The Company makes certain estimates and judgments in determining income tax expense for financial statement purposes, in accordance with Statement of Financial Accounting Standards No. 109. These estimates and judgments occur in the calculation of tax credits, tax benefits, and deductions, and in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes. Significant changes to these estimates may result in an increase or decrease to the Company's tax provision in a subsequent period.

In addition, the calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with management's expectations could materially affect the Company's financial condition or its future operating results.

Recent Accounting Pronouncements: See Note 1 to the Consolidated Financial Statements for a full description of the impact of recently issued accounting standards, which is incorporated herein by reference, including the expected dates of adoption and estimated effects on the Company's results of operations and financial condition.

CONSOLIDATED RESULTS OF OPERATIONS

The following analysis of the consolidated financial condition and results of operations of Alexander & Baldwin, Inc. and its subsidiaries (collectively, the "Company") should be read in conjunction with the consolidated financial statements and related notes thereto. Amounts in this narrative are rounded to millions, but per-share calculations and percentages were calculated based on thousands. Accordingly, a recalculation of some per-share amounts and percentages, if based on the reported data, may be slightly different than the more accurate amounts included herein.

	2006	2005	2004
	Chg.	Chg.	Chg.
(dollars in millions, except per-share amounts)			
Operating Revenue	\$ 1,607	\$ 1,603	\$ 1,486
Operating Costs and Expenses	1,459	1,420	1,324
Operating Income	148	183	162
Other Income and (Expenses)	5	NM	(6)
Income Taxes	(57)	(69)	(59)
Discontinued Operations	26	12	4
Net Income	\$ 122	\$ 126	\$ 101
Basic Earnings Per Share	\$ 2.84	\$ 2.89	\$ 2.37
Diluted Earnings Per Share	\$ 2.81	\$ 2.86	\$ 2.33

Operating Revenue for 2006 increased less than 1 percent, or \$4 million, to \$1,607 million. Real estate leasing revenue increased 20 percent in 2006 (after subtracting leasing revenue from assets classified as discontinued operations), primarily due to higher occupancies, higher lease rates, and additions to the leased portfolio. Ocean transportation revenue increased 8 percent in 2006, principally due to higher fuel surcharge revenues as a result of higher direct and indirect energy costs, initiation of the new China service, and improved yields and cargo mix. Logistics services revenue increased 3 percent in 2006, primarily due to higher yields and mix, partially offset by a decline in volumes for freight transported by rail. Real estate sales revenue decreased by 92 percent in 2006 (after subtracting revenue from discontinued operations) due to the timing and mix of properties sold. Because of the episodic nature of property sales, the Company views changes in real estate sales revenues on a year-over-year basis before the reclassification of revenue to discontinued operations to be more meaningful in assessing segment performance. Additionally, due to the timing of sales for development properties and the mix of properties sold, management believes performance is more appropriately assessed over a multi-year period. Furthermore, year-over-year comparisons of revenues are not complete without the consideration of results from the Company's investment in its real estate joint ventures, which are not included in operating revenues, but are included in operating profit. The Analysis of Operating Revenue and Profit by Segment that follows, provides additional information on changes in real estate sales revenue and operating profit.

ANALYSIS OF OPERATING REVENUE AND PROFIT BY SEGMENT

Additional detailed information related to the operations and financial performance of the Company's Industry Segments is included in Part II Item 6 and Note 13 to the Consolidated Financial Statements. The following information should be read in relation to the information contained in those sections.

Transportation Industry

Ocean Transportation, 2006 compared with 2005

(dollars in millions)	2006	2005	Change
Revenue	\$ 945.8	\$ 878.3	8%
Operating profit	\$ 105.6	\$ 128.0	-18%
Operating profit margin	11.2%	14.6%	
Volume (units):			
Hawaii containers	173,200	175,800	-1%
Hawaii automobiles	118,700	143,100	-20%
Guam containers	15,100	16,600	-9%
China containers	32,700	--	NM

Ocean Transportation revenue increased 8 percent, or \$67.5 million, to \$945.8 million in 2006. The increase reflected a number of factors, including a \$43.4 million increase in fuel surcharge revenues to help offset increases in direct and indirect fuel costs, \$22.5 million increase due to aggregate volume increases in Matson's service lines due to the new China service, \$19.3 million increase due to improved yields and cargo mix, and \$14.8 million due to higher purchased transportation costs that are billed to customers. These increases were partially offset by \$40.5 million in lower vessel charter revenue, resulting from the expiration of the APL Alliance in the first quarter of 2006. Matson's Hawaii automobile volume for 2006 was 20 percent lower than 2005, due to lower auto retail sales, lower demand from rental car agencies as a result of reduced auto manufacturer incentives and longer holding periods for autos, and competitive pressures. Total Hawaii container volume was down 1 percent from 2005, reflecting reduced shipments in the lower-margin building materials segment, reduced military freight due to non-recurring military deployments that occurred in 2005, and reduced household goods shipments reflecting the moderation in the growth of Hawaii's economy. Guam container volume was down 9 percent from 2005, primarily due to competitive pressures resulting from the transition in vessel schedules, as well as a decline in the Saipan garment trade and tourism industries.

Operating profit decreased 18 percent, or \$22.4 million, to \$105.6 million in 2006. This decrease was primarily the result of the following operating expense changes, which offset revenue increases. Direct and indirect fuel costs increased \$53.1 million, primarily as a result of higher energy costs, terminal handling costs increased \$14.3 million due primarily to increased rates related primarily to wage- and wharfage-related cost increases, equipment control, leasing, and repair costs increased \$14.9 million, primarily due to the new China service, and other costs increased due to the reimbursement of government vessel construction subsidies of \$4.8 million. Additionally, selling, general, and administrative expenses increased \$5.1 million primarily due to employee related costs. These increases were partially offset by lower vessel operating expenses of \$2.4 million, driven primarily by lower claims expenses and lower vessel wages, resulting from fewer vessel operating days. Other expense changes included a \$1.3 million gain on the sale of two surplus and obsolete vessels in 2006, and Matson's SSAT joint venture contributed \$3.8 million less in 2006. Earnings from this venture are not included in revenue, but are included in operating profit.

Operating Revenue for 2005 increased 8 percent, or \$117 million, to \$1,603 million. Logistics services revenue increased 15 percent in 2005, primarily due to a 20 percent increase in volumes related to freight transported by truck, partially offset by a 6 percent decline in volumes related to freight transported by rail. Real estate leasing revenue increased 11 percent in 2005 (after subtracting leasing revenue from assets classified as discontinued operations) due primarily to 2005 property acquisitions, higher rental rates, and higher Hawaii occupancies. Agribusiness revenue increased 9 percent in 2005 primarily due to the receipt of a payment under a federal disaster relief program and higher power sales. Ocean transportation revenue increased 3 percent in 2005, principally due to increases in fuel surcharge revenues and higher Hawaii container volumes. Real estate sales revenue increased 21 percent in 2005 (after subtracting revenue from discontinued operations) primarily due to the sale of all 100 units at the Company's Lanika residential high-rise project in Waikiki.

The reasons for business- and segment-specific year-to-year fluctuations in revenue growth are further described below in the Analysis of Operating Revenue and Profit by Segment.

Operating Costs and Expenses for 2006 increased by 3 percent, or \$39 million, to \$1,459 million. Ocean transportation costs increased 12 percent in 2006, primarily due to higher fuel costs, terminal handling, and equipment costs. Agribusiness costs increased 7 percent in 2006, principally due to higher crop production costs and repairs to irrigation reservoirs. Real estate sales and leasing costs decreased 56 percent, primarily due to the timing and mix of development sales. Selling, General and Administrative costs ("SG&A") increased by 4 percent, or \$6 million, to \$146 million in 2006 due to higher personnel and benefit costs that included \$2.8 million in non-cash stock option expense as a result of the adoption of SFAS No. 123R. SG&A as a percentage of revenue has remained constant from 2004 to 2006. However, this trend may not continue in 2007 and future years as a result of the adoption of SFAS 123R, which requires the expensing of the fair value of employee stock options. Accordingly, management expects that salaries and related costs as a percentage of operating revenues may be more volatile.

Operating Costs and Expenses for 2005 increased by 7 percent, or \$96 million, to \$1,420 million. Real estate sales and leasing costs increased 35 percent in 2005, primarily due to the sale of all 100 units at the Company's Lanika residential high-rise project in Waikiki. Logistics services costs increased by 13 percent in 2005, primarily due to an increase in volumes related to freight transported by truck. SG&A costs in 2005 increased by 9 percent, or \$12 million, to \$140 million due to higher depreciation, amortization of leasehold improvements, professional service fees, personnel and benefit costs, and charitable contributions, partially offset by lower Sarbanes-Oxley Act internal compliance costs. Operating costs and expenses for 2005 also included impairment losses of \$2 million for the carrying value of the Company's investment in C&H Sugar Company, Inc. ("C&H"). The 2005 impairment loss was in connection with the ultimate disposition of the Company's investment in C&H on August 9, 2005 as further described in Note 4 to the Consolidated Financial Statements.

The reasons for changes in business- and segment-specific year-to-year fluctuations in operating costs, which affect segment operating profit, are more fully described below in the Analysis of Operating Revenue and Profit by Segment.

Other Income and Expenses in 2006 is comprised of equity in earnings of real estate joint ventures, interest revenue and interest expense. Equity in income of real estate affiliates was \$11 million higher in 2006 due primarily to the Company's share of earnings from its Hoku joint venture, which completed sales of all 247 luxury residential units in the first quarter of 2006. Interest expense of \$15 million in 2006 was \$2 million higher than 2005 due to higher average debt balances. Other income in 2005 was higher than 2006 and 2004 because it included a \$5 million gain from an insurance settlement following a fire earlier in that year at the Kahului Shopping Center on Maui. Interest income and expense for 2005 was comparable to 2004.

Income Taxes were lower for 2006 compared with 2005 due primarily to lower pre-tax income. The effective tax rates in 2006 and 2005 were comparable. Income taxes were higher for 2005 compared with 2004 due primarily to higher pre-tax income, partially offset by a lower effective tax rate of 37.5 percent in 2005 versus 38 percent for 2004.

Ocean Transportation: 2005 compared with 2004

(dollars in millions)	2005	2004	Change
Revenue	\$ 878.3	\$ 850.1	3%
Operating profit	\$ 128.0	\$ 108.3	18%
Operating profit margin	14.6%	12.7%	
Volume (units)			
Hawaii containers	175,800	169,600	4%
Hawaii automobiles	148,100	157,000	-6%
Guam containers	16,600	17,200	-3%

Ocean Transportation revenue increased 3 percent, or \$28.2 million, to \$878.3 million in 2005. Of this increase, \$17.6 million was due to increases in the fuel surcharges, \$13.6 million was due to higher Hawaii container and conventional volumes offset partially by lower automobile volume, and \$8.4 million was due to yields and cargo mix in all services. Charter and other revenue was \$12.9 million lower than in 2004 as a result of less U.S. Government business and fewer charter opportunities. Revenue for 2005 was also affected adversely by a 52-week operating year versus 53 weeks in 2004 and by competitive effects on both volume and rates. Matson's Hawaii service container volume was 4 percent higher and automobile volume was 6 percent lower. The container volume increase was principally the result of stabilized growth in the Hawaii economy, in turn, fueled by tourism and construction. Guam container volume was 3 percent below 2004 due to normal business fluctuations. The lower automobile volume was the result of unusually high shipments from automobile manufacturers to renew rental car fleets in late 2004 and increased competition. The lower automobile volume, however, did not materially affect operating profit adversely for the year because the incremental vehicles would have been carried in containers, a method of shipment that is not cost-efficient.

Operating profit increased by 18 percent, or \$19.7 million, to \$128 million in 2005. This increase was primarily the result of the following operating expense changes, which partially offset revenue increases. Matson's SSAT joint venture contributed \$12.4 million higher equity in earnings (earnings from this venture are not included in revenue, but included in operating profit) and vessel and overhead operating costs decreased by \$3 million due to lower vessel wages, lower fuel consumption, and lower vessel overhead. Lower vessel wages in 2005 are due to lower staffing levels as a result of labor shortages. Lower fuel consumption was due to higher fuel consumption in 2004 as a result of the West Coast labor shortage, partially offset by higher fuel costs in 2005. Lower vessel overhead in 2005 compared to 2004 was due to reduced dry-docking amortization costs.

Logistics Services: 2006 compared with 2005

(dollars in millions)	2006	2005	Change
Intermodal revenue	\$ 287.4	\$ 287.5	--
Highway revenue	\$ 156.8	\$ 144.1	9%
Total Revenue	\$ 444.2	\$ 431.6	3%
Operating profit	\$ 20.8	\$ 14.4	44%
Operating profit margin	4.7%	3.3%	

Logistics revenue increased 3 percent, or \$12.6 million, to \$444.2 million in 2006. This increase was principally the result of higher volumes and rates for freight transported by truck ("Highway"). Revenue related to freight transported by rail ("Intermodal") declined slightly due to a 14 percent decrease in volumes that was largely offset by higher rates. Volume decreases for intermodal were due to rail service performance issues, which caused a diversion of business from rail to truck, and market conditions that drove business direct to suppliers.

Logistics operating profit increased 44 percent, or \$6.4 million, to \$20.8 million in 2006. The increased operating profit was primarily the result of higher yields relative to purchased transportation costs, offset in part by higher personnel costs. Higher yields related to freight transported by truck resulted from stronger demand relative to available truck supply. Higher yields related to freight transported by rail benefited from general rate increases, but were offset by volume decreases described previously. Margins achieved in 2006 were significantly higher than in preceding periods and may not be indicative of future results.

The revenue for integrated logistics services includes the total amount billed to customers for transportation services. As a non-asset based logistics company, the primary costs include purchased transportation services from asset-based vendors, such as railroads and trucking companies. As a result, the operating profit margin for this business is narrower than other businesses of the Company. The primary operating profit and investment risk for this business is the quality of receivables, which is monitored closely.

Logistics Services: 2005 compared with 2004

(dollars in millions)	2005	2004	Change
Intermodal revenue	\$ 287.5	\$ 287.6	7%
Highway revenue	\$ 144.1	\$ 109.3	32%
Total Revenue	\$ 431.6	\$ 376.9	15%
Operating profit	\$ 14.4	\$ 8.9	62%
Operating profit margin	3.3%	2.4%	

Logistics revenue increased 15 percent, or \$54.7 million, to \$431.6 million in 2005. This increase was due to improvements in the mix of business, yields, and a 20 percent increase in volumes related to freight transported by truck, partially offset by a 6 percent decline in volumes related to freight transported by rail. The increase in volume for freight transported by truck was primarily due to market shifts, the late 2004 business acquisition and organic growth. In December 2004, MIL acquired certain assets, obligations and contracts of a Texas-based business that provides truck and rail brokerage services.

Logistics operating profit increased by 62 percent, or \$5.5 million, to \$14.4 million in 2005. The increase was due to higher yields and overall increased volumes partially offset by higher personnel costs and other overhead.

Real Estate Industry

Real estate leasing and sales revenue and operating profit are analyzed before subtracting amounts related to discontinued operations. This is consistent with how the Company's management evaluates and makes decisions for the Company's real estate businesses. A discussion of discontinued operations for the real estate business is included separately.

Leasing: 2006 compared with 2005

(dollars in millions)	2006	2005	Change
Revenue	\$ 100.6	\$ 89.7	12%
Operating profit	\$ 50.3	\$ 43.7	15%
Operating profit margin	50.0%	48.7%	
Occupancy Rates:			
Mainland	98%	95%	
Hawaii	98%	93%	
Leasable Space (million sq. ft.):			
Mainland	3.8	3.5	9%
Hawaii	1.5	1.6	-6%

Real estate leasing revenue and operating profit for 2006 were 12 percent and 15 percent higher, respectively, than the amounts reported in 2005. These increases were due principally to higher Hawaii and Mainland occupancies and lease rates, 2006 property acquisitions, and full-year results from Kunia Shopping Center, an Oahu retail development which opened in November 2005. In 2006, two retail centers in Arizona, a Maui office building, a commercial property on the island of Hawaii, and several Maui leased fee parcels were sold.

The real estate leasing portfolio earnings consisted of 25 percent for office property, 37 percent for retail property, 19 percent for industrial property, and 20 percent for other property, principally ground leases.

Leasing: 2005 compared with 2004

(dollars in millions)	2005	2004	Change
Revenue	\$ 89.7	\$ 83.8	7%
Operating profit	\$ 43.7	\$ 38.8	13%
Operating profit margin	48.7%	46.3%	
Occupancy Rates:			
Mainland	95%	95%	
Hawaii	93%	90%	
Leasable Space (million sq. ft.):			
Mainland	3.5	3.7	-5%
Hawaii	1.6	1.7	-6%

Real estate leasing revenue and operating profit for 2005 were 7 percent and 13 percent higher, respectively, than the amounts reported for 2004. The higher revenue and operating profit was due primarily to 2005 property acquisitions as well as higher rental rates and improved Hawaii occupancies. Hawaii occupancy increased, principally due to tenancy increases in retail and office properties as well as the varying mix of properties in the portfolio due to sales and acquisitions. Mainland occupancy remained unchanged from 2004. In 2005, two Mainland properties and two Hawaii office buildings were sold and a Mainland property, the Lanikai Shopping Center in Kona on the island of Hawaii, and a retail property in Honolulu were acquired. The Kuni Shopping Center development on Oahu was completed in the second half of 2005.

The real estate leasing portfolio earnings consisted of 23 percent for office property, 37 percent for retail property, 19 percent for industrial property and 21 percent for other property, principally ground leases.

Real-Estate Sales: 2005 compared with 2005 and 2004

(dollars in millions)	2006	2005	2004
Hawaii improved	\$ 43.7	\$ 25.5	\$ --
Mainland improved	35.6	24.1	60.0
Hawaii development sales	4.5	72.5	22.3
Hawaii unimproved/other	13.5	26.8	82.3
Total Revenue	97.3	148.9	31.3
Operating profit before joint ventures	35.3	40.8	3.3
Equity in earnings of joint ventures	14.4	3.3	3.3
Total Operating Profit	\$ 49.7	\$ 44.1	\$ 34.6
Operating profit margin	51.1%	29.6%	

The lower revenue and higher operating profit results were due to the mix and timing of real estate sales in 2006 compared with 2005, as well as the treatment of income earned from the Company's joint ventures. Earnings from joint ventures are not included in revenue, but are included in operating profit. The composition of these sales is described below.

2006: Real estate sales revenue, before subtracting amounts treated as discontinued operations, included the sale of two retail centers in Arizona, a commercial property on the island of Hawaii, a Maui office building, several commercial parcels on Maui, a commercial property on Oahu, and a 19-percent installment payment for an agricultural parcel on Kauai. Operating profit for 2006 was significantly higher as a percentage of real estate sales revenue compared to 2005 because operating profit also included \$14.4 million for the Company's earnings from its real estate joint ventures (which are not included in revenue for the segment). The joint venture earnings principally relate to a portion of the Company's earnings from its Hokena joint venture, which completed sales of all 247 residential condominium units in January 2006, and joint venture earnings from the Company's Kai Maui project, partially offset by higher marketing expenses related to the Company's Kikou'uila project.

2005: Real estate sales revenue from property sales, before subtracting amounts treated as discontinued operations, included the sale of all 100 units at the Company's Lanika residential high-rise project in Waikiki, a commercial office building on Oahu, a warehouse/distribution complex in Ontario, California, the final 80-percent installment payment for a development parcel at Wailea, several Maui and Oahu commercial properties, a residential development parcel and three residential properties on Maui, a service center/warehouse complex comprised of three buildings in San Antonio, Texas, and 5.5 units in an office condominium project on Oahu. Additionally, a gain of \$5 million was recognized in operating profit during the third quarter for a partial property damage insurance settlement related to the Kahala Shopping Center line. Operating Profit also included \$3.3 million for the Company's share of earnings in joint ventures (which are not included in revenue for the segment).

2004: Real estate sales revenue, before subtracting amounts treated as discontinued operations, from property sales included 28 residential properties, 17.5 office condominium units, 33 Maui and Oahu commercial inventory properties, and three residential development parcels. In addition to the profit contribution from these sales, 2004 operating profit included \$3.3 million for the Company's share of earnings in joint ventures (which are not included in revenue for the segment).

The mix of real estate sales in any year or quarter can be diverse. Sales can include developed residential real estate, commercial properties, developable subdivision lots, undeveloped land, and property sold under threat of condemnation. The sale of undeveloped land and vacant parcels in Hawaii generally provides a greater contribution to earnings than does the sale of developed and commercial property, due to the low historical-cost basis of the Company's Hawaii land. Consequently, real estate sales revenue trends, cash flows from the sales of real estate, and the amount of real estate held for sale on the balance sheets do not necessarily indicate future profitability trends for this segment. Additionally, the operating profit reported in each quarter does not necessarily follow a percentage of sales trends because the cost basis of property sold can differ significantly between transactions. The reporting of real estate sales is also affected by the classification of certain real estate sales as discontinued operations. Finally, earnings from joint venture investments are not included in segment revenue, but are included in operating profit.

Discontinued Operations: Real-estate - The revenue, operating profit, and after-tax effects of discontinued operations for 2006, 2005 and 2004 were as follows (in millions, except per-share amounts):

	2006	2005	2004
Sales Revenue	\$ 89.7	\$ 50.1	\$ 1.1
Leasing Revenue	\$ 4.4	\$ 10.4	\$ 12.3
Sales Operating Profit	\$ 40.1	\$ 13.9	\$ 1.5
Leasing Operating Profit	\$ 2.6	\$ 4.7	\$ 4.8
After-tax Earnings	\$ 26.5	\$ 11.5	\$ 3.9
Basic Earnings Per Share	\$ 0.62	\$ 0.26	\$ 0.10

2006: The revenue and operating profit from the sale of two retail centers in Arizona, an office building on Maui, a commercial property on the island of Hawaii, and several commercial parcels in Hawaii were included in discontinued operations.

2005: The sales of two office buildings in Honolulu, one warehouse/distribution complex in Ontario, California, one service center/warehouse complex, consisting of three buildings in San Antonio, Texas, and the fee interest in a parcel in Maui were considered discontinued operations. Additionally, the revenue and expenses of an office building in Waikiki, Maui and three parcels on Maui were classified as discontinued operations even though the Company had not sold the properties by the end of 2005. The three parcels were sold in 2006.

2004: The sale of a Maui property was classified as a discontinued operation. In addition, two office properties and one light industrial property met the criteria for classification as discontinued operations even though the Company had not sold the properties by the end of 2004. One of the office properties and the light industrial property were sold in January 2005.

Agribusiness Industry (formerly Food Products)

Agribusiness: 2006 compared with 2005

(dollars in millions)	2006	2005	Change
Revenue	\$ 127.4	\$ 123.2	3%
Operating profit	\$ 6.9	\$ 11.2	-38%
Operating profit margin	5.4%	9.1%	
Tons sugar produced	173,600	192,700	-10%

Agribusiness revenue increased 3 percent, or \$4.2 million, to \$127.4 in 2006. Excluding the \$5.5 million disaster relief payment received in 2005, revenue increased 8 percent due mainly to \$4.3 million in higher repair services and trucking revenues, \$4.1 million from higher power sales, \$2.6 million in higher equipment rentals and soil sales, and \$2.2 million in higher specialty sugar and molasses sales. Lower revenue of \$5.4 million from lower bulk raw sugar sales volumes partially offset the previously noted increases. Operating profit decreased 38 percent, or \$4.3 million, to \$6.9 million in 2006. However, excluding the \$5.5 million disaster relief payment received in 2005, operating profit increased 21 percent due mainly to the same factors noted above. This 21 percent increase in operating profit reflected the effect of the factors mentioned above as well as higher 2006 crop production costs and repair costs for irrigation reservoirs. Production costs were higher due to increases in personnel, materials and supplies, fertilizer, and chemicals expenses. Also, 2006 included one additional week compared to 2005 (53 weeks in 2006 vs. 52 weeks in 2005).

Compared with 2005, sugar production in 2006 was 10 percent, or 19,100 tons, lower due primarily to dry-weather conditions during growing months, less-than-optimal fertilizer applications last year, and a lower crop age. The average revenue per ton of sugar for 2006 was \$350, or 2 percent higher than in 2005.

Coffee production of 2.7 million pounds for 2006 was 50 percent, or 0.9 million pounds, higher than 2005 production. The 2006 crop benefited from higher yields and an increased percentage of higher-value specialty and mid-grade green beans and a lower percentage of commodity grade green beans. The higher yield and favorable green bean mix were attributable to improved plant nutrition, reduced insect infestation, and favorable weather. The lower-than-expected coffee harvest for 2005 resulted in a loss of \$1.8 million to reduce the carrying value of the inventory to its net realizable value. There was no impairment loss recorded in 2006.

Approximately 91 percent of the Company's sugar production was sold to Hawaiian Sugar & Transportation Cooperative ("HS&TC") during 2006 under a marketing contract. The remainder was sold as specialty sugar. HS&TC sells its raw sugar to C&H at a price equal to the New York No. 14 Contract settlement price, less a discount and less costs for sugar vessel discharge and stevedoring. This price, after deducting the marketing, operating, distribution, transportation and interest costs of HS&TC, reflects the gross revenue to the Company.

Agribusiness: 2005 compared with 2004

(dollars in millions)	2005	2004	Change
Revenue	\$ 123.2	\$ 112.8	9%
Operating profit	\$ 11.2	\$ 4.8	2.3x
Operating profit margin	9.1%	4.3%	
Tons sugar produced	192,700	198,800	-3%

Agribusiness revenue increased 9 percent, or \$10.4 million, in 2005 due mainly to \$5.5 million received as part of an agricultural disaster relief program, \$5.1 million for higher power sales, \$2.2 million of higher trucking and royalty revenue and \$1.7 million higher molasses sales, partially offset by \$4.3 million of lower sugar and coffee sales. Operating profit was \$6.4 million better than 2004 due mainly to the same factors noted above, offset partially by higher costs for fuel, chemicals, fertilizer and personnel.

Compared with 2004, sugar production in 2005 was 3 percent, or 6,100 tons, lower due primarily to yield losses from a decline in cane age from drought, malicious fires, and leaf scald disease as well as a decision to increase the age of the cane to achieve a more optimal yield. The average revenue per ton of sugar for 2005 was 1 percent lower than in 2004.

Coffee production of 1.8 million pounds for 2005 was substantially the same as 2004 production. Both years' crops suffered from low yields and an increased mix of lower-value commodity grade beans. Factors such as plant nutrition, water quality, reduced orchard density and insect infestation negatively impacted yields and crop price. The lower-than-expected coffee harvest for 2005 resulted in a loss of \$1.8 million to reduce the carrying value of the inventory to its net realizable value. A similar loss of \$1.6 million was recorded in 2004.

LIQUIDITY AND CAPITAL RESOURCES

Overview: Cash flows provided by operating activities continue to be the Company's most significant source of liquidity. Additional sources of liquidity were provided by available cash and cash equivalent balances as well as borrowings on available credit facilities.

Cash Flows: Cash Flows from Operating Activities were \$106 million for 2006, compared with \$278 million for 2005. This decrease was principally the result of higher 2005 proceeds from the sale of units in the Company's Lanitca residential high-rise project in Waikiki, higher year-to-date income tax payments, higher development expenditures for real estate inventory, and lower Mission earnings, partially offset by proceeds received from the Company's Hokuca joint venture in 2006.

Cash Flows used in Investing Activities were \$124 million for 2006, compared with \$305 million for 2005. A critical component of the Company's long-term growth strategy is its capital expenditure program. In 2006, the Company's capital expenditures, excluding purchases of property using tax-deferred proceeds, additions to real estate held-for-sale, and related assumed debt, totaled \$281 million. This was comprised principally of \$147 million for the purchase of the *MP Maunalei*, which completed the Company's four ship modernization and replacement strategy, equipment purchases for the ocean transportation segment, primarily related to the Company's new China service, \$46 million in expenditures related to property development activities, and \$15 million related to routine asset replacements for agricultural operations and specialty sugar expansion activities. The cash used for transportation capital expenditures was partially funded by Capital Construction Fund withdrawals. The amounts reported in Capital Expenditures on the Statement of Cash Flows exclude \$49 million of tax-deferred purchases since the Company did not actually take control of the cash during the exchange period. In 2007, the Company expects that capital expenditures will be lower than 2006 due to the completion of the Company's four-ship modernization program and equipment purchases for its China service transition that were described previously; however, capital expenditures in the real estate business are expected to increase. In 2007, the Company's capital expenditure budget is expected to range from \$300 to \$325 million, including capital expenditures for real estate developments and 1031 lease portfolio acquisitions that would not be included in capital expenditures under investing activities in the statement of cash flows. Certain real estate capital expenditures are excluded from investing activities on the statement of cash flows because the expenditures are either classified as operating cash flows (when made for real estate held for sale) or non-cash activities (when made using tax-deferred proceeds from prior tax-deferred sales).

Cash Flows from Financing Activities for 2006 totaled \$6 million, compared with \$42 million for 2005. The decrease in cash flows from financing activities is due primarily to share repurchases and dividends that were offset by proceeds from debt issuance. In June 2006, A&B purchased 200,000 shares on the open market at an average price of \$42.37. Additionally, the Company also entered into an accelerated share repurchase agreement ("ASR") with Goldman, Sachs & Co. on June 27, 2006 to repurchase shares of A&B's common stock for an aggregate purchase price of approximately \$63 million. As of December 31, 2006, A&B had repurchased 1,653,795 shares of its stock at an average price of \$43.34.

On October 26, 2006, the Company's board of directors authorized the repurchase of up to two million shares of its common stock in the open market, in privately-negotiated transactions or by other means. The new authorization, which augmented the previous authorization of two million shares that expired December 31, 2006,

under the December 31, 2008. As of December 31, 2006, two million shares remained available for repurchase under the new share authorization.

The Company believes that funds generated from the expected results of operations, available cash and cash equivalents, and available borrowings under credit facilities will be sufficient to finance the Company's business requirements for the next fiscal year, including working capital, capital expenditures, dividends, and potential acquisitions and stock repurchases. There can be no assurance, however, that the Company will continue to generate cash flows at or above current levels or that it will be able to maintain its ability to borrow under its available credit facilities.

Tax-Deferred Real Estate Transactions: *Sales* - During 2006, sales and condemnation proceeds that qualified for potential tax-deferral treatment under the Internal Revenue Code Sections 1031 and 1033 totaled approximately \$90 million. The proceeds consisted primarily of the sales of two retail centers in Arizona, a Maui office building, a commercial property on the island of Hawaii, several commercial parcels on Maui and Oahu, and two parcels on Kauai.

Purchases - During 2006, the Company utilized \$92 million in proceeds from tax-deferred sales, which included \$84 million used for 2006 acquisitions and \$8 million attributed to a 2005 acquisition under a reverse 1031 transaction. The properties acquired with tax-deferred proceeds in 2006 principally included a two-building office property in Salt Lake City, Utah, a two-building office complex in Plano, Texas, a two-story office building in Sacramento, California, and a three-story office building in Phoenix, Arizona.

The proceeds from 1031 tax-deferred sales are held in escrow pending future use to purchase new real estate assets. The proceeds from 1033 condemnations are held by the Company until the funds are redeployed. As of December 31, 2006, \$12.3 million of proceeds from tax-deferred sales had not been reinvested and \$16.8 million expected without reinvestment.

The funds related to 1031 transactions are not included in the Statement of Cash Flows but are included as non-cash activities below the Statement. For "reverse 1031" transactions, the Company purchases a property in anticipation of receiving funds from a future property sale. Funds used for reverse 1031 purchases are included as capital expenditures on the Statement of Cash Flows and the related sales of property, for which the proceeds are linked, are included as property sales in the Statement.

Sources of Liquidity: Funds generated by operating activities continue to be the Company's most significant source of liquidity. Additional sources of liquidity for the Company, primarily comprised of cash and cash equivalents, receivables, sugar and coffee inventories, totaled \$2.9 million at December 31, 2006, a decrease of \$10 million from December 31, 2005. This net decrease was due primarily to \$12 million in lower cash balances, partially offset by \$1 million in higher receivables balances and \$1 million in higher sugar and coffee inventories.

The Company also has various revolving credit and term facilities that provide additional sources of liquidity for working capital requirements or investment opportunities on a short-term as well as longer-term basis. Long-term debt, including current portion of long-term debt and current notes payable, was \$442 million at the end of 2006 compared with \$327 million at the end of 2005. As of December 31, 2006, available borrowings under these facilities, which are more fully described below, totaled \$478 million.

The Company has a \$400 million three-year unsecured note purchase and private shelf agreement with Prudential Investment Management, Inc. and its affiliates (collectively, "Prudential") under which the Company may issue notes in an aggregate amount up to \$400 million, less the sum of all principal amounts then outstanding on any notes issued by the Company or any of its subsidiaries to Prudential and the amounts of any notes that are committed under the note purchase agreement. The facility expires on April 19, 2009 and borrowings under the shelf facility bear interest at rates that are determined at the time of the borrowing. Under the facility, Prudential is committed to purchase three series of notes under three scheduled draws totaling \$125 million, at rates ranging from 5.53 percent to 5.56 percent. In December 2006, the Company received \$50 million that represents the first of three scheduled draws under the facility. The second and third draws will be received in March and June 2007 in the

amounts of \$50 million and \$25 million, respectively. At December 31, 2006, \$164 million was available under the facility, including the additional \$75 million that will be drawn in 2007 under the committed series of notes.

The Company has two revolving senior credit facilities with six commercial banks that expire in December 2011. The revolving credit facilities provide for an aggregate commitment of \$325 million, which consists of a \$225 million and \$100 million facility for A&B and Matsen, respectively. Amounts drawn under the facilities bear interest at London Interbank Offered Rate ("LIBOR") plus 0.225 percent, provided the Company maintains an S&P/ Moody's rating of A-/A3 or better. At December 31, 2006, \$27 million was outstanding, \$20 million in letters of credit had been issued against the facilities, and \$279 million remained available for borrowing. Amounts drawn under these facilities are classified as current, unless the Company intends to move the drawn amount to another facility that is classified as long-term. The \$27 million outstanding as of December 31, 2006 was classified as a long-term borrowing since the Company intends to refinance the short-term borrowing with proceeds from the Prudential \$400 million three-year unsecured note purchase and private shelf agreement.

Matsen has a \$105 million secured revolving credit agreement with DNB NOR Bank ASA and ING Bank N.V. which provides for a 10-year commitment beginning in June 2005. The maximum amount that can be outstanding under the facility declines in eight annual commitment reductions of \$10.5 million each, commencing on the second anniversary of the closing date. The incremental cost to borrow under the facility is 0.225 percent above LIBOR. As of December 31, 2006, \$70 million was outstanding under the facility and \$35 million remained available.

The Company's ability to access its credit facilities is subject to its compliance with the terms and conditions of the credit facilities, including financial covenants. The financial covenants require the Company to maintain certain financial covenants, such as minimum consolidated shareholders' equity and maximum debt to EBITDA ratios. At December 31, 2006, the Company was in compliance with all such covenants. Credit facilities are more fully described in Note 7 to the Consolidated Financial Statements.

The Company's and Matsen's credit ratings from Standard and Poor's as of October 27, 2006 were both A- with a stable outlook. Factors that can impact the Company's and Matsen's credit ratings include changes in operating performance, the economic environment, conditions in industries in which the Company has operations, and the Company's and Matsen's financial position. If a credit downgrade were to occur, it could adversely impact, among other things, future borrowing costs and access to capital markets.

Debt is maintained at levels the Company considers prudent based on its cash flows, interest coverage ratio, and percentage of debt to capital. From current levels, the Company intends to increase its leverage, primarily through strategic investments, to the 35-40 percent range. This is a range that the Company believes optimizes its use of leverage and minimizes its cost of capital, but still leaves sufficient flexibility and capacity to pursue strategic investments.

CONTRACTUAL OBLIGATIONS, COMMITMENTS, CONTINGENCIES AND OFF-BALANCE SHEET ARRANGEMENTS

Contractual Obligations: At December 31, 2006, the Company had the following estimated contractual obligations (in millions):

Contractual Obligations	Payment due by period			
	Total	2007	2008-2009	2010-2011 Thereafter
Long-term debt obligations	\$ 442	\$ 41	\$ 64	\$ 271
Estimated interest on debt	161	23	41	64
Purchase obligations	114	75	39	--
Post-retirement obligations	34	3	6	7
Non-qualified benefit obligations	36	7	3	13
Operating lease obligations	70	10	14	35
Total	\$ 857	\$ 152	\$ 167	\$ 401

(a) Long-term debt obligations include principal repayments of short-term and long-term debt as described in Note 7 to the Consolidated Financial Statements.

(b) Estimated interest on debt is determined based on scheduled payments of the long-term debt at the interest rates in effect as of December 31, 2006. Because the Company has facilities that are at variable interest rates and expects to have new borrowing facilities in place during the years noted in the table, actual interest is expected to be in an amount greater than the amounts indicated.

(c) Purchase obligations include only non-cancellable contractual obligations for the purchases of goods and services.

(d) Post-retirement obligations include expected payments to medical service providers in connection with providing benefits to the Company's employees and retirees. The \$18 million noted in the column labeled "thereafter" comprises estimated benefit payments for 2013 through 2016. Post-retirement obligations are described further in Note 9 to the Consolidated Financial Statements.

(e) Non-qualified benefit obligations includes estimated payments to executives and directors under the Company's four non-qualified plans, as described in Note 9 to the Consolidated Financial Statements. The \$13 million noted in the column labeled "thereafter" comprises estimated benefit payments for 2013 through 2016. Additional information about the Company's non-qualified plans is included in Note 9 to the Consolidated Financial Statements.

(f) Operating lease obligations include principally land, office and terminal facilities, containers and equipment using long-term lease arrangements that do not transfer the risks and rewards of ownership to the Company. These amounts are further described in Note 8 to the Consolidated Financial Statements.

Off Balance Sheet Arrangements: See Note 12 of the Consolidated Financial Statements, which is incorporated herein by reference, for a description of contingent commitments that totaled approximately \$97 million at December 31, 2006.

ECONOMIC & BUSINESS OUTLOOK

In 2006, the pace of growth in the Hawaii economy slowed and moderate growth is expected to continue into 2007. The Hawaii economy remains healthy, as evidenced by a stable, growing tourism industry, a large military presence with its attendant expenditures, a robust retail environment, and expectations of continued, large infrastructure projects. In 2007, Hawaii is expected to see continued growth in real personal income, visitor arrivals, and job growth of 1.8 percent, 2.0 percent, and 1.5 percent, respectively (source: University of Hawaii Economic Research Organization). Although the rate of inflation is expected to ease in 2007 from higher-than-expected levels in 2006, it may have a dampening effect on real economic growth. Nevertheless, with an expectation of a stable, but modestly growing economy, A&B expects continued good performance in 2007 as it explores additional growth opportunities.

The Company's long-term strategic intent is to expand its real estate segment through an active real estate investment program, including land acquisitions, development of new and current projects, joint ventures, and effective maintenance of income-producing properties. In the ocean transportation segment, growth will be influenced by various initiatives, which include the expansion of Matson Integrated Logistics ("MIL"), extension of cross-selling opportunities between MIL and Matson, and the margin growth of Matson's expedited service from China. In the Agribusiness segment, growth opportunities include the expansion of Agribusiness' specialty sugar products, but may also include various energy initiatives, which are in the early stages of evaluation.

Real Estate - Leasing: The Company's lease portfolio consists of high-quality properties in attractive locations, generates approximately 50 percent of the Company's real estate income, and together with real estate sales segment assets, comprises 36 percent of consolidated identifiable assets. These properties are well diversified by geography, asset class, and tenant profile, which provides protection against location-specific downturns. In addition, the lease portfolio serves to mitigate the effect of potential slowdowns in the development activities of the Company's business. Occupancy at year-end averaged 98 percent for Mainland properties and 98 percent for Hawaii properties. Although these near-record occupancies cannot be sustained indefinitely, the Company expects steady performance in 2007 as it continues to expand its leased portfolio and improve the performance of its properties through re-tenanting and property repositioning. In addition, in the Hawaii market, where current market vacancy rates are at or near historic lows of 2.3 percent, 7.0 percent and 2.2 percent for industrial, office, and retail properties, respectively, the Company expects continued strength in its lease rate structure.

Real Estate - Sales: The Company's development activities, which are primarily concentrated in Hawaii, consist of a diversified "pipeline" of property types, including, but not limited to: primary residential condominiums, primary residential single or multi-family homes, resort residential housing, office and industrial condominiums, commercial properties, and raw and improved land.

In the primary residential market, which includes single family homes and condominiums, the rapid rise in sales prices leveled off in the second half of 2006. Traditional measures of market strength and depth, such as sales volume, inventory of homes for sale, and the number of days on market, have weakened. Despite these recent trends, median year-over-year sales prices for single family homes and condominiums on the island of Oahu went up 6.8 percent and 15.2 percent in 2006, respectively. To mitigate risk in its real estate portfolio, the Company adheres to disciplined underwriting, which may include self-imposed pre-sale or pre-leasing requirements, phased development, and joint ventures with third-parties.

In 2007, the Company expects continued growth, driven by the completion of existing development pipeline projects, sales of owned real estate, and opportunistic acquisitions. The Company also will continue to pursue its strategy of identifying and developing projects that are longer-term in nature that create stable income and profit streams while providing additional diversification of its portfolio.

One of the Company's largest long-term projects is Kūka'i'ūla, a 1,000-acre resort residential joint venture project on the island of Kauai, which is a premier destination development being built in partnership with an affiliate of DNB Associates, Inc. over a 10-15 year time horizon. While 2006 sales activity did not meet original expectations due to permitting delays and recent market conditions, the prospects for the development remain favorable. Sales of lots commenced in late 2006 and the Company expects closings to continue for several years as the property is developed and sold. The contribution to profit from this development in the near-term will be limited.

OTHER MATTERS

Management Changes: The following management changes occurred during 2006 and through February 16, 2007:

Charles M. Stockholm retired as non-executive chairman of the boards of A&B and Matson effective April 27, 2006.

W. Allen Doane was named chairman of the boards of A&B and Matson effective April 28, 2006. Mr. Doane is also president and chief executive officer of A&B.

Christopher J. Benjamin was named treasurer of A&B effective May 1, 2006, and continues in the positions of senior vice president and chief financial officer of A&B.

Tim Reid was named assistant treasurer of A&B effective May 1, 2006.

Thomas A. Wellman resigned as vice president, treasurer, and controller of A&B effective May 1, 2006.

Paul K. Ito was promoted to controller of A&B effective May 1, 2006.

Rufhamn S. Yamamaki resigned as vice president, human resources of A&B, effective May 13, 2006.

John B. Kelley, vice president, investor relations of A&B, passed away on May 24, 2006.

Kevin L. Hallock was named director of corporate finance and investor relations of A&B, effective October 11, 2006.

Son-Jai Paik was named vice president, human resources of A&B, effective January 1, 2007.

Allan D. Darling was named director, internal audit of A&B, effective January 22, 2007.

since the joint venture will be required to apply the percentage-of-completion method of accounting for revenue recognition. However, from a cash flow perspective, the joint venture will receive the full benefit generated from the sales of its lots, which enable it to fund significant future construction activities, thereby reducing partner capital requirements.

Other long-term projects in the pipeline include the Wailea Resort development lands, and the Waiwaia project, a master-planned community for primary housing in central Oahu that is being developed in a joint venture with Gentry Investment Properties.

Progress at other key residential developments, including Keola La'i in Honolulu, Kai Maha at Wailea on Maui, and Port Allen in Kauai, continues to be positive and will generate earnings for the Company over the next two years. A&B also will continue to pursue similar projects with a 3-5 year return horizon to complement its current slate of properties.

Transportation: In 2006, Matson completed its transition from its APL alliance service to the startup of a new China service. Matson's performance to date in China has been strong, and Matson was recently recognized by Drewry Shipping Consultants as the world's best on-time carrier. It is upon this foundation, coupled with its core logistics expertise that the Company believes it can create an expedited shipping service from China that will first serve to distinguish Matson from a highly competitive field, and second, provide an improved rate structure in the future.

Performance in the Hawaii Service will continue to be influenced by the strength of Hawaii's economy as well as Matson's competitors, in both the container and auto segments. In March 2005, a new dedicated automobile and truck carrier began bi-weekly roll-on, roll-off (ro-ro) service from California to Hawaii. The operator targeted automobiles, buses, trucks and other rolling stock, and has had success in 2006 in securing new accounts for the carriage of westbound automobiles. The impact from the addition of this competitor has been mitigated by Matson's service enhancements and successful contract extensions with major accounts in 2005 and throughout 2006. Through conversion of one of its C-9 class ships, Matson expects to add additional ro-ro capacity in 2007 to improve its throughput and productivity related to auto carriage. In addition, Horizon Lines will add capacity to its Hawaii container service starting in the second quarter of 2007. The additional container capacity is estimated at 6 to 7 percent of the total market.

Matson Integrated Logistics is expected to continue growing through the capture of new business opportunities, extension of its product offerings, and expansion of its service area coverage. To extend its national footprint, MIL may take advantage of opportunistic acquisitions in the highly fragmented intermodal and truck brokerage sectors. Additionally, MIL will explore supply chain opportunities at all of its network nodes throughout the coming year.

Agribusiness: A&B, through its Hawaiian Commercial & Sugar ("HCS") operations on Maui, produces approximately 75 to 80 percent of the sugar grown in Hawaii. The commodity-based industry poses specific challenges, including revenue enhancement and cost containment. While agriculture remains the best and highest use for much of the Company's land, declining margins in this segment may impact future profitability. In 2006, the Company commenced construction of new facilities to expand its specialty sugar production, distribution and marketing capabilities. The Company expects these investments to produce favorable results as early as 2007, and it is encouraged by the growing market demand in this higher-margin, high-growth segment of the food processing industry. In addition, the Company is evaluating the expansion of its energy production capacity (ethanol and electricity) through the use of cane juice and leaves from the sugar cane plant. Although the Company has not completed its evaluation, the Company did conclude in 2006 that production of ethanol from available molasses alone is not economically feasible.

In addition to the economic and market information presented above, there are two primary sources of periodic economic forecasts for the state of Hawaii: the University of Hawaii Economic Research Organization (UHERO) and the state's Department of Business, Economic Development & Tourism (DBEDT). For more information please refer to the websites of these organizations at www.uhero.hawaii.edu and www.hawaii.gov/dbedt/info/economic, respectively.

C&H, a portion of its raw sugar deliveries to HS&TC. That agreement has a provision that permits, under certain circumstances, the sales of sugar at a floor price.

A&B has no material exposure to foreign currency risks, although it is indirectly affected by changes in currency rates to the extent that this affects tourism in Hawaii. Additionally, transactions related to its China Service that commenced in February 2006, are primarily denominated in U.S. dollars, and therefore, the Company's foreign currency exposure is not material.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

A&B, in the normal course of doing business, is exposed to the risks associated with fluctuations in the market value of certain financial instruments. A&B maintains a portfolio of investments, pension fund investments and, through its Capital Construction Fund, an investment in mortgage-backed securities. Details regarding these financial instruments are described in Notes 1, 3, 4, 6 and 9 to the Consolidated Financial Statements.

The Company periodically uses derivative financial instruments such as interest rate and foreign currency hedging products to mitigate risks. The Company's use of derivative instruments is limited to reducing its risk exposure by utilizing interest rate or currency agreements that are accounted for as hedges. The Company does not hold or issue derivative instruments for trading or other speculative purposes nor does it use leveraged financial instruments.

In February 2005, Matson entered into a right of first refusal agreement with Aker Philadelphia Shipyard, which provides that, subsequent to the delivery of the MV *Manaki*, Matson has the right of first refusal to purchase each of the next four containerhips of similar design built by Aker that are deliverable before June 30, 2010. Matson may either exercise its right of first refusal and purchase the ship at an 8 percent discount from a third party's proposed contract price, or decline to exercise its right of first refusal and be paid by Aker 5 percent of such price. Notwithstanding the above, if Matson and Aker agree to a construction contract for a vessel to be delivered before June 30, 2010, Matson shall receive an 8 percent discount. The right of first refusal was accounted for as a derivative under FASB Statement No. 133, "Accounting for Derivative Instruments and Hedging Activities." The amount recorded was not material. Other than the right of first refusal, the Company had no other derivative financial instruments outstanding as of December 31, 2006 or 2005.

A&B is exposed to changes in U.S. interest rates, primarily as a result of its borrowing and investing activities used to maintain liquidity and to fund business operations. In order to manage its exposure to changes in interest rates, A&B utilizes a balanced mix of debt maturities, along with both fixed-rate and variable-rate debt. The nature and amount of A&B's long-term and short-term debt can be expected to fluctuate as a result of future business requirements, market conditions, and other factors.

The Company's fixed rate debt consists of \$345 million in principal term notes. The Company's variable rate debt consists of \$97 million in principal term notes. Other than in default, the Company does not have an obligation to prepay its fixed-rate debt prior to maturity and, as a result, interest rate risk and the resulting changes in fair value would not have a significant impact on the fixed rate borrowings unless the Company was required to refinance such debt.

The following table summarizes A&B's debt obligations at December 31, 2006, presenting principal cash flows and related interest rates by the expected fiscal year of repayment.

	Expected Fiscal Year of Repayment as of December 31, 2006 (dollars in millions)					Total	
	2007	2008	2009	2010	2011		Thereafter
Fixed rate	\$ 31	\$ 32	\$ 32	\$ 31	\$ 27	\$ 192	\$ 345
Average interest rate	5.33%	5.27%	5.21%	5.15%	5.19%	5.21%	5.23%
Variable rate	\$ 10	\$ --	\$ --	\$ --	\$ 8	\$ 79	\$ 97
Average interest rate	5.87%	--	--	--	5.86%	5.87%	5.87%

A&B's sugar plantation, HC&S, has a contract to sell its raw sugar production through 2008 to Hawaiian Sugar & Transportation Cooperative ("HS&TC"), an unconsolidated sugar and marketing cooperative, in which A&B has an ownership interest. Under that contract, the price paid will fluctuate with the New York No. 14 Contract settlement price for domestic raw sugar, less a fixed discount. A&B also has an agreement with C&H Sugar Company, Inc., the primary purchaser of sugar from HS&TC, which allows A&B to forward price, with

Fair Value at
December 31,
2006

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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MANAGEMENT'S ANNUAL REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Alexander & Baldwin, Inc. has the responsibility for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rule 13a-15(f) and 13b-15(f) under the Securities Exchange Act of 1934, as amended, as a process designed by, or under the supervision of, the company's principal executive and principal financial officers and effected by the company's board of directors, management and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America and includes those policies and procedures that:

- Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of assets of the company;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and
- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting only provides reasonable assurance with respect to financial statement presentation and preparation. Projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2006. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework*. Based on its assessments, management believes that, as of December 31, 2006, the Company's internal control over financial reporting is effective. The Company's independent registered public accounting firm, Deloitte & Touche LLP, has issued an audit report on management's assessment of the Company's internal control over financial reporting. That report appears on page 53 of this Form 10-K.

W. Allen Doane
Christopher J. Benjamin

W. Allen Doane
 Chairman, President and Chief Executive Officer
 February 23, 2007

Christopher J. Benjamin
 Senior Vice President, Chief Financial Officer and
 Treasurer
 February 23, 2007

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Alexander & Baldwin, Inc.:

We have audited the accompanying consolidated balance sheets of Alexander & Baldwin, Inc. and subsidiaries (the "Company") as of December 31, 2006 and 2005, and the related consolidated statements of income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2006. We also have audited management's assessment, included in the accompanying "Management Report—Management's Annual Report on Internal Control Over Financial Reporting," that the Company maintained effective internal control over financial reporting as of December 31, 2006, based on the criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission. The Company's management is responsible for the financial statements, for maintaining effective internal control over financial reporting, and for providing us with access to all the financial statements, as an opinion on management's assessment, and an opinion on the effectiveness of the Company's internal control over financial reporting based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audit of financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control, testing the operating effectiveness of those controls, and performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

A company's internal control over financial reporting is a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the recording, processing, summarizing, and reporting of financial data that are material, in accordance with the accounting principles and practices that are generally accepted in the United States; and (2) include the design and implementation of controls and procedures that are intended to ensure that the company's assets are safeguarded and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of the inherent limitations of internal control over financial reporting, including the possibility of collusion or improper management override of controls, internal misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any effectiveness of internal control over financial reporting to future periods are subject to risk. These limitations may be more inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Alexander & Baldwin, Inc. and subsidiaries as of December 31, 2006 and 2005, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2006, in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, management's assessment that the Company maintained effective internal control over financial reporting as of December 31, 2006, is fairly stated, in all material respects, based on the criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission. The Company's management is responsible for the design, implementation, and maintenance of internal control over financial reporting as of December 31, 2006, based on the criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

As discussed in Note 1 to the consolidated financial statements, on January 1, 2006, the Company changed its method of accounting for share-based payment arrangements to conform to Statement of Financial Accounting Standards ("SFAS") No. 123(R), *Share-Based Payment*, and as of December 31, 2006, the Company adopted a new accounting standard for the reporting of defined benefit pensions and other post-retirement plans, SFAS No. 158, *Employer's Liability for Defined Benefit Pension and Other Postretirement Plans—An Amendment of FASB Statements No. 97, 98, 106, and 132(R)*.

Deloitte + Touche LLP

Honolulu, Hawaii
February 23, 2007

ALEXANDER & BALDWIN, INC.
CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per-share amounts)

	Year Ended December 31,	
	2006	2005
Operating Revenue:		
Ocean transportation	\$ 936	\$ 846
Logistics services	444	377
Property leasing	95	71
Property sales	8	81
Agribusiness	124	111
Total operating revenue	1,607	1,486
Operating Costs and Expenses:		
Cost of ocean transportation services	754	668
Cost of logistics services	395	345
Cost of property sales and leasing services	46	78
Cost of agricultural goods and services	118	105
Selling, general and administrative	146	140
Impairment loss for operating investment	2	2
Total operating costs and expenses	1,452	1,324
Operating Income	148	162
Other Income and (Expense)		
Gain on insurance settlement	—	5
Equity in income of real estate affiliates	14	3
Interest income	6	4
Interest expense, net of amounts capitalized	(15)	(13)
Income From Continuing Operations Before Income Taxes	153	156
Income taxes	57	52
Income From Continuing Operations	96	114
Income from discontinued operations, net of income taxes	26	4
Net Income	\$ 122	\$ 118
Basic Earnings per Share of Common Stock:		
Continuing operations	\$ 2.22	\$ 2.63
Discontinued operations	0.62	0.26
Net income	\$ 2.84	\$ 2.89
Diluted Earnings per Share of Common Stock:		
Continuing operations	\$ 2.20	\$ 2.60
Discontinued operations	0.61	0.26
Net income	\$ 2.81	\$ 2.86
Average Number of Shares Outstanding	43.2	43.6
Average Number of Dilutive Shares Outstanding	43.6	44.0

See notes to consolidated financial statements.

ALEXANDER & BALDWIN, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in millions)

Year Ended December 31,

2006 2005 2004

Cash Flows from Operating Activities:			
Net income	\$ 122	\$ 126	\$ 101
Adjustments to reconcile net income to net cash provided by operations:			
Depreciation and amortization	85	84	80
Deferred income taxes	(40)	68	(11)
Gains on disposal of assets	(49)	(30)	(12)
Share-based expense	10	(17)	(9)
Equity in income of affiliates, net of distributions	1	2	--
Write-down of long-lived assets and investments	--	--	--
Changes in assets and liabilities:			
Accounts and notes receivable	5	5	(21)
Inventories	(1)	(4)	1
Prepaid expenses and other assets	(35)	(8)	(14)
Deferred dry-docking costs	(6)	(1)	9
Liability for benefit plans	6	(1)	3
Accounts and income taxes payable	(28)	39	26
Other liabilities	21	4	20
Real Estate Developments Held for Sale:			
Real estate inventory sales	4	45	30
Expenditures for new real estate inventory	(69)	(34)	(30)
Net cash provided by operations	<u>106</u>	<u>278</u>	<u>173</u>
Cash Flows from Investing Activities:			
Capital expenditures for property and developments	(281)	(231)	(151)
Receipts from disposal of income-producing property, investments and other assets	61	25	22
Deposits into Capital Construction Fund	(66)	(219)	(2)
Withdrawals from Capital Construction Fund	139	130	142
Payments for purchases of investments	(40)	(32)	(39)
Proceeds from sale and maturity of investments	43	2	7
Net cash used in investing activities	<u>(124)</u>	<u>(305)</u>	<u>(21)</u>
Cash Flows from Financing Activities:			
Proceeds from issuance of long-term debt	217	104	56
Payments of long-term debt and deferred financing costs	(102)	(27)	(158)
Payments of short-term borrowings - net	--	(7)	--
Repurchases of capital stock	(72)	--	(2)
Proceeds from issuance of capital stock, including excess tax benefit	5	11	26
Dividends paid	(42)	(39)	(38)
Net cash provided by (used in) financing activities	<u>6</u>	<u>42</u>	<u>(116)</u>
Cash and Cash Equivalents:			
Net increase for the year	(12)	15	36
Balance, beginning of year	57	42	6
Balance, end of year	<u>\$ 45</u>	<u>\$ 57</u>	<u>\$ 42</u>
Other Cash Flow Information:			
Interest paid	\$ (20)	\$ (17)	\$ (14)
Income taxes refunded (paid), net	\$ (49)	\$ 3	\$ (61)
Non-cash Activities:			
Debt assumed in real estate purchase	\$ --	\$ 11	--
Tax-deferred property sales	\$ 60	\$ 55	--
Tax-deferred property purchases	\$ (49)	\$ (28)	--

See notes to consolidated financial statements.

ALEXANDER & BALDWIN, INC.
CONSOLIDATED BALANCE SHEETS
(in millions, except per-share amount)

December 31,

2006 2005

ASSETS		
Current Assets		
Cash and cash equivalents	\$ 45	\$ 57
Accounts and notes receivable, less allowances of \$14 for each year	178	177
Sugar and coffee inventories	7	6
Materials and supplies inventories	12	12
Real estate held for sale	--	9
Income taxes receivable	5	--
Deferred income taxes	10	16
Prepaid expenses and other assets	28	25
Accrued withdrawal (deposit), net to Capital Construction Fund	--	1
Total current assets	<u>285</u>	<u>305</u>
Investments in Affiliates	149	134
Real Estate Developments	147	71
Property - net	1,499	1,289
Capital Construction Fund	1	93
Benefit Plan Assets	56	68
Other Assets	114	93
Total	<u>\$ 2,251</u>	<u>\$ 2,071</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Notes payable and current portion of long-term debt	\$ 41	\$ 31
Accounts payable	136	134
Payrolls and vacation due	18	19
Uninsured claims	12	16
Income taxes payable	--	12
Liability for benefit plans - current portion	3	3
Accrued and other liabilities	47	39
Total current liabilities	<u>257</u>	<u>254</u>
Long-term Liabilities		
Long-term debt	401	296
Deferred income taxes	442	415
Liability for benefit plans	52	47
Uninsured claims and other liabilities	72	45
Total long-term liabilities	<u>967</u>	<u>803</u>
Commitments and Contingencies		
Shareholders' Equity		
Capital stock - common stock without par value; authorized, 150 million shares (\$0.75 stated value per share), outstanding, 42.6 million shares in 2006 and 44.0 million shares in 2005	35	36
Additional capital	179	175
Accumulated other comprehensive loss	--	(7)
Deferred compensation	--	(6)
Retained earnings	843	827
Cost of treasury stock	(11)	(11)
Total shareholders' equity	<u>1,027</u>	<u>1,014</u>
Total	<u>\$ 2,251</u>	<u>\$ 2,071</u>

See notes to consolidated financial statements.

ALEXANDER & BALDWIN, INC.
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
FOR THE THREE YEARS ENDED DECEMBER 31, 2006
(In millions, except per-share amounts)

	Capital Stock		Additional Capital	Accumulated Other Comprehensive Income (Loss)	Deferred Compensation	Retained Earnings	Total
	Issued Shares	In Treasury Shares					
Balance, December 31, 2003	46.0	\$ 35	\$ (12)	\$ (9)	\$ 684	\$ 811	
Net income	-	-	-	-	101	101	
Other comprehensive income, net of tax:							
Cash flow hedge (out of taxes of \$1)	-	-	-	(2)	-	(2)	
Total comprehensive income	-	-	-	1	-	1	
Shares repurchased	(0.1)	-	-	-	(2)	(2)	
Stock options exercised - net	1.0	-	-	-	(4)	(4)	
Share-based incentive plan	0.1	-	34	-	-	34	
Dividends (\$0.50 per share)	-	-	4	\$ (2)	(33)	(33)	
Balance, December 31, 2004	47.0	35	150	(9)	741	904	
Net income	-	-	-	-	126	126	
Other comprehensive income, net of tax:							
Cash flow hedge (out of taxes of \$1)	-	-	-	2	-	2	
Total comprehensive income	-	-	-	2	-	2	
Shares repurchased	(0.6)	-	17	-	(1)	16	
Stock options exercised - net	-	-	8	-	(6)	2	
Share-based incentive plan	-	-	-	-	2	2	
Dividends (\$0.50 per share)	-	-	-	-	(33)	(33)	
Balance, December 31, 2005	47.6	36	175	(7)	837	1,044	
Net income and other comprehensive income	-	-	-	-	122	122	
Shares repurchased	(1.7)	-	(7)	-	(64)	(72)	
Stock options exercised - net	0.1	-	-	-	2	2	
Share-based incentive plan	0.2	-	-	-	-	-	
Share-based compensation	-	-	10	-	-	10	
Adjustment to initially adopt SFAS No. 123R	-	-	(6)	-	6	-	
Dividends (\$0.75 per share)	-	-	-	(12)	(42)	(42)	
Balance, December 31, 2006	46.2	35	172	(15)	845	1,002	

See notes to consolidated financial statements.

ALEXANDER & BALDWIN, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Description of Business: Founded in 1870, Alexander & Baldwin, Inc. ("A&B") is incorporated under the laws of the State of Hawaii. A&B operates primarily in three industries: Transportation, Real Estate and Agribusiness. These industries are described below:

Transportation - carrying freight, primarily between various U.S. Pacific Coast, Hawaii, Guam, other Pacific island, and China ports; chartering vessels to third parties; arranging domestic and international rail intermodal service, long-haul and regional highway brokerage, specialized hauling, flat-bod and project work, less-than-truckload and expedited/air freight services; and providing terminal, stevedoring and container equipment maintenance services in Hawaii.

Real Estate - purchasing, developing, selling, managing, leasing, and investing in commercial (including retail, office and industrial) and residential properties in Hawaii and on the U.S. mainland.

Agribusiness - growing sugar cane and coffee in Hawaii; producing bulk raw sugar, specialty food-grade sugars, molasses and green coffee; marketing and distributing roasted coffee and green coffee; providing sugar, petroleum, and molasses hauling, general trucking, services, mobile equipment maintenance and repair services, and self-service storage in Hawaii; and, generating and selling, to the extent not used in factory operations, electricity.

Principles of Consolidation: The consolidated financial statements include the accounts of Alexander & Baldwin, Inc. and all wholly-owned and controlled subsidiaries (the "Company"), after elimination of significant intercompany amounts.

Risks and Uncertainties: Factors that could adversely impact the Company's operations or financial results include, but are not limited to, the following: increased competition; strikes or work stoppages; increased cost of energy; changes in laws and regulations relating to the Company's business; unfavorable economic and political conditions in domestic or international markets; litigation or legal proceedings; adverse weather conditions; changes in the legal and regulatory environment; changes in accounting and taxation standards, including an increase in tax rates; an inability to achieve the Company's overall long-term goals; an inability to protect the Company's information systems; future impairment charges; and global or regional catastrophic events.

Investments in Affiliates: Significant investments in businesses, partnerships, and limited liability companies in which the Company does not have a controlling financial interest, but has the ability to exercise significant influence, are accounted for under the equity method. A controlling financial interest is one in which the Company has a majority voting interest or one in which the Company is the primary beneficiary that absorbs the majority of the expected losses or receives a majority of the expected residual returns, or both, of a variable interest entity as defined in FASB Interpretation No. 46 (revised December 2003), "Consolidation of Variable Interest Entities" (FIN 46R).

Segment Information: The Company has five operating segments in three industries: Transportation, Real Estate, and Agribusiness. The Transportation industry is comprised of ocean transportation and integrated logistics service segments. The Real Estate industry is comprised of real estate leasing and real estate sales segments. The Company reports segment information in the same way that the chief operating decision maker assesses segment performance. For purposes of certain segment disclosures, such as identifiable assets, the Company's development activities are included with the real estate sales segment. Additional information regarding these segments is found in Note 13.

Use of Estimates: The preparation of the consolidated financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the amounts reported. Significant estimates and assumptions are used for, but not limited to:

(i) asset impairments, (ii) revenue recognition for long-term real estate developments, (iii) self-insured liabilities, (iv) cash flow scenarios related to unconsolidated investments, (v) share-based compensation, and (vi) income taxes. Future results could be materially affected if actual results differ from these estimates and assumptions.

Cash and Cash Equivalents: Cash equivalents are composed of highly liquid investments with a maturity of three months or less at the date of purchase. The Company carries these investments at cost, which approximates fair value. Outstanding checks in excess of funds on deposit totaled \$9 and \$27 million at December 31, 2006 and 2005, respectively, and are reflected as current liabilities in the Consolidated Balance Sheets.

Fair Value of Financial Instruments: The fair values of cash and cash equivalents, receivables and short-term borrowings approximate their carrying values due to the short-term nature of the instruments. The carrying amount and fair value of the Company's long-term debt at December 31, 2006 was \$442 million and \$433 million, respectively.

Allowances for Doubtful Accounts: Allowances for doubtful accounts are established by management based on estimates of collectibility. The changes in allowances for doubtful accounts, included on the Balance Sheets as an offset to "Accounts and notes receivable," for the three years ended December 31, 2006 were as follows (in millions):

	Balance at Beginning of Year	Expense	Write-offs and Other	Balance at End of Year
2004	\$ 12	\$ 6	\$ (4)	\$ 14
2005	\$ 14	\$ 5	\$ (5)	\$ 14
2006	\$ 14	\$ 2	\$ (2)	\$ 14

Inventories: Raw sugar and coffee inventories are stated at the lower of cost (first-in, first-out basis) or market value. Other inventories, composed principally of materials and supplies, are stated at the lower of cost (principally average cost) or market value.

Dry-docking: Under U.S. Coast Guard rules, administered through the American Bureau of Shipping's alternative compliance program, all vessels must meet specified seaworthiness standards to remain in service. Vessels must undergo regular inspection, monitoring and maintenance, referred to as "dry-docking," to maintain the required operating certificates. These dry-docks occur on scheduled intervals ranging from two- to five years, depending on the vessel age. Because the dry-docks enable the vessel to continue operating in compliance with U.S. Coast Guard requirements, the costs of these scheduled dry-docks are deferred and amortized until the next regularly scheduled dry-dock period. Routine vessel maintenance and repairs that do not improve or extend asset lives are charged to expense as incurred. Deferred amounts are included on the Consolidated Balance Sheets in other non-current assets. Amortized amounts are charged to operating expenses in the Consolidated Statements of Income. Changes in deferred dry-docking costs are included in the Consolidated Statements of Cash Flows in Cash Flows from Operating Activities.

Property: Property is stated at cost, net of accumulated depreciation and amortization. Expenditures for major renewals and betterments are capitalized. Replacements, maintenance, and repairs that do not improve or extend asset lives are charged to expense as incurred. Costs of developing coffee orchards are capitalized during the development period and depreciated over the estimated productive lives. Upon acquiring real estate, the Company allocates the purchase price to land, buildings, in-place leases and above and below market leases based on relative fair value.

Depreciation: Depreciation and amortization is computed using the straight-line method over the estimated useful lives of the assets. Estimated useful lives of property are as follows:

Classification	Range of Life (in years)
Buildings	10 to 40
Vessels	10 to 40
Marine containers	2 to 15
Terminal facilities	3 to 35
Machinery and equipment	3 to 35
Utility systems and other	5 to 50
Coffee orchards	20

In 2006, Matson extended the useful life of certain of its vessels based on extensive modifications and improvements that extended the useful lives of these vessels. The increase in the useful life of the vessels resulted in a reduction in depreciation expense of \$2.5 million, on an after-tax basis, or \$0.06 per diluted share in 2006.

Real Estate Developments: Expenditures for real estate developments are capitalized during construction and are classified as Real Estate Developments on the Consolidated Balance Sheets. When construction is substantially complete, the costs are reclassified as either Real Estate Held for Sale or Property, based upon the Company's intent to either sell the completed asset or to hold it as an investment, respectively. Cash flows related to real estate developments are classified as either operating or investing activities, based upon the Company's intention to sell the property or to retain ownership of the property as an investment following completion of construction.

For development projects, capitalized costs are allocated using the direct method for expenditures that are specifically associated with the unit being sold and the relative-sales-value method for expenditures that benefit the entire project. These project-wide costs typically include land, grading, roads, water and sewage systems, landscaping and project amenities.

Capitalized Interest: Interest costs incurred in connection with significant expenditures for real estate developments, the construction of assets, or investments in joint ventures are capitalized during the period in which activities necessary to get the asset ready for its intended use are in progress. Capitalization of interest is discontinued when the asset is substantially complete and ready for its intended use. Capitalization of interest on investments in joint ventures is recorded until the underlying investee commences operations; this is typically when the investee has other-than-ancillary revenue generation. Total interest expense was \$21 million, \$17 million, and \$15 million in 2006, 2005, and 2004, respectively. Capitalized interest was \$6 million, \$4 million, and \$2 million in 2006, 2005, and 2004, respectively.

Impairments of Long-Lived Assets: Long-lived assets are reviewed for possible impairment when events or circumstances indicate that the carrying value may not be recoverable. In such an evaluation, the estimated future undiscounted cash flows generated by the asset are compared with the amount recorded for the asset to determine if its carrying value is not recoverable. If this review determines that the recorded value will not be recovered, the amount recorded for the asset is reduced to estimated fair value. A large portion of the Company's real estate is undeveloped land located in the State of Hawaii on the islands of Maui and Kauai. The cost basis of the Company's undeveloped land on Maui and Kauai, excluding the recently acquired Waitia property, is approximately \$150 per acre, a value much lower than fair value.

Goodwill and Intangible Assets: Goodwill and intangibles are recorded on the Balance Sheets as other non-current assets. Goodwill and intangible assets relate to the acquisition of certain assets, obligations, and contracts of two logistic service entities in 2003 and 2004. The purchase agreements included covenants, provisions based on EBITDA through 2009. The Company reviews goodwill for potential impairment on an annual basis, or more frequently if indications of impairment exist. Intangible assets are reviewed for impairment whenever events or changes in circumstances would indicate the carrying amount of the intangible asset(s) may not be recoverable.

The changes in the carrying amount of goodwill and intangible assets for the years ended December 31, 2006 and 2005 were as follows (in millions):

	Goodwill	Intangible Assets
Balance, December 31, 2004	\$ 3	\$ 5
Additions	2	1
Amortization	(1)	(1)
Balance, December 31, 2005	4	5
Additions	5	—
Amortization	(4)	(1)
Balance, December 31, 2006	\$ 5	\$ 4

Revenue Recognition: The Company has a wide range of revenue types, including, for example, rental income, property sales, shipping revenue, intermodal and logistics revenue and sales of raw sugar, molasses and coffee. Before recognizing revenue, the Company assesses the underlying terms of the transaction to ensure that recognition meets the requirements of relevant accounting standards. In general, the Company recognizes revenue when persuasive evidence of an arrangement exists, delivery of the service or product has occurred, the sales price is fixed or determinable, and collectibility is reasonably assured.

Voyage Revenue Recognition: Voyage revenue is recognized ratably over the duration of a voyage based on the relative transit time in each reporting period, commonly referred to as the "percentage of completion" method. Voyage expenses are recognized as incurred.

Logistics Services Revenue and Cost Recognition: The revenue for logistics services includes the total amount billed to customers for transportation services. The primary costs include purchased transportation services, revenue and the related purchased transportation costs are recognized based on relative transit time, commonly referred to as the "percentage of completion" method. The Company reports revenue on a gross basis following the guidance in Emerging Issues Task Force 99-19, "Reporting Revenue Gross as a Principal versus Net as an Agent." The Company serves as principal in transactions because it is responsible for the contractual relationship with the customer, has latitude in establishing prices, has discretion in supplier selection, and retains credit risk.

Real Estate Sales Revenue Recognition: Sales are recorded when the risks and rewards of ownership have passed to the buyers (generally on closing dates), adequate down payments have been received, and collection of remaining balances is reasonably assured. For development projects, including Kukui'ula, that have material continuing post-closing involvement and for which total revenue and capital costs are estimable, the Company uses the percentage-of-completion method for revenue recognition. Under this method, the amount of revenue recognized is based on development costs that have been incurred through the reporting period as a percentage of total expected development cost associated with the subject property. This generally results in a stabilized gross margin percentage, but requires judgments and estimates.

Real Estate Leasing Revenue Recognition: Rental revenue is recognized on a straight-line basis over the terms of the related leases, including periods for which no rent is due (typically referred to as "rent holidays"). Differences between revenue recognized and amounts due under respective lease agreements are recorded as increases or decreases, as applicable, to deferred rent receivable. Also included in rental revenues are certain tenant reimbursements and percentage rents determined in accordance with the terms of the leases. Income arising from tenant rents that are contingent upon the sales of the tenant exceeding a defined threshold are recognized only after the contingency has been removed (i.e., sales thresholds have been achieved).

Sugar and Coffee Revenue Recognition: Revenue from bulk raw sugar sales is recorded when delivered to the cooperative of Hawaiian producers, based on the estimated net return to producers in accordance with contractual agreements. Revenue from coffee is recorded when the title to the product and risk of loss passes to third parties (generally this occurs when the product is shipped or delivered to customers) and when collection is reasonably assured.

Non-voyage Ocean Transportation Costs: Depreciation, charter hire, terminal operating overhead, and general and administrative expenses are charged to expense as incurred.

Agricultural Costs: Costs of growing and harvesting sugar cane are charged to the cost of inventory in the year incurred and to cost of sales as raw sugar is delivered to the cooperative of Hawaiian producers, as permitted by Statement of Position No. 85-3, "Accounting by Agricultural Producers and Agricultural Cooperatives." Costs of growing coffee, excluding orchard development costs, are charged to inventory in the year incurred and to cost of sales as coffee is sold.

Discontinued Operations: The sales of certain income-producing assets are classified as discontinued operations, as required by Statement of Financial Accounting Standards ("SFAS") No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets," if the operations and cash flows of the assets clearly can be distinguished from the remaining assets of the Company, if cash flows for the assets have been, or will be, eliminated from the ongoing operations of the Company, if the Company will not have a significant continuing involvement in the operations of the assets sold and if the amount is considered material. Certain assets that are "held for sale," based on the likelihood and intention of selling the property within 12 months, are also treated as discontinued operations. Upon reclassification, depreciation of the assets is stopped. Sales of land and residential houses are generally considered inventory and are not included in discontinued operations.

Employee Benefit Plans: Certain ocean transportation subsidiaries are members of the Pacific Maritime Association ("PMA") and the Hawaii Stevedoring Industry Committee, which negotiate multiemployer pension plans covering certain shoreside bargaining unit personnel. The subsidiaries directly negotiate multiemployer pension plans covering other bargaining unit personnel. Pension costs are accrued in accordance with contribution rates established by the PMA, the parties to a plan or the trustees of a plan. Several trusteed, noncontributory, single-employer defined benefit plans and defined contribution plans cover substantially all other employees.

Accounting Method for Share-Based Compensation: On January 1, 2006, the Company adopted SFAS No. 123 (revised 2004), "Share-Based Payment" (SFAS No. 123R) using the modified prospective method. SFAS No. 123R requires the measurement and recognition of compensation expense for all share-based payment awards made to employees and directors. Prior to January 1, 2006, the Company accounted for share-based compensation under Accounting Principles Board ("APB") Opinion No. 25, which required recognition of compensation expense based on the intrinsic value of the equity instrument awarded. Consequently, no share-based compensation expense for stock option grants was reflected in net income since all options granted had an exercise price equal to the market value of the underlying common stock on the date of grant. If the Company had applied the fair value recognition provisions of SFAS No. 123, as amended by SFAS No. 148, "Accounting for Stock-Based Compensation - Transition and Disclosure," the effect on net income and earnings per share for the years ended December 31, 2005 and 2004 would have been as follows (in millions, except per-share amounts):

	2005	2004
Net Income:		
As reported	\$ 126	\$ 101
Share-based compensation expense determined under fair value based method for all awards, net of related tax effects	(2)	(2)
Pro forma	\$ 124	\$ 99
Net Income Per Share:		
Basic, as reported	\$ 2.89	\$ 2.37
Basic, pro forma	\$ 2.85	\$ 2.33
Diluted, as reported	\$ 2.86	\$ 2.33
Diluted, pro forma	\$ 2.82	\$ 2.30

The Company's various stock option plans are more fully described in Note 11.

Basic and Diluted Earnings per Share of Common Stock: Basic earnings per share is determined by dividing net income by the weighted-average common shares outstanding during the year. The calculation of diluted earnings per share includes the dilutive effect of unexercised options to purchase the Company's stock and

non-vested stock. The computation of average dilutive shares outstanding excluded non-qualified stock options to purchase 0.2 million shares of common stock for the year ended December 31, 2006. These amounts were excluded because the options' exercise prices were greater than the average market price of the Company's common stock for the periods presented and, therefore, the effect would be anti-dilutive. The anti-dilutive shares for 2005 and 2004 were not significant.

	2006	2005	2004
Effect on average shares outstanding of assumed exercise of stock options (in millions of shares):			
Average number of shares outstanding	43.2	43.6	42.6
Effect of dilutive securities:			
outstanding stock options and non-vested stock	0.4	0.4	0.6
Average number of shares outstanding after effect of dilutive securities	43.6	44.0	43.2

Income Taxes: Significant judgment is required in determining the Company's tax liabilities in the multiple jurisdictions in which the Company operates. Income taxes are reported in accordance with SFAS No. 109, "Accounting for Income Taxes." Deferred income taxes are provided for the tax effect of temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements. Deferred tax assets and deferred tax liabilities are adjusted to the extent necessary to reflect tax rates expected to be in effect when the temporary differences reverse. Adjustments may be required to deferred tax assets and deferred tax liabilities due to changes in tax laws and audit adjustments by tax authorities. To the extent adjustments are required in any given period, the adjustments would be included within the tax provision in the statement of operations and/or balance sheet.

The Company has not recorded a valuation allowance. A valuation allowance would be established if, based on the weight of available evidence, management believes that it is more likely than not that some portion or all of a recorded deferred tax asset would not be realized in future periods.

The Company's income tax provision is based on calculations and assumptions that are subject to examination by different tax authorities. The Company establishes accruals for certain tax contingencies and interest when, despite the belief that the Company's tax return positions are properly supported, the Company believes certain positions are likely to be challenged and that the Company's positions may not be fully sustained. The tax contingency accruals are adjusted in light of changing facts and circumstances, such as the progress of tax audits, case law, and the expiration of statutes of limitations. If events occur and the payment of these amounts proves to be unnecessary, the reversal of the liabilities would result in tax benefits being recognized in the period it is determined the liabilities are no longer necessary. If the Company's estimate of tax liabilities proves to be less than the ultimate assessment, a further charge to expense would result.

Derivative Financial Instruments: The Company periodically uses derivative financial instruments such as interest rate and foreign currency hedging products to mitigate risks. The Company's use of derivative instruments is limited to reducing its risk exposure by utilizing interest rate or currency agreements that are accounted for as hedges. The Company does not hold or issue derivative instruments for trading or other speculative purposes nor does it use leveraged financial instruments. All derivatives are recognized in the consolidated balance sheets at their fair value. At December 31, 2006 and 2005, there were no material derivative instruments held by the Company.

Comprehensive Income: Comprehensive Income includes all changes in Stockholders' Equity, except those resulting from capital stock transactions. Other Comprehensive Income (Loss) includes gains or losses on certain derivative instruments used to hedge interest rate risk (see Note 7).

Environmental Costs: Environmental expenditures are recorded as a liability and charged to operating expense when the environmental liability has been incurred and can be estimated. An environmental liability has

been incurred when both of the following conditions have been met: (i) litigation has commenced or a claim or an assessment has been asserted, or based on available information, commencement of litigation or assertion of a claim or an assessment is probable, and (ii) based on available information, it is probable that the outcome of such litigation, claim, or assessment will be unfavorable. If a range of probable loss is determined, the Company will record the obligation at the low end of the range unless another amount in the range better reflects the expected loss. Certain costs, however, are capitalized in Property when the obligation is recorded, if the cost (1) extends the life, increases the capacity or improves the safety and efficiency of property owned by the Company, (2) mitigates or prevents environmental contamination that has yet to occur and that otherwise may result from future operations or activities, or (3) is incurred or discovered in preparing for sale property that is classified as "held for sale." The amounts of capitalized environmental costs were not material at December 31, 2006 or 2005.

Self-Insured Liabilities: The Company is self-insured for certain losses that include, but are not limited to, employee health, workers' compensation, general liability, real and personal property, and real estate construction defect claims. However, the Company obtains third-party insurance coverage to limit its exposure to these claims. When estimating its self-insured liabilities, the Company considers a number of factors, including historical claims experience, demographic factors, and valuations provided by independent third-parties. Periodically, management reviews its assumptions and the valuations provided by independent third-parties to determine the adequacy of the Company's self-insured liabilities.

Impact of Recently Issued Accounting Standards: On July 13, 2006, the Financial Accounting Standards Board ("FASB") issued FASB Interpretation No. 48, "Accounting for Uncertainty in Income Taxes—an Interpretation of FASB Statement No. 109" ("FIN 48"). This interpretation prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. This interpretation also provides guidance on derecognition, classification, interest and penalties, accounting in interim periods, disclosure, and transition. The new interpretation will be effective for fiscal years beginning after December 15, 2006. The Company will adopt this interpretation on January 1, 2007. Although the Company has not completed its evaluation, the adoption of FIN 48 is not expected to have a material impact on the Company's consolidated financial position, results of operations, or cash flows.

On September 15, 2006, the FASB issued SFAS No. 157 ("SFAS No. 157"), "Fair Value Measurements" which defines fair value, establishes guidelines for measuring fair value, and expands disclosures regarding fair value measurements. SFAS No. 157 does not require any new fair value measurements but rather eliminates inconsistencies in guidance found in various prior accounting pronouncements. SFAS No. 157 is effective for fiscal years beginning after November 15, 2007. The Company is currently evaluating the impact of SFAS No. 157, but does not expect that the adoption of SFAS No. 157 will have a material impact on the Company's consolidated financial position, results of operations, or cash flows.

The Company adopted SFAS No. 158 ("SFAS No. 158"), "Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans" as of December 31, 2006, as required. This standard amends FASB Statements No. 87, 88, 106 and 132(R) and requires an employer to recognize the overfunded or underfunded status of a defined benefit postretirement plan (other than a multiemployer plan) as an asset or liability in its statement of financial position and to recognize changes in that funded status in the year in which the changes occur through comprehensive income. The pension asset or liability is the difference between the plan assets at fair value and the projected benefit obligation as of year end. For other postretirement benefit plans, the asset or liability is the difference between the plan assets at fair value and the accumulated postretirement benefit obligation as of year end. Note 9 provides additional information about the impact resulting from the adoption of SFAS No. 158.

In September 2006, the SEC issued Staff Accounting Bulletin No. 108, "Considering the Effects of Prior Year Misstatements when Quantifying Misstatements in Current Year Financial Statements" ("SAB 108"). SAB 108 provides guidance on the consideration of the effects of prior year misstatements in quantifying current year misstatements for the purpose of a materiality assessment. SAB 108 establishes an approach that requires quantification of financial statement errors based on the effects of each of the Company's balance sheets and statements of operations and the related financial statement disclosures. The Company adopted SAB 108 as of December 31, 2006. The adoption of SAB 108 did not have a material impact on the Company's consolidated financial position, results of operations, or cash flows.

Rounding: Amounts in the Consolidated Financial Statements and Notes are rounded to millions, but per-share calculations and percentages were determined based on un-rounded amounts. Accordingly, a recalculation of some per-share amounts and percentages, if based on the reported data, may be slightly different.

2. DISCONTINUED OPERATIONS

During 2006, the sales of two retail centers in Phoenix, Arizona, for approximately \$36 million, an office building on Maui, for approximately \$16 million, a retail center in Kahului-Kona on the island of Hawaii for approximately \$27 million, and several commercial parcels in Hawaii were included in discontinued operations.

During 2005, the sales of two office buildings in Honolulu for \$26 million, one warehouse/distribution complex in Ontario, California, for \$18 million, one service center/warehouse complex, consisting of three buildings in San Antonio, Texas, for \$6 million, and the fee interest in a parcel in Maui were considered discontinued operations. Additionally, the revenue and expenses of an office building in Waihaku, Maui and three parcels on Maui had been classified as discontinued operations even though the Company had not sold the properties by the end of 2005. The three parcels were sold in January 2006 and the office building in Maui was sold in March 2006.

During 2004, the sale of a Maui property was classified as a discontinued operation. In addition, two office and one light industrial property met the criteria for classification as discontinued operations even though the Company had not sold the property by the end of 2004. Two of these properties were sold in January 2005.

The revenue, operating profit, income tax expense and after-tax effects of these transactions for the three years ended December 31, 2006, were as follows (in millions, except per share amounts):

	2006	2005	2004
Sales Revenue	\$ 90	\$ 50	\$ 1
Leasing Revenue	\$ 4	\$ 10	\$ 12
Sales Operating Profit	\$ 40	\$ 14	\$ 2
Leasing Operating Profit	\$ 3	\$ 5	\$ 4
Income tax expense	\$ 17	\$ 7	\$ 2
Income from Discontinued Operations	\$ 26	\$ 12	\$ 4
Basic Earnings Per Share	\$ 0.62	\$ 0.26	\$ 0.10
Diluted Earnings Per Share	\$ 0.61	\$ 0.26	\$ 0.09

The results of operations from these properties in prior years were reclassified from continuing operations to discontinued operations to conform to the current year's accounting treatment. Consistent with the Company's intention to reinvest the sales proceeds into new investment property, the proceeds from the sales of property treated as discontinued operations were deposited in escrow accounts for tax-deferred reinvestment in accordance with Section 1031 of the Internal Revenue Code.

3. IMPAIRMENT AND DISPOSAL OF INVESTMENTS

Through August 8, 2005, the Company held common and preferred stock holdings in C&H Sugar Company Inc. ("C&H"). During the second quarter of 2005, the Company recorded a \$2 million loss in connection with the ultimate disposition of the investment in C&H in August 2005. The impairment charges were recorded as a separate line item in Operating Costs and Expenses in the Consolidated Statements of Income.

4. INVESTMENTS IN AFFILIATES

At December 31, 2006 and 2005, investments consisted principally of equity in limited liability companies, each of which was accounted for following the equity method of accounting because either: (i) the entity was not within the scope of FASB Interpretation No. 46 (revised December 2005) "Consolidation of Variable Interest Entities" ("FIN 46K"), as amended, (ii) the entity was not determined to be a variable interest entity ("VIE"), or (iii)

the Company was not determined to be the primary beneficiary. These investments are summarized, by industry, as follows (in millions):

	2006	2005
Equity in Affiliated Companies:		
Real Estate	\$ 99	\$ 114
Transportation	50	40
Total Investments	\$ 149	\$ 154

Operating results include the Company's proportionate share of income (loss) from its equity method investments. A summary of financial information for the Company's equity method investments by industry is as follows (in millions):

	December 31, 2006		December 31, 2005	
	Real Estate	Transportation	Real Estate	Transportation
Current assets	\$ 93	\$ 56	\$ 309	\$ 58
Noncurrent assets	235	123	128	81
Total assets	\$ 328	\$ 179	\$ 437	\$ 139
Current liabilities	\$ 86	\$ 46	\$ 245	\$ 36
Noncurrent liabilities	43	5	14	3
Total liabilities	\$ 129	\$ 51	\$ 259	\$ 39

	Year Ended December 31,		2004	
	2006	2005	2006	2005
Real Estate:				
Operating revenue	\$ 311	\$ 8	\$ 6	\$ 6
Operating costs and expenses	248	1	4	4
Operating income	\$ 63	\$ 7	\$ 2	\$ 2
Transportation:				
Operating revenue	\$ 501	\$ 486	\$ 384	\$ 371
Operating costs and expenses	477	449	371	313
Operating income	\$ 24	\$ 37	\$ 13	\$ 13

In addition to the investments described above, the Company formerly held ownership interests in C&H (that was sold in August 2005) and Sea Star Line, LLC ("Sea Star") (that was sold in August 2004). Prior to the sale of C&H, the Company recorded, in 2005, a loss of \$2 million to write down the investment to the value expected to be received upon its ultimate disposition. Matson's sale of its 19.5 percent investment in Sea Star for approximately \$7 million resulted in a gain of approximately \$1 million in 2004.

Real Estate: In 2006, the Company and its real estate subsidiaries had investments in ten joint ventures that operate and/or develop real estate. The Company does not have a controlling financial interest, as interpreted under FIN 46R, in any of these ventures and, accordingly, accounts for its investments in the real estate ventures using the equity method of accounting. A summary of the Company's principal investments is as follows:

A) Bakersfield: In November 2006, AEB entered into a joint venture with Intertex P&O Retail, LLC, for the development of a 600,000 square-foot retail center on a 57.3-acre commercial parcel in Bakersfield, California. The parcel was acquired in November 2006. The Company has a 50 percent voting interest in the venture.

- B) **Bridgeport Marketplace:** In July 2005, A&B entered into a joint venture with Intertex Bridgeport Marketplace, LLC and, in October 2005, the venture acquired 27.8 acres in Valencia, California. The final subdivision plan was recorded and includes the subdivision of the site to create a 5-acre parcel for dedication as a public park, a 7.3-acre parcel for sale to a church, and a 15.5-acre parcel for the development of a 126,600 square-foot retail center. The Company has a 50 percent voting interest in the venture.
- C) **Centre Pointe Marketplace:** In April 2005, A&B entered into a joint venture with Intertex Centre Pointe Marketplace, LLC, and in April 2005, the venture acquired a 10.2-acre parcel for the planned development of a 104,700-square-foot retail center in Valencia, California. The Company has a 50 percent voting interest in the venture.
- D) **Crossroads Plaza:** In June 2004, A&B entered into a joint venture with Intertex Hasley, LLC, for the planned development of a 60,000-square-foot mixed-use neighborhood retail center on 6.5 acres of commercial-zoned land in Valencia, California. The property was acquired in August 2004. The Company has a 50 percent voting interest in the venture.
- E) **Hokoa:** In July 2003, the Company entered into a joint venture with MK Management LLC, for the development of "Hokoa at 1288 Ala Moana" ("Hokoa"), a 40-story, 247-unit luxury residential condominium in Honolulu. The Company's original investment in the venture was \$40 million. The 247 units closed in January 2006, resulting in the repayment of the Company's original investment and its income on its investment. The Company has a 50 percent voting interest in the venture.
- F) **Kai Maui at Wailea:** In April 2004, A&B entered into a joint venture with Armstrong Builders, Ltd. for development of a 150-unit duplex project on a 25-acre parcel in Wailea. Closings commenced in the fourth quarter of 2006 and are expected to be completed in 2008. The Company has a 50 percent voting interest in the venture.
- G) **Ka Miihi at Mauna Lani:** In April 2004, the Company entered into a joint venture with Brookfield Homes Hawaii, Inc., NYSE:BHS, ("Brookfield") to develop a 30.5-acre residential parcel in the Mauna Lani Resort on the island of Hawaii. In May 2004, the property was acquired by the venture, and is planned for 37 single-family units and 100 duplex town-homes. The Company has a 50 percent voting interest in the venture.
- H) **Kukui'ula:** Kukui'ula is a 1,000-acre master planned resort residential community in Poipu, Kauai. In April 2002, an agreement was signed with an affiliate of DMB Associates, Inc., an Arizona-based developer of master planned communities, for the development of Kukui'ula, which is planned to consist of approximately 1,200 high-end residential units. The Company has a 50 percent voting interest in the venture.
- I) **Rye Canyon:** In October 2004, the Company entered into a joint venture with Intertex Properties, LLC for the development of an office building on 5.4 acres of commercial-zoned land in Valencia, California. The property was acquired in 2004. Subsequently, the venture decided to sell the land for \$4 million. The sale closed in January 2006.
- J) **Waiawa:** In August 2006, the Company entered into a joint venture with an affiliate of Gentry Investment Properties (Waiawa Development LLC) for the master development of 530 residential acres in Central Oahu. The Company has a 50 percent voting interest in the venture.

Transportation: Matson, a wholly owned subsidiary of the Company, owns a 35 percent membership interest in an LLC with SSA Marine Inc., named SSA Terminals, LLC ("SSAT"), which provides stevedoring and terminal services at five terminals in three West Coast ports to the Company and other shipping lines. Matson accounts for its interest in SSAT under the equity method of accounting. The "Cost of transportation services" included approximately \$146 million, \$137 million, and \$130 million for 2006, 2005, and 2004, respectively, paid to this unconsolidated affiliate for terminal services.

The Company's equity in earnings or (loss) of unconsolidated transportation affiliates of \$13 million, \$17 million and \$6 million for 2006, 2005, and 2004, respectively, was included on the consolidated income statements

with costs of transportation services because the affiliates are integrally related to the Company's ocean transportation operations since SSAT provides all terminal services to Matson for the U.S. West Coast and Sea Star was formed, in part, to charter vessels from the Company.

5. PROPERTY

Property on the Consolidated Balance Sheets includes the following (in millions):

	2006	2005
Vessels	\$ 1,145	\$ 1,000
Machinery and equipment	572	517
Buildings	412	359
Land	156	158
Water, power and sewer systems	105	102
Other property improvements	95	86
Total	2,485	2,222
Less accumulated depreciation and amortization	986	953
Property - net	<u>\$ 1,499</u>	<u>\$ 1,269</u>

6. CAPITAL CONSTRUCTION FUND

Matson is party to an agreement with the United States government that established a Capital Construction Fund ("CCF") under provisions of the Merchant Marine Act, 1936, as amended. The agreement has program objectives for the acquisition, construction, or reconstruction of vessels and for repayment of existing vessel indebtedness. Deposits to the CCF are limited by certain applicable earnings. Such deposits are tax deductions in the year made; however, they are taxable, with interest payable from the year of deposit, if withdrawn for general corporate purposes or other non-qualified purposes, or upon termination of the agreement. Qualified withdrawals for investment in vessels and certain related equipment do not give rise to a current tax liability, but reduce the depreciable bases of the vessels or other assets for income tax purposes.

Amounts deposited into the CCF are a preference item for calculating federal alternative minimum taxable income. Deposits not committed for qualified purposes within 25 years from the date of deposit will be treated as non-qualified withdrawals over the subsequent five years. As of December 31, 2006, the oldest CCF deposits date from 2006. Management believes that all amounts on deposit in the CCF at the end of 2006 will be used or committed for qualified purposes prior to the expiration of the applicable 25-year periods.

Under the terms of the CCF agreement, Matson may designate certain qualified earnings as "accrued deposits" or may designate, as obligations of the CCF, qualified withdrawals to reimburse qualified expenditures initially made with operating funds. Such accrued deposits to, and withdrawals from, the CCF are reflected on the Consolidated Balance Sheets either as obligations of the Company's current assets or as receivables from the CCF.

The Company has classified its investments in the CCF as "held-to-maturity" and, accordingly, has not reflected temporary unrealized market gains and losses on the Consolidated Balance Sheets or Consolidated Statements of Income. The long-term nature of the CCF program supports the Company's intention to hold these investments to maturity.

At December 31, 2006 and 2005, the balances on deposit in the CCF are summarized as follows (in millions):

	2006		2005	
	Amortized Cost	Fair Value	Amortized Cost	Fair Value
Mortgage-backed securities	\$ 1	\$ 1	\$ 1	\$ 1
Cash and cash equivalents	--	--	93	93
Accrued (withdrawals) deposits, net	--	--	(1)	(1)
Total	\$ 1	\$ 1	\$ 92	\$ 92

Fair value of the mortgage-backed securities was determined based on identical or substantially similar security values. No central exchange exists for these securities; they are traded over-the-counter. The Company earned \$0.1 million in 2006, \$0.1 million in 2005, and \$0.4 million in 2004, on its investments in mortgage-backed securities. The fair values of the cash and cash equivalents, comprised principally of commercial paper and money market funds, are based on quoted market prices.

7. NOTES PAYABLE AND LONG-TERM DEBT

At December 31, 2006 and 2005, notes payable and long-term debt consisted of the following (in millions):

	2006	2005
	\$ 27	\$ --
Revolving Credit loans, 5.58%		
Title XI Bonds		
3.27%, payable through 2029	51	53
5.34%, payable through 2028	48	51
Term Loans:		
4.79%, payable through 2020	95	102
6.00%, payable through 2015	70	--
5.53%, payable through 2016	50	--
4.10%, payable through 2012	35	35
7.55%, payable through 2009	15	15
7.42%, payable through 2010	11	14
4.31%, payable through 2010	11	13
6.20%, payable through 2013	11	11
7.44%, payable through 2007	7	15
7.57%, payable through 2009	6	8
7.43%, payable through 2007	5	10
Total	442	327
Less current portion	41	31
Long-term debt	\$ 401	\$ 296

Long-term Debt Maturities: At December 31, 2006, maturities of all long-term debt during the next five years and thereafter are \$41 million in 2007, \$32 million in 2008 and 2009, \$31 million in 2010, \$35 million in 2011, and \$271 million thereafter.

Revolving Credit Facilities: The Company has two revolving senior credit facilities with six commercial banks that expire in December 2011. The revolving credit facilities provide for an aggregate commitment of \$325 million, which consists of a \$225 million and \$100 million facility for A&B and Mason, respectively. Amounts drawn under the facilities bear interest at London Interbank Offered Rate ("LIBOR") plus 0.25 percent, provided the Company maintains an S&P/Moody's rating of A-/A3 or better. The agreement contains certain restrictive covenants, the most significant of which requires the maintenance of minimum shareholders' equity levels, minimum property investment values, and a maximum ratio of debt to earnings before interest, depreciation, amortization, and taxes. At December 31, 2006, \$27 million was outstanding, \$20 million in letters of credit had been issued against the facility, and \$279 million remained available for borrowing. As of December 31, 2006,

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Iao Groundwater Management Area
High-Level Source Water Use
Permit Applications and Petition to Amend
Interim Instream Flow Standards of Waiehe,
Waiehu, Iao & Waikapu Streams
Contested Case Hearing

Case No. CCH-MA-06-01

DECLARATION OF
RICK W. VOLNER, JR.

DECLARATION OF RICK W. VOLNER, JR.

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

1. I am currently employed by Hawaiian Commercial & Sugar ("HC&S") as its Senior-Vice President of Agricultural Operations. I was born and raised in Maui, Hawai'i. I attended the University of Hawai'i at Manoa, where I obtained a B.S. in Mechanical Engineering in 1997. Upon graduation I returned to Maui to work for HC&S as an Agricultural Engineer. I have worked in various supervisory positions including wastewater operations manager, Lowrie and Maalea Farm Manager, and Vice President of Farming Operations. I assumed my current position at HC&S in 2005.

2. As HC&S' Senior-Vice President of Agricultural Operations, it is my responsibility to monitor and coordinate HC&S' use of water delivered through the West Maui irrigation system for application to HC&S' sugar fields in West Maui. This entails monitoring the available surface water being delivered to HC&S on a daily basis from the West Maui irrigation system and deciding if it is necessary to supplement the surface water being received with groundwater pumped by HC&S' pumps.

3. Approximately 5,300 acres of HC&S' sugar plantation is located in West Maui (the "West Maui Fields"). Approximately 3,950 acres of the West Maui Fields are located in

13.21-1

Waiehe'e-Hopoi and are owned by HC&S (the "Waiehe'e-Hopoi Fields"). The balance of 1,350 acres are located in 'Iao-Waikapu, and, except for HC&S Field 920, are leased from a private landowner on lands, formerly used by C. Brewer and its successor entities ("Brewer") (the "'Iao-Waikapu Fields").

4. Approximately 1,500 acres of the West Maui Fields are used to grow seed cane.

5. Exhibit "E-1" is a map showing each field in the HC&S sugar cane plantation and the ditch source from which water is taken to irrigate the field.

6. All of the West Maui Fields are irrigated by water from the West Maui watershed. HC&S primarily uses water from the ditch system that collects water from Na Wai 'Eha streams as more specifically described in the written testimony of Garret Hew. The only other water source that HC&S has for the West Maui Fields is HC&S Well No. 7, which is the only one of the sixteen wells on the plantation that is situated so as to be able to introduce water into HC&S' internal ditch system and direct it by gravity flow to the West Maui Fields. Water from Well No. 7 can be used to irrigate most, but not all, of the Waiehe'e-Hopoi Fields. It cannot, however, be used to irrigate Field No 715. Well No. 7 also cannot be used to irrigate any of the 'Iao-Waikapu Fields which, as explained in the written testimony of Garret Hew, are located at an elevation above Waiale Reservoir and HC&S' internal ditch system that services the West Maui Fields.

7. HC&S has minimized the use of Well No. 7 ever since Brewer went out of the sugar business and the Waiehe and Spreckels Ditch flows previously used by Brewer to irrigate its cane fields were allowed to flow uninterrupted into Waiale Reservoir 24 hours a day rather than being substantially reduced during the day as explained in the written testimony of Garret Hew was previously the case under the sharing arrangement between HC&S and Brewer. This is one of the reasons that HC&S has been able to viably operate in recent years because, as

13.21-2

explained further below, it has enabled HC&S to prioritize the expenditure of its fixed supply of electric power to run the pumps on its other wells on the Eastern side of the plantation to irrigate fields that suffer greater deficits of available surface water than is currently the case with the West Maui Fields.

8. Sugar cane has a two-year crop cycle. The sugar cane plant requires water throughout the crop cycle but during the last six months before harvesting, the amount of water applied to the plant is purposely reduced to induce the plant to accumulate sucrose. To facilitate the entry of machinery into the fields for harvesting, the fields are usually not irrigated at all approximately 40-60 days before harvest.

9. The irrigation needs of the West Maui Fields are determined by the daily evapo-transpiration rate, which is defined as the loss of water from the soil both by evaporation and by transpiration from the plants growing in the soil, and varies during the year depending on weather conditions, solar insolation, temperatures, humidity, and wind speed. In order to maintain sugar yields, the sum of available rainfall plus irrigation water applied to the fields must approach the evapo-transpiration rate to promote efficient growth. The evapo-transpiration rate tends to be the highest during the months of May through September, which are the peak growing, planting and harvesting periods for the plantation. Adequately meeting evapo-transpiration rates is directly correlated with crop yield potential.

10. In order to maintain yields that allow sugar cultivation to be economically viable, HC&S constantly monitors, conserves and carefully prioritizes the manner in which available water is applied to its sugar fields. To that end, HC&S employs the following water management practices:

A. In 1986, HC&S installed a drip irrigation system in its fields at a total cost

of approximately \$30 million. Irrigating fields with drip tubes reduces water loss due to evaporation and helps ensure that water applied to a field is actually delivered to the sugar cane plant. Under drip irrigation, it is assumed that 80% of the water applied is delivered to the sugar cane plant.

B. Because HC&S does not have the capacity to irrigate all of its fields simultaneously, irrigation water that is available is applied in "rounds" to different fields in accordance with priorities that are assigned to them by the farm managers. The highest priority is given to fields that are being planted, the second priority is given to fields that are ripening, and the third priority is given to all other fields (routine irrigation).

C. Before ditch water is applied to the fields, it is filtered through sand filters stations to ensure that leaves, dirt, trash, and other debris in the water do not enter the drip irrigation system. Occasionally, the sand filters need to be "back flushed" with water to remove collected debris. HC&S reuses the discharged back flush water for irrigation either by returning it to irrigation ditches, or applying it to cultivated fields through perforated plastic pipes.

11. HC&S irrigates all of the Waiale'e-Hopoi Fields with water from the Waiale Reservoir (also known as Reservoir #73). Waiale Reservoir receives water from the Spreckels Ditch and the Waiale'e Ditch at Hopoi. Water from the Waiale Reservoir is delivered via open ditches and pipes to sand filter stations for removal of impurities and then applied to the fields through drip tubes.

12. HC&S tries to maintain the water level in Waiale Reservoir at a relatively constant level of approximately 12 feet, or 36 million gallons ("mg"). This level is desirable because it is not too close to the point where a sudden rain event would cause the reservoir to overflow, but stores a reasonable amount of water to act as a buffer for days when the ditch

flows are low. HC&S tries to avoid letting the level drop below 9 feet, or 20 mg, because when the level is low, there is a greater risk of silt entering the irrigation system and clogging the sand filters and irrigation tubes. Irrigation volume is therefore set, as much as possible to match outflows to inflows on a daily basis, adjusting for seepage and system losses, as discussed further below.

13. HC&S aggressively manages its irrigation practices to be as efficient as possible with the available water. To illustrate this, I have reviewed HC&S records and compiled an estimate of what HC&S' average water usage has been in gallons per acre per day ("gad") for the West Maui Fields for the last three calendar years, 2004, 2005 and 2006. These three years were chosen because this is the most current data that reflects HC&S' usage. Data from 2003 is unfortunately not available because some of the computer records for that year were lost. Going back any earlier would not be reliable because, due to personnel changes and the ongoing refinement of HC&S' water management practices, earlier years would not be representative of HC&S current water usage.

14. Exhibit E-5 is a spreadsheet that depicts the information drawn from HC&S' records to perform this exercise for the Waie'e-Hopoi Fields. The acres irrigated have been calculated to exclude a little over 100 acres that are leased to a third party lessee for the growing of corn.

15. The average gad for the Waie'e-Hopoi Fields for these three years is 6,828. On an average daily basis, this compares well with the historical daily requirement of 6,826 gad. While there are periods of time when the irrigation requirement is fully satisfied, the fields are typically at a substantial moisture deficit during the summer months, when solar radiation is greater and ditch flows are low.

16. Discrepancies in delivery and usage numbers can be explained by evaporation, seepage, and delivery of water to other users. Seepage estimates for HC&S' Waiale reservoir are 6-8 mgd depending on level. Estimates for seepage throughout the rest of the HC&S ditch and reservoir system is 3-4 mgd. As noted above, HC&S also provides water to a third party lessee on a little over 100 acres that is excluded from acreage calculation. Daily usage of 1-2 mgd is estimated for this use.

17. Exhibit E-6 is a spreadsheet that depicts the information drawn from HC&S' records to perform a similar exercise for the 'Iao-Waikapu Fields. The water usage is calculated from HC&S records by multiplying the flow rates in the drip irrigation system by the hours of operation. There is no significant issue of system losses other than the assumed 80% delivery rate to the plants inherent in the drip system, since the water for these fields is delivered by WWC directly to the fields rather than going through Waiale Reservoir and HC&S' internal ditch system.

18. The average gad for the 'Iao-Waikapu Fields for 2004-2006 is 7,716. This number is skewed somewhat, however, by the inclusion of Field 920, which has very sandy soil and has consumed more water than the other fields because of its porosity and also because of its use for seed cane.

19. Exhibit E-7 is a spreadsheet that depicts the same information as E-6 but excluding Field 920. After excluding Field 920, the average gad for the three years is 7,098. HC&S is able to satisfy the irrigation requirement for these fields more consistently because the available water for these fields per acre is greater than it is for the Waie'e-Hopoi Fields. As a result, these are among the highest yielding fields on the plantation.

20. HC&S cannot rely on pumped groundwater from Well No. 7 to compensate for

significant reductions in delivery of Na Wai 'Eha stream water because HC&S does not have adequate electrical power to run the pumps for Well No. 7 on a consistent and sustained basis. HC&S has a fixed amount of energy available, and it cannot supplement its energy supply simply by purchasing more. Sustained pumping of Well No. 7 will also result in increased salinity of the underlying aquifer over time, which negatively affects sugar yields.

A. HC&S generates its power principally through a combination of the burning of bagasse and other supplemental fuels in its power plant and the operation of its hydro power turbines on its ditch system, which are supplied by East Maui water. The total power generation capacity of HC&S' combined system is 36 megawatts ("MW") during cane grinding periods (30 MW from steam and 6 MW from hydro).

B. HC&S has a firm power contract with Maui Electric Company ("MECO") pursuant to which HC&S is obligated to supply to MECO 12 MW of power from 7:00 a.m. to 9:00 p.m. daily except Sunday and 8 MW at all other times, subject to events of force majeure. The contract provides for monetary penalties in the event these requirements are not met.

C. The 30 MW total capacity of the steam-powered system combined with HC&S' internal power consumption and obligations to supply power to MECO are limiting conditions on HC&S' ability to pump groundwater during dry periods when the hydro units may not be operating.

21. If HC&S were to utilize its pumps at Well No. 7 to compensate for diminished flows to the Waiale Reservoir, it would have to reduce power consumption somewhere else on the plantation, principally by reducing the pumping from its other wells that are used to supplement water delivered from the East Maui irrigation system. In that scenario, HC&S would likely use water pumped at Well No. 7 to irrigate the West Maui Fields within the reach of water

from Well No. 7 that historically have high yields and fields prioritized for use in cultivating seed cane. Correspondingly, due to power limitations, HC&S would pump less water in the East Maui portion of the plantation.

22. Pumping less water in East Maui would result in the marginalization of yields. If the deficit between the ideal level of irrigation water needed to maximize sugar yields and the amount of irrigation water available becomes too great and continues for too long, fields will be deprived of moisture replacement to the point where not only will yields suffer, but crops may be lost and fields ultimately withdrawn from cultivation.

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

DATED: Pouapea, Maui, ~~September~~ 14, 2007.


RICK W. VOLNER, JR.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

‘Iao Groundwater Management Area
High-Level Source Water Use
Permit Applications and Petition to Amend
Interim Instream Flow Standards of Waiahe‘e,
Waiehu, ‘Iao & Waikapu Streams
Contested Case Hearing

Case No. CCH-MA06-01

DECLARATION OF
RICK W. VOLNER, JR.

DECLARATION OF RICK W. VOLNER, JR.

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

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

2. I have reviewed the written testimony of Dr. Delwyn Oki of the U.S. Geological Society ("USGS") with respect to proposed releases of water into Waiahe‘e, ‘Iao, and Waiehu streams. Dr. Oki proposes that releases be made in three stages, each stage requiring release of a greater flow than the last, and each stage lasting a month or a total of three months of releases for each of the streams.

3. I have also reviewed the written testimony of Dr. M. Eric Benbow regarding his proposal for controlled releases. Dr. Benbow proposes that the releases recommended by USGS be sustained for up to three months for each stage, for a total of up to nine months to a year, and once the release reaches the last stage, that the release be sustained for at least five years. Dr. Benbow also recommends that 75 percent of the annual median flow of all Na Wai ‘Eha streams be restored indefinitely.

4. The releases proposed by USGS and Dr. Benbow would significantly and adversely impact HC&S' operations, although the impacts are difficult to quantify with

precision. Any attempt to generalize the effects of the releases must be qualified with the understanding that HC&S' water management decisions are based on conditions and circumstances that change from day to day, such as soil moisture levels, rainfall, solar radiation, and available power. It also cannot be assumed that constant controlled releases of the precise quantities and durations proposed by USGS are physically possible. Garret Hew explains these limitations in his testimony. With these limitations in mind, below are some of the impacts of the proposed releases.

5. HC&S is limited in its ability to replace irrigation water it would lose if the proposed controlled releases are put into effect. The only existing means HC&S has of providing alternative irrigation to the West Maui Fields is by pumping up to 14 mgd of brackish water from HC&S Well No. 7. This water can reach all of the Waie'e-Hopoi Fields except for Field No. 715, which is approximately 175 acres.

6. Brackish groundwater is not as suitable as ditch water for irrigating sugar cane due to its salinity, which hinders the cane plant's ability to store sucrose. Sustained pumping can, over time, increase the salinity of the pumped water which, in turn, will diminish the yields of fields irrigated with brackish water.

7. HC&S' ability to generate the additional electrical power needed to run the pumps for Well No. 7 is another limiting factor. As mentioned in my previously submitted written testimony, HC&S has a firm power contract with Maui Electric Company ("MECO") pursuant to which HC&S is obligated to supply to MECO 12 megawatts (MW) of power from 7:00 a.m. to 9:00 p.m. daily except Sunday and 8 MW at all other times, subject to events of force majeure. HC&S frequently operates at its maximum power generation capacity in order to fulfill its power contract to MECO, and run its mill and other facilities, including the pumps for its 15 other wells

and its filter stations. This is especially true during the months of June through September when the other wells are relied upon heavily to compensate for low ditch flows from East Maui and high evapo-transpiration rates, but these conditions also occur at other times throughout the year depending upon weather conditions. HC&S thus lacks the power generation capacity to generate additional power to run the pumps at Well No. 7 for much of the year unless it reduces pumping for the East Maui Fields, which would adversely affect the yields of those fields.

8. HC&S generates electricity principally by burning the bagasse that is a byproduct of its mill operation. When bagasse is unavailable, such as when harvesting is suspended due to weather conditions or during the approximately three month annual shutdown of mill operations each winter, HC&S burns fossil fuel to generate the necessary power to run its operations and fulfill its obligation to deliver power to MECO. Thus, during certain periods of the year, and particularly during the winter months, HC&S must incur the additional cost of purchasing fossil fuel to generate power.

9. HC&S also generates electricity by operating hydro power turbines on its ditch system in East Maui. Low ditch flows in East Maui will limit the amount of power that HC&S can generate.

10. HC&S' capacity to generate electricity is further limited when certain components of its power system, such as generators and boilers, are taken offline for maintenance and/or repair, which commonly occurs during the annual winter shutdown of the mill.

11. In light of the constraints on HC&S' power generation capacity, running the pumps at Well No. 7 for a sustained period of time will negatively impact HC&S' operations. For example, during a winter month, HC&S may have the capacity to generate additional power to run Well No. 7, but it will be required to incur the cost of burning fossil fuel to do so. The

cost to generate the 0.5 MW needed to run Well No. 7 is approximately \$1,700 to \$3,300 a day. When the additional power generation is not possible, there will have to be a net reduction in irrigation water applied elsewhere on the plantation at the cost of reduced sugar yields when those fields are later harvested.

12. With the above observations in mind, I will discuss some of the impacts corresponding to each stage of the controlled releases recommended by USGS and Dr. Benbow. Because HC&S is the largest user and the last user in the system for most of the water at issue, I will assume that each release will reduce the amounts delivered to HC&S in a corresponding amount, understanding that this approach could use some further refinement based on possible adjustments in deliveries to other users and system losses. For each stream, I will discuss the impacts at each stage of release, first assuming that the flow rate in that stage is sustained for 30 days, and then assuming that the flow rate is sustained indefinitely. Because the latter scenario has a long time horizon, I will consider the cumulative impacts of the releases and the County of Maui's and A&B's plans to build and operate the Waiale Water Treatment Plant. The Waiale Water Treatment Plant is designed to have a sustained capacity of approximately 9 mgd, utilizing water supplied from the West Maui Ditch system and treating it to potable quality for municipal uses, distributed through the County's Central Maui system.

Waiahe'e Stream

A. USGS 10 mgd

13. In Stage 1 of the releases into Waiahe'e Stream, USGS proposes to release 10 mgd into the stream for a period of 30 days beginning in January 2008. It should be noted that the mill is shut down during January, which means that there is no bagasse to burn and there is an

increased possibility of HC&S' power generation capacity being reduced while the three boilers are taken offline, in rotation, for preventative maintenance. Assuming HC&S has sufficient power capacity to operate the pumps at Well No. 7 during the release period, HC&S can compensate for the loss of 10 mgd by pumping water at Well No. 7 at a cost of \$1,700 to \$3,300 per day for fossil fuels. Field No. 715 cannot be serviced with pumped water without added infrastructure and would remain unirrigated, which will affect cane growth during that month with some likely impact on the yield when Field No. 715 is ultimately harvested. Since Field No. 715 will be planted in December of 2007, being unable to irrigate it while it is germinating and developing roots will be detrimental to crop establishment and possibly result in loss of the entire crop.

14. If a release of 10 mgd is sustained indefinitely, then the cumulative long-term impact would be a total reduction of 19 mgd in water deliveries to HC&S when the 9 mgd maximum capacity of the proposed Waiale Water Treatment Plant for the County of Maui (which contemplates Waiahe'e Stream water taken from the Waiahe'e Ditch as its source) is taken into consideration. A loss of 19 mgd is 5 mgd in excess of the maximum amount of irrigation groundwater that can be pumped from Well No. 7 as presently configured. Thus, depending upon the time of year, HC&S would experience combined impacts of additional pumping costs and lower yields due to lack of sufficient irrigation water.

B. USGS 17 mgd

15. In Stage 2 of the releases into Waiahe'e Stream, USGS proposes to release 17 mgd into the stream for a period of 30 days beginning in February 2008. This release exceeds the amount of water that can be pumped to Well No. 7 by 3 mgd. HC&S would incur the cost of running the pumps at Well No. 7 and experience lower yields due to lack of sufficient irrigation

water.

16. If a release of 17 mgd is sustained indefinitely, the impacts would be the same as the initial release, except that the cumulative impact of the release and the Waiale Water Treatment Plant would be a long-term total reduction of water deliveries to HC&S of 26 mgd.

C. USGS 30 mgd

17. In Stage 3 of the releases into Waie'e Stream, USGS proposes to release 30 mgd into the stream for a period of 30 days beginning in March 2008. This release exceeds the amount of water that can be pumped to Well No. 7 by 16 mgd. As illustrated in Exhibits E-10 and E-11 prepared by Garret Hew and discussed in his testimony, the release amount also exceeds the amount of water that HC&S typically receives from Waie'e Stream. HC&S would incur the cost of running the pumps at Well No. 7 and experience lower yields due to lack of sufficient irrigation water.

18. If a release of 30 mgd is sustained indefinitely, the impacts would be the same as the initial release, except that the cumulative impact of the release and the eventual construction of the proposed Waiale Water Treatment Plant would be a long-term total reduction of water deliveries to HC&S of 39 mgd, assuming there is that much water in the stream. On most days, the total flow of Waie'e Stream is below 39 mgd. Thus, a sustained release of 30 mgd probably would also not leave enough water available for the County of Maui to operate the proposed Waiale Water Treatment Plant.

D. Bombow 75% of Annual Median Flow.

19. Assuming that 75 percent of the annual median flow of Waie'e Stream equals a continuous flow of 25 mgd, the impacts of such a release would be very similar to those of a sustained release in Stage 3.

Wao Stream

A. USGS 9.5 mgd

20. In Stage 1 of the releases into Wao Stream, USGS proposes to release 9.5 mgd into the stream for a period of 30 days beginning in July 2008. A release of 9.5 mgd exceeds the amount that Wao Stream typically contributes to the Waiale Reservoir. If this were the only release for July 2008, the reduction in deliveries could be compensated with water from Well No. 7 with respect to the Waie'e-Hopoi Fields at the cost of not running other pumps in East Maui, and diminished sugar yields when those fields are later harvested. With respect to the Wao-Waikapu Fields (which includes Field No. 920), however, Wao Stream is the principal source of irrigation water. There is no alternative water source for these fields, and it is unclear how much water Waikapu Water Company would deliver to these fields if 9.5 mgd were required to be left in the stream.

21. If a release of 9.5 mgd is sustained indefinitely, the impacts would be the same as the initial release, except that the cumulative impact of the release and the Waiale Water Treatment Plant would be a long-term total reduction of water deliveries to HC&S by 18.5 mgd and a likely reduction in WWC deliveries to the Wao-Waikapu Fields. The long-term impact would be a combination of increased costs for pump operation and a reduction in revenues from diminished sugar yields.

B. USGS 16 mgd

22. In Stage 2 of the releases into Wao Stream, USGS proposes to release 16 mgd into the stream for a period of 30 days beginning in August 2008. This level of release far exceeds the amount that Wao Stream typically contributes to the Waiale Reservoir and would likely

prevent WWC from being able to deliver adequate irrigation water to the 'Iao-Waikapu Fields.

23. If a release of 16 mgd is sustained indefinitely, the impacts would be the same as the initial release, except that the cumulative impact of the release and the Waiale Water Treatment Plant would be a long-term total reduction of water deliveries to HC&S of up to 25 mgd. In addition, WWC would not be able to deliver adequate water for HC&S to continue to cultivate the 'Iao-Waikapu Fields, except those that could be adequately served with Waikapu Stream water.

C. USGS 22 mgd

24. In Stage 3 of the releases into 'Iao Stream, USGS proposes to release 22 mgd into the stream for a period of 30 days beginning in September 2008. This level of release far exceeds the amount that 'Iao Stream typically contributes to the Waiale Reservoir. There would not be enough water to adequately irrigate the 'Iao-Waikapu Fields.

25. If a release of 16 mgd is sustained indefinitely, the impacts would be the same as the initial release, except that the cumulative impact of the release and the Waiale Water Treatment Plant would be a long-term total reduction of water deliveries to HC&S of up to 31 mgd. There would not be enough water in 'Iao Stream to irrigate the 'Iao-Waikapu Fields.

D. Benbow 75% of Annual Median Flow

26. Assuming that 75 percent of the annual median flow of 'Iao Stream equals a continuous flow of 19 mgd, the impacts of such a release would be very similar to those of a sustained release in Stage 3.

South Waiehu Stream

27. Given the relatively small volumes of the releases proposed for South Waiehu

Stream, and the relatively smaller contribution that HC&S uses from this stream that from Waiehu's and 'Iao Streams, the impacts to HC&S from these controlled releases alone would be minimal. If they were to be aggregated with releases from the other streams either temporarily or indefinitely, they would add to the cumulative impacts discussed above.

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

DATED: Pouhene, Maui, October 26, 2007.


RICK W. VOLNER, JR.

COMMISSION ON WATER RESOURCE MANAGEMENT
STATE OF HAWAII

'Iao Groundwater Management Area
High-Level Source Water Use
Permit Applications and Petition to Amend
Interim Instream Flow Standards of Waiehe'e,
Waiehu, 'Iao & Waikapu Streams
Contested Case Hearing

Case No. CCH-MA06-01

DECLARATION OF
RICK W. VOLNER, JR.

DECLARATION OF RICK W. VOLNER, JR.

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

1. I am the Senior-Vice President of Agricultural Operations at Hawaiian Commercial & Sugar ("HC&S"). The following testimony is offered to respond to arguments that have been made to the effect that my earlier written testimony did not fully explain what the impacts to HC&S would be from increased pumping from Well No. 7 to replace water that is currently delivered to Waiale Reservoir from the West Maui Ditch System, and also to provide supporting data on the relationship between crop age and crop yields that is discussed in the rebuttal testimony being submitted by Steve Holaday.
2. As currently configured, the pumps and electrical system that serve Well No. 7 can only receive power generated internally by HC&S because there is no direct physical connection between any MECO power supply line and Well No. 7.
3. Further, without adding a new booster pump and constructing a new pipeline, Well No. 7 can only supply 14 MGD to the Waiehe Hopoi Fields, with the exception of Field 715.
4. If HC&S were to run Well No. 7, as presently configured, to pump 14 MGD of irrigation water for the Waiehe Hopoi Fields on days where internally generated power is

available, the minimum amount that this would cost HC&S would be the lost revenues from the sale to MECO of the 12 megawatt hours required to run Well No. 7 (24 hours @ .5 MW per hour), or approximately \$2400 per day.

5. To increase the capacity of Well No. 7 to serve the Waitee Hopoi Fields from 14 to 28 MGD, it would be necessary to install an additional booster pump and construct an additional distribution pipeline. HC&S has internally estimated the cost to accomplish this to be \$525,000.

6. If HC&S were to incur the capital cost for the additional booster pump and pipeline to pump this additional 14 MGD, on days where internally generated power is available, this would still cost HC&S a minimum of another \$2400 per day, for a total of \$4800 per day, in lost power revenues from MECO.

7. To enable Well No. 7 to irrigate Field No. 715, a new pipeline would have to be installed. Based on HC&S experience on similar projects, HC&S estimates that this would cost approximately \$475,000.

8. In order for HC&S to purchase the necessary power to run the pumps at Well No. 7 from MECO, it would be necessary to install a direct service connection between a MECO power supply line and Well No. 7. HC&S has investigated this with MECO, and has been advised that MECO will not provide direct service to the pumps at Well No. 7 unless HC&S upgrades its pumps and related electrical equipment to MECO's standards for servicing such equipment. Exhibit E-21 is a summary of HC&S' internal estimate of the cost of completing this work, which is \$777,650. This does not include the cost of \$1,000,000 previously discussed for adding the booster pump and pipelines to increase the capacity of Well No. 7

from 14 to 28 MGD and the additional pipeline needed to enable the pumped water to reach Field No. 715.

9. If HC&S were to expend the \$1,777,650 of capital required to both increase the capacity of Well No. 7 to 28 MGD, enable it to service Field No. 715 and upgrade HC&S' equipment to qualify for a direct service connection to MECO, it would still cost HC&S an additional \$310 per MWH, or \$7,440 per day, to run Well No. 7.

10. The foregoing estimates do not include any consideration of the effects on HC&S' costs or on its yields of potential increases to the salinity of the brackish water pumped from Well No. 7 if it is pumped heavily for sustained periods of time and ground water recharge from the use of fresh surface water from the West Maui Ditch System is correspondingly reduced.

11. With regard to the relationship between crop age and crop yields, Exhibit E-22 is a chart prepared from HC&S' records that illustrates the historic relationship between crop yields in tons of sugar per acre harvested ("TSA") and average crop age per acre harvested, measured in months.

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

Executed on November 16, 2007.


RICK W. VOLNER, JR.

COPY

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

'Iao Ground Water Management) CASE NO. CCH-NA06-01

Area High Level Source Water)

Use Permit Applications and)

Petition to Amend Interim)

Instream Flow Standards of) VOLUME XV

Waihe'e, Waiehu, 'Iao & Waikapu)

Streams Contested Case Hearing)

_____)

CONTESTED CASE HEARING

Held on January 29, 2008, at MOE, Wailuku, Maui,
commencing at 9:00 a.m.

BEFORE: Jean Marie McManus, CSR #156

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1 (Recess taken.)

2 RICK W. VOLNER, JR.

3 was called as a witness by and on behalf of HC&S, was
4 sworn to tell the truth, was examined and testified
5 as follows:

6 DIRECT EXAMINATION

7 BY MR. SCHULMEISTER:

8 Q State your name, please.

9 A Rick Volner, Jr..

10 Q By whom are you employed?

11 A I am currently employed by Hawaiian
12 Commercial & Sugar Company.

13 Q What is your position?

14 A My position is Senior Vice President of
15 agricultural operations.

16 Q Could you just outline very thumbnail
17 fashion your educational background?

18 A Well, I was born and raised here on Maui.
19 Went to public schools here and University of Hawaii
20 at Manoa where I got my bachelors of science degree
21 in mechanical engineering in 1997.

22 Q So what high school did you go to?

23 A Baldwin High School.

24 Q What year did you graduate?

25 A 1992.

1 Q How old are you?

2 A Can I object to that? I am 33.

3 HEARINGS OFFICER MIIKE: You're going to
4 object for being 33?

5 Q (By Mr. Schulmeister): You mention that --
6 and you submitted I think three different written
7 testimonies in this case?

8 A Yes.

9 Q And you have those with you?

10 A Yes.

11 Q So you went directly from high school to
12 University of Hawaii at Manoa?

13 A That's correct.

14 Q And when you majored in mechanical
15 engineering, did you think you were going to be a
16 farm manager?

17 A No, that was probably the last thing I
18 thought I would get into was agriculture. I did
19 marry into a farmer's family though, so I got a crash
20 course in agriculture pretty quick.

21 Q When you graduated with your BS in
22 mechanical engineering in 1997, how did it turn out
23 that you ended up becoming employed by HC&S?

24 A Like most college graduates, your last
25 semester you end up sending out resumes, applying for

1 jobs. I had numerous job interviews, quite a few
 2 call backs. Then my I was mildly surprised to get an
 3 unsolicited, I guess, response from HC&S regarding an
 4 agricultural engineering position that they were
 5 advertising at the time.

6 Q At the time did you have any intention of
 7 trying to live on Maui if you could?

8 A You know, I would have preferred to move
 9 back. My current my wife now was my girlfriend at
 10 the time also from Maui, so it would have been nice
 11 to be able to come back.

12 Q My graduating class there were 12 or
 13 13 people, I think, ten or 11 of them ultimately
 14 found employment outside of Hawai'i. Some by choice,
 15 some because of the job market.

16 Q At the time I really hadn't planned on
 17 coming back.

18 Q When you say your graduating class, you're
 19 talking about from UH?

20 A From UH in 1997.

21 Q So in your job search had you included
 22 other places besides Maui?

23 A Yeah, there were at least three or four
 24 areas or job opportunities on Oahu. Hawaiian
 25 Airlines was one of them.

Q What about the mainland?

A I looked at two different job offers in Las
 Vegas and one in Seattle at Boeing Company.

Q Eventually you chose to work for HC&S
 because it was on Maui?

A I thought it was a good opportunity to come
 home. I thought it was a neat opportunity. My great
 grandparents had actually come from Portugal, had
 immigrated from Portugal to work at what became HC&S,
 what was actually Maui Ag Company.

Q My grandmother had retired, I would say,
 15 years prior to that after about 40 years of
 service.

Q So when you joined HC&S in 1997 -- is that
 when it was?

A That's correct.

Q So it was as an agricultural engineer?

A As agricultural engineer.

Q And what was an agricultural engineer at
 HC&S in '97?

A The job I was specifically hired for was to
 oversee, to do some design work, but mainly to
 supervise the construction of our wastewater
 reclamation facility.

At the time we had two mills, Puunene and

1 Paia. And we were recycling our cane wash water and
 2 power plant effluent water. The hope was to use it
 3 through drip irrigation on cane fields instead of
 4 using it for furrow irrigation.

5 So I oversaw the construction of that
 6 project, as well as the construction of the Maui Pine
 7 and Wastewater Disposal Project Field 921 and 922.

8 Q You've been here during most of the
 9 testimony and you were here when Mr. Hew was
 10 testifying, and on cross-examination he was asked
 11 some questions about what are the overhead sprinklers
 12 that you can see from the road by the airport. Does
 13 that relate to what you're talking about?

14 A Yeah. A brief summary of the project. In
 15 1997 we embarked on turning the last of the furrow
 16 fields in Puanene and Paia into drip irrigated fields
 17 using wastewater reclaimed from the mill facility.

18 We ended up converting roughly 2500 acres
 19 that were previously either furrow or they were clean
 20 water drip irrigated. When I say clean water, I mean
 21 mountain water fed either from the East Maui system
 22 to drip irrigation with reclaimed wastewater.

23 That proved to have quite a few challenges
 24 initially. The filtering was not as successful as we
 25 would like. The high nitrogen content of the water

13.21-29

McMANUS COURT REPORTERS 239-6148

1 did cause us some problems when we tried to ripen the
 2 cane and that was not uncommon even with the furrow
 3 irrigation of mill water.

4 But ultimately the cost, the maintenance
 5 cost and repairs, as well as the declining yield, led
 6 us to convert that entire system to overhead
 7 sprinklers, and we actually reduced the acreage that
 8 is irrigated by wastewater to about 545 acres.

9 Q And so on Exhibit E-1, one of the color
 10 codes in the legend says Puanene mill water. Is that
 11 what you're referring to?

12 A Right. The fields lab led 710, 711, 712,
 13 713 and 714 are actively or were actively under
 14 overhead irrigation. Field 713 was followed sometime
 15 ago. And Field 610, 709, 606 and 706 are drip
 16 irrigated fields that have the potential, should
 17 there be a need or should the need arise, that we can
 18 shift reclaimed wastewater to those areas. It's not
 19 preferable, but we could if we needed to.

20 Q I believe in one of your answers a moment
 21 ago, you mentioned Maui Pine water. What are you
 22 referring to? What is that?

23 A Sometime in the 1990s, between 1995 and
 24 1997 Maui Pine was injecting their wastewater into an
 25 injection well in Kahului at the cannery facility.

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McMANUS COURT REPORTERS 239-6148

1 They experienced something that was called a methane
 2 build-up which ultimately caused an explosion.
 3 So they were asked, or told, I would assume
 4 by the Department of Health that they needed to find
 5 another application for that wastewater. So we
 6 entered into an agreement with Maui Pine to transport
 7 that wastewater from their cannery facility to an
 8 area of the plantation which, on Exhibit E-1, is
 9 labeled Fields 921 and 922.

10 Those fields were not under cane
 11 cultivation. It was actually pasture land. Quite a
 12 bit of kiawe trees. So the agreement we entered into
 13 with Maui Pine was to clear the area, install a
 14 wastewater drip system, and pump that water all the
 15 way to those fields and apply it on the 300 acres of
 16 Field 921, 922.

17 Q So you need to help me now. That's shown
 18 in blue here as Waihe'e Ditch. So some of the water
 19 that goes into the Waihe'e Ditch has been from Maui
 20 Pine?

21 A No. That's a self-contained system. That
 22 water is not mixed with the Waihe'e Ditch water in
 23 the ditch itself. The system does have the ability
 24 to take Waihe'e Ditch water if Maui Pine wastewater
 25 is not available.

Throughout my testimony, when I talk about
 the 5300 acres of HC&S' sugar plantation located in
 West Maui, as well as the 3950 acres of the West Maui
 fields that we call the Waihe'e Hopoi fields, that
 does not include the 300 acres of Field 921 and 922.
 The years that we covered in the testimony,
 specifically 2004 to 2006, we were receiving about a
 hundred percent of the water used for those 921 and
 922 fields was coming from Maui Pine wastewater.

Q So to the extent that the blue area is
 shown as essentially the location of the 3950 -- that
 needs to be clarified. The blue area probably is
 more 3950, it's only after you deduct 921 and 922
 that you get to the 3950?

A That's right. So the total area is closer
 to 4250, that's right.

Q So that's what you were doing your first
 five years?
 A First four years. That pretty much took up
 all four years.

Then the opportunity arose to take on
 additional duties as the farm manager of the Lowrie
 farm. So under that responsibility, I had an
 additional 9000 acres added to the wastewater system
 that I was already managing. And subsequently --

1 Q So we're roughly in 2001 now?
 2 A 2001 to 2002, yeah.
 3 Q So now you've kind of -- is that when you
 4 began to get involved in farming?
 5 A The real ag operation, yeah, other than the
 6 wastewater.
 7 Q By 2005 you're the vice president of all
 8 the farming operations?
 9 A In between I was also given the
 10 responsibility of the farming operations on the on
 11 Maalaea farm. So effectively I was managing a little
 12 more than half of the total acres at HC&S. And in
 13 late 2005 I was given the opportunity to take over
 14 the entire farming operation.
 15 Q Now, in your current -- describe what that
 16 entails. In other words, our current position, what
 17 are those responsibilities?
 18 A The current position, I'm basically
 19 responsible for every ag operation that takes place
 20 on our plantation. Everything from planting or land
 21 preparation to planting, weed control, harvesting.
 22 I'm responsible for the four farm managers report
 23 directly to me as well as the wastewater operations
 24 manager.
 25 So we manage and prioritize irrigation of

1 all 35,000 acres on the plantation, long-range
 2 planning for seed production. And recently the added
 3 responsibilities of the agricultural shops in our ag
 4 research unit.
 5 Q Did your mechanical engineering curriculum
 6 train you for all of that?
 7 A Sure. I put my thermal dynamics to use
 8 every day. You know, I think -- and I think Mr.
 9 Schwarm testified to it to some degree, I mean
 10 engineering is about problem solving. And in any
 11 job, especially an agricultural job, you have a lot
 12 of challenges and a lot of problems. So I think my
 13 engineering background has helped quite a bit in the
 14 daily problem solving skills I need.
 15 Q How many employees do you supervise?
 16 A On the agricultural operation we probably
 17 have close to 500 total, management and bargaining
 18 unit.
 19 Q And just so we can kind of get the big
 20 picture, the agricultural operations is just one of
 21 the operations of HC&S?
 22 A HC&S is basically composed of three major
 23 categories: The agricultural unit, our production
 24 unit, which is our factory and power plant unit as
 25 well as specialty sugar. Then the third would be a

1 general administrative group, our financial people,
2 human resources.

3 Q So did you say 500?

4 A Roughly.

5 Q And that includes both union and nonunion?

6 A That's right.

7 Q How many nonunion employees do you
8 supervise?

9 A About 45.

10 Q And what kind of job descriptions? I mean
11 what kind of employees are these? What are their
12 responsibilities?

13 A Their responsibilities range from
14 supervision of the planting operations, weed control.
15 We have the farm managers. We have farm supervisors
16 who are responsible for one-third of each farm. We
17 have management people in charge of the harvesting
18 operations that supervise your around-the-clock
19 operations.

20 We have some of our research people. Many
21 any of these people, the backgrounds, I would say
22 probably half of them are college educated with
23 degrees ranging from horticulture to some have
24 business degrees and some even have advanced degrees.
25 Some are associate agricultural degrees from, say, UH

Hilo or MCC.

The other half are on-the-job training type
individuals who have worked their way up through the
bargaining unit and into the management structure.

Q And of the 45 management employees that you
supervise, non-bargaining unit, how many of them are
older than you?

A 43 of them, I'm guessing.

Q And what is the level of turnover among
those employees?

A It's actually very low. I would say the
average for the 45 employees is probably 20 to
25 years of service. I think, as Mr. Hew testified,
we've had some management employees with 40 years of
service. We have quite a few that have 25 to
30 years of service.

Q So the pattern that Mr. Hew testified as
having prevailed on the EMI side you've also seen
that on the farm division, farm operation side for
HC&S?

A Yes, that's correct.

Q And among the -- that leaves another close
to 500 union employees, roughly that are under you;
is that right?

A Roughly, about 450 to 500 at any time. We

1 have sometimes 20 to 30 vacancies.

2 Q Is there any pattern as to whether these
3 employees, actually on both the managerial and the
4 union side originally from Maui, originally from
5 Hawai'i?

6 A On the managerial side, I would say at
7 least half of them were born and raised either here
8 in Maui or Hawai'i. The other half generally have
9 immigrated to Hawai'i, mainly from the Philippines,
10 although we do have a couple from the mainland that
11 worked their way up through the bargaining unit rank,
12 then ultimately supervisory positions.

13 Q So it appears, based on the fairly rapid
14 advancement that you've experienced at HC&S, that you
15 demonstrated to someone that you have some ability?

16 A I would hope so.

17 Q Now, have you ever considered taking that
18 career somewhere else or visitor industry or resort
19 or development, anything like that?

20 A No, I've never seriously considered that.
21 I enjoy the many challenges, and obviously the
22 opportunity that have been afforded to me. And Maui
23 is my home, so I enjoy it.

24 Q Are you hoping to have a future with HC&S?

25 A I would hope so.

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1 Q I mean as far as you've been able to tell
2 so far as a young management prospect risen through
3 the ranks, are you expecting HC&S to be around and
4 operating for awhile?

5 A I do.

6 Q Moving down, looking at your first written
7 testimony submitted in September. What I would like
8 you to do is, I had asked Garret Hew when he was
9 testifying to kind of describe what a typical day
10 from dawn until dusk is for him in his
11 responsibilities. I would like to ask you the same
12 question. Again, with the same caveat that on a day
13 that you don't have to attend the contested case
14 hearing, can you describe a typical day in terms of
15 what you do?

16 A Okay. Generally it's a pre-dawn day. Like
17 most agricultural operations, we start fairly early.
18 We also have a lot of operations that run
19 24-hours-a-day, seven days a week, so there is always
20 something going on at HC&S.

21 My day generally starts somewhere between
22 5:00 and 5:30. I usually start from home, checking
23 on the ditch situation, water incoming, water flows
24 are both on East Maui and West Maui.

25 Checking the weather report. We get a

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1 meteorological weather summary every morning at about
 2 4:30, so it's on my computer ready to go when I come
 3 into the office. I'll review that. See if there is
 4 any changes that we need to make. Any operational
 5 changes.

6 See if the weather may affect any of our
 7 production units such as land, planting or weed
 8 control.

9 And then starting at about 6:00 o'clock or
 10 so my production people file in and give me the daily
 11 report for the past day. You know, what we were able
 12 to accomplish, what we need to accomplish. What
 13 additional resources they need.

14 We generally go through that for about
 15 45-minutes to an hour planning out the day's
 16 activities. After that kind of a time I call fire
 17 fighting, that's when all the fires come up and you
 18 need to respond to them, and if there's questions or
 19 problems or changes in the operation, that's when we
 20 generally deal with them.

21 If it's a good day and I don't have to
 22 attend any meetings or anything else, I try and spend
 23 at least three or four hours out in the field looking
 24 at fields that are ripening. Looking at our plant
 25 quality. Looking at our harvesting. Where we're

1 harvesting, if we're in season. Generally overview
 2 of the entire operation, I try and pick one area of
 3 the plantation every day to look at.

4 Q So, again, refer to your first written
 5 testimony. In paragraph four, you mention
 6 approximately 1,500 acres of the West Maui fields are
 7 used to grow seed cane.

8 Do you see that?

9 A Yes.

10 Q And do you remember you guys have a tour
 11 that you do sometimes.

12 A We have a community tour, yes.

13 Q I got to go on it before you shutdown the
 14 mill. And one of the things you did, you showed a
 15 seed cane operation. And that's when I learned for
 16 the first time that seed is not coming from a tassel
 17 like a corn plant, it's something else.

18 Could you explain how that works?

19 A Sure. Sugarcane is a little different from
 20 most plants in that it does not produce a true seed
 21 except for one time a year, and it needs to be in a
 22 certain climate, specific climate that's conducive to
 23 flowering. That can be both the environment or the
 24 location in elevation. Needs a certain temperature,
 25 certain rainfall. Those are triggered generally in

1 the last week of September.
 2 So to get around that, since it doesn't
 3 flower on a regular basis, cane can be cut into
 4 vegetative cuttings which we plant and we refer to as
 5 seed. So it's a little different from, say, a corn
 6 seed or a seed for a tomato plant. It's an actual
 7 vegetative cutting that we plant and new plants
 8 sprout from the nodes or the eyes.

9 Q So when you have acres in seed cane, is
 10 that managed differently from cane that is not being
 11 raised as seed cane?

12 A Yes. It's on a different cycle. Seed
 13 cane, because we need to mechanically cut it, we
 14 actually use what other people throughout the world
 15 use as cane harvester, we use it as what we call a
 16 seed cutter. It will cut that standing cane into ten
 17 to 12 inches long that we can plant.

18 It's on a shorter crop rotation. It's on
 19 an eight to nine month schedule, so that it stays
 20 erect and does not fall to the ground, so that it's
 21 conducive to the mechanical harvester.

22 What we are trying to do when we grow seed
 23 is produce as many nodes or and as many viable eyes
 24 as possible, because from each eye a new cane plant
 25 will emerge. So the irrigation scheduling, the

1 fertilizer scheduling, all of those are unique to the
 2 seed crop and are not necessarily the same as our
 3 crop cane fields.

4 Q Is there a different criteria that is used
 5 to select which fields would be good candidates for
 6 seed cane versus which ones would not?

7 A In general at HC&S the sandy, less clay
 8 soils, which are indicative of the Waihe'e Hopoi
 9 fields, some of our 900 series fields, are conducive
 10 to the harvesters that we need to use for the seed
 11 cane. They're rubber-tired, are transport trucks
 12 rubber tired. Our loaders which we use within the
 13 field to ferry the seed, are rubber tired.

14 So we need to locate it in an area of the
 15 plantation that, should there be a rain event, we
 16 would be able to get in and continue our seed cutting
 17 plantation since it's critical to planting. So
 18 that's one of the reasons that it was selected in
 19 this area.

20 Another reason is the terrific growing
 21 conditions in that area, the hours of sunlight, the
 22 flat terrain also makes it conducive to our
 23 operations. And the availability of water. You
 24 know, seed is basically the lifeline of our planting
 25 operation. If we do not have seed or we do not have

1 adequate seed, we can't plant.

2 Q Now, paragraph six of your first testimony,
3 there is a discussion of the West Maui fields and
4 that HC&S primarily uses water from the ditch system
5 that collects water from the Na Wai 'Eha streams as
6 discussed by Mr. Hew. And then you describe the only
7 other water source that HC&S has for the West Maui
8 fields is HC&S Well No. 7.

9 Do you see that?

10 A Yes.

11 Q Now, I guess, do we need to -- I guess you
12 have clarified though that this Field 922 and 921
13 have been getting this wastewater from Maui Pine.
14 But what you're saying is that in the calculation of
15 the acres, you excluded those fields?

16 A Right. Because we would say pretty close
17 to a hundred percent of all the water applied to
18 those fields was from the Maui Pine wastewater
19 system.

20 Q Now, is that going to continue?

21 A Maui Pine has shutdown their cannery
22 operation, so we still receive wastewater from them.
23 We're still trying to figure out exactly how much and
24 what quantity of wastewater we're going to get. But
25 it looks like it will be maybe 50 percent of what we

1 were receiving historically.

2 Q So in the future when water -- I guess,
3 when we talk about Well No. 7 and the West Maui
4 surface water being used on the 3950 acres, are we
5 going to have to add some acres, if Field 921 and 922
6 can't be fully served by the Maui Land and Pine
7 wastewater?

8 A I think what we would have to do is add the
9 acres in, but also add the wastewater that we receive
10 as credit.

11 Q So you think it's going to be about half?

12 A That's what we're estimating.

13 Q Currently?

14 A Right.

15 Q Now, Well No. 7, are you familiar with Well
16 No. 7?

17 A I am familiar with Well No. 7.

18 Q Do you think you can answer all of the
19 questions that all of the attorneys have about Well
20 No. 7?

21 A Probably not.

22 Q As well as anybody else at HC&S?

23 A Currently.

24 Q Could you describe basically what Well No.
25 7 is and what it can do?

1 A Well No. 7, as Mr. Hew pointed out, is
 2 located along Waiko Road within the interior of our
 3 Waihe'e Hopoi fields adjacent to Field 718 and Field
 4 902. I'm not sure what the actual depth of the well
 5 is. There are three pumps, two at water level and
 6 one at ground level.

7 The two at water level are, the water table
 8 level, are 7A and 7B, as in boy. The third pump is a
 9 booster pump located at ground level, which we call
 10 the 7C or 7 Charlie, which has the ability of taking
 11 the 7A water and pumping that up to the HC&S' Waihe'e
 12 Ditch. And that is rated at 14 million gallons per
 13 day.

14 The 7A and 7B can also be run without the
 15 booster pump for about 17-and-a-half million gallons
 16 each and discharge them at ground level. As
 17 configured, that water can only service three fields
 18 at HC&S at that level.

19 To reach all the fields at HC&S it needs to
 20 be pumped up to the HC&S Waihe'e Ditch, which we have
 21 the capacity of pumping only 14 million gallons of
 22 water. And I should note, and it's in the testimony,
 23 it can service all the fields except for Field 715.
 24 715 takeoff is actually prior to the discharge of
 25 Well 7.

1 Q So maybe you can explain exactly why it is
 2 it can't service -- I know you just did, but
 3 elaborate as to why it can't service 715.

4 A If you look at Exhibit E-1, I know it's
 5 difficult to see where pump seven is at. There is a
 6 dark line and also a parallel dotted line that's
 7 labeled 24-inch pump line. And that travels from
 8 Well 7 up to the Waihe'e Ditch and discharges there
 9 at the Waihe'e Ditch.

10 Water is flowing from Reservoir 73 to
 11 Reservoir 92 -- sorry, Reservoir 91, which is in
 12 Field 906. So it's gravity flowing from 73 to
 13 Reservoir 91. The takeoff, or where we take water
 14 for Field 715 is actually off of the HC&S' Waihe'e
 15 Ditch in the area very close to Kuhilani Highway in
 16 Field 719, so it's upstream of the discharge point
 17 for Well 7.

18 Q So it's an issue of gravity flow?

19 A Right.

20 Q And the pumps you already have versus pumps
 21 you would need to add if you wanted to reach 715?

22 A We address that later in the testimony, we
 23 would have to add quite a bit of pipeline and pumps
 24 to be able to utilize that pump Well 7 water in Field
 25 715.

1 Q Now, could you take a moment and describe
2 physically how the drip system of irrigation works?
3 You talk about takeoff for the fields. Just from an
4 overview, you know, you're bringing water into the
5 Waihe'e Ditch or whatever. How does the drip system
6 actually apply to the fields?

7 A We have a few different major ways to get
8 water into the drip system. When I refer to a
9 takeoff, it generally is a wooden structure in the
10 ditch or in the wall of the ditch that allows water
11 to pass through a one by one screen, so effectively
12 getting rid of all the big tilapia, leaves, branches
13 anything fairly big.

14 That water then gravity flows into a pipe,
15 or multiple pipes in most cases. We try and get a
16 minimum of 20 psi or 45 feet of head from that ditch
17 takeoff or that entry point of the water into the
18 system to our sand media filters. Sand media filters
19 are basically round vessels that are pressurized that
20 have a bed of sand, very similar to beach sand, that
21 the water percolates through with pressure, and any
22 impurities such as, you know, anything that got in
23 through the ditch takeoff that's too big to be passed
24 through the drip emitter is taken out.

25 The water then flows through the outlet of

the sand filters, generally into large main lines
that then distribute the water throughout the fields.
At that point we do have agricultural water meters
that we can check instantaneous flows.

At each acre in the field we have a
pressure regulator and a control valve. So if there
was a break in that one acre section, we can isolate
that and continue to run the rest of the field.

We also regulate the pressure down to 12
psi. That ensures that our uniformity, or we achieve
better uniformity by keeping the pressure constant
throughout the entire field.

Then it enters the drip tubing, which for
our purposes in this area is generally an emitter
every 36 inches where water comes out at the rate of
0.6 gallons per hour.

Q And you mentioned having a pressure
regulator, 12 psi, where the system comes out from
the main lines and into the drip tubes. Did I get
that right?

A That's right. One pressure regulator
controls nine to ten drip lines.

Q So is it necessary for the system to work
that the entire area that is being irrigated through
tubes or whatever is under that constant pressure?

1 A It ensures a greater level of uniformity.

2 We do have some fields that our pressure is so low it
3 approaches the 12 psi that we need in the tubes
4 anyway, that we do not have pressure regulators on
5 each acre or each field.

6 Q Now, having to pressurize the tubes, does
7 that pose, I guess, logistical challenges different
8 from when water was just dropped into furrows from
9 ditches?

10 A Sure. When this area was in furrow, and it
11 is a relatively flat area. It does have elevation
12 changes, but it is relatively flat. To get water to
13 flow, you just need a downhill gradient, even an inch
14 of slope will allow water to run.

15 To generate 12 pounds per square inch of
16 pressure to push water through the drip tubing, you
17 need to have at least 25 to 26 feet of elevation
18 difference. So it does pose some challenges. And in
19 some cases, in the Waihe'e Hopoi fields, that
20 elevation is not present, so we instead have to use
21 drip irrigation pumps that actually draw water from
22 the ditch, pressurize it up to the 25 or 30 psi that
23 we require, and then introduce it into the sand
24 filters.

25 Q And in this paragraph six of your testimony

1 you also talk about the fact that the water that is
2 brought into Waiale Reservoir from West Maui can't be
3 used from Waiale Reservoir through the irrigation
4 system to irrigate the area in green, that's been
5 referred to as the 'Iao-Waikapu fields?

6 A That's correct.

7 Q And that's because of gravity?

8 A The elevation difference and gravity.

9 Q Now, but these fields are drip irrigated,
10 right?

11 A All those fields are drip irrigated.

12 Q And they have the sand filter, and the
13 pressure regulators and the drip tubing?

14 A Everything is pretty much the same.

15 Q Just doesn't come off of the system that
16 originates from Waiale Reservoir?

17 A That's right.

18 Q You made one brief reference to meters,
19 irrigation water meters that you can take spot
20 readings from. Can you describe that more?

21 A Each main line that exits the sand filters
22 has an agricultural micrometer or water meter on it.
23 These are somewhat different than the water meters
24 that you or I would be used to at, say, your house.

25 They're much larger meters. These are

1 metering water on pipes that are anywhere from four
 2 inch up to 12 inch. They're a prop-type meter, which
 3 basically means there's a large propeller that spans
 4 the diameter of the pipe, the inner diameter of the
 5 pipe and spins. And that spin is then translated
 6 into a gallons per minute based on the size of the
 7 meter that it is.

8 There is also a totalizer on there where we
 9 can take -- if necessary, we can take readings from
 10 one time to the next, and to verify that our flow
 11 readings are correct, that the instantaneous flow
 12 that we're getting is correct.

13 Q Could you talk about the decision-making
 14 process, management process that you engage in when
 15 you come in the morning? You read the gauges, you
 16 look at what's going on, and then you make decisions
 17 about whether to pump various of the wells or not.
 18 Is that right?

19 A That's right.

20 Q And we talked briefly about Well No. 7.
 21 That's just one of the HC&S wells; is that right?

22 A That's one of the 16 deep wells that we
 23 have.

24 Q But the other 15 aren't in a position to
 25 provide water to the West Maui field, is that right?

A That's right.

Q But there is a balancing process between
 using surface water and using pump water to meet the
 daily irrigation requirements of the plantation as a
 whole?

A Sure. Every morning I look at the incoming
 flows from both East Maui and West Maui. And the
 East Maui flows pose a slightly different challenge
 because they come in at varying levels on the ditch
 system, at different elevations.

How we manage that water, where the
 priorities are for irrigation depend on where our
 planting operations are, as Mr. Hew said. We have a
 priority list of what gets irrigated. What we're
 planting gets irrigated first and has first crack at
 the water or highest priority, because we have
 invested that money in the land preparation and the
 planting operation. We want to make sure it
 germinates.

After that the next priority would be where
 we have ripening fields. Ripening is a fairly exact
 science on trying to build sugar content in the cane
 plant. And one of the major controlling factors of
 that is irrigation. And then the third priority on
 the list would be all the fields that are under

1 cultivation at different ages.

2 So we look at both the incoming flows. We
3 look at what our daily irrigation needs are. We look
4 at what the weather report, both short-term and
5 long-term is. Then we make decisions on what
6 available power we have, where we're going to pump to
7 satisfy the various irrigation requirements.

8 Q Now, paragraph seven you talk a bit about
9 the prioritization of. The top of page three, the
10 expenditure of fixed supply of electrical power.

11 Can you explain what you mean by fixed
12 supply of electric power?

13 A Sure. We have available to us between 30
14 and 31 megawatts of steam generated power, which
15 is -- we produce steam whether by burning fossil fuel
16 or bagasse, which is a by-product of the sugarcane.

17 We generate steam, which we use throughout our
18 process as well as to generate electricity for
19 internal use and for sales to MECO. And by internal
20 use, I mean for factory usage as well as our
21 irrigation pump demand.

22 On top of that we also have six megawatts
23 that are available to us when East Maui flows are
24 high in hydroelectric power that we generate. So
25 total, we have roughly 36 megawatts available.

Q And that's on an internal grid?

A That's on HC&S' internal grid.

Q I just used that phrase, but I'm not sure I
know exactly what it means as opposed to the Maui
Electric grid. Could you explain that?

A It's HC&S' owned and operated electrical
system consisting of power lines, power poles,
switching stations, relays, transformer stations,
both high voltage and low voltage supply lines.

Q So MECO is not involved at all in the
maintenance or operation of what you describe as HC&S
internal grid?

A Not of the internal grid.

Q But there is a connection with MECO?

A We actually have two connections. One is
our meter connection which is our major tie line
which is where we export power. And in some
instances, if we are blacked out and need to import
power to get started, that tie line is what ties our
two systems together.

And we also have what we call a back door
system in case of emergency or a failure at one of,
either our power plant or their transformer station,
we have the ability to export or import very small
quantities from another tie in along Omaopio Road.

1 Q Paragraph eight you talk about the two-year
2 crop cycle. Why is cane grown on a two-year crop
3 cycle?

4 A Well, the decision to grow cane on a
5 two-year crop cycle was made well before me. It was
6 made in the 1800s when the people who were planting
7 the sugarcane noticed that in Hawai'i it was
8 conducive, the growing environment, the temperatures,
9 the year-round good climate was conducive to growing
10 a crop more than just one year.

11 In other places, Louisiana, Texas, Florida,
12 which grow sugarcane here in the United States,
13 they're restricted to growing a crop eight to nine
14 months. The main restriction is the coming of frost.
15 Frost basically kills the vegetative matter growing
16 above ground. So they are required to harvest prior
17 to that frost coming.

18 In Hawai'i, we don't have the frost. So
19 they found that they could spread out their costs,
20 which are mainly front-loaded. You spend most of
21 your money on that crop the first year of its life,
22 the planting, the land prep, the weed control, the
23 herbicide applications are all done the first year.
24 So if you can spread out those costs over two years
25 instead of having to repeat those same costs every

year, just do it once and get double the yield over
two years, economically you're better off.

Q And during Mr. Hew's testimony he made a
comment that HC&S tries to harvest something on the
order of 16,000 acres a year. So is that sort of
like the model, the plan for the farm?

A It's about ballpark. If you assume we have
35,000 acres under production, subtracting for seed
cane, subtracting for wastewater acreage, you try not
to harvest more than half of your available acreage
every year.

Q Is there some necessity or benefit to
spread that harvesting out consistently over the year
in terms of being able to operate the power plant?

A Yes. It's a more consistent supply of
biomass, which is what we generate majority of our
electricity from, biomass. It also lessens your risk
of weather impacts. Having a shorter grinding
season. If you got, say, the rain that we got in
December which forced us to stop harvesting. If we
had a lot more fields schedule in that timeframe, we
would be in a lot more trouble. By spreading it out,
you lessen your risk as to weather impacts.

Q So is there any seasonality at all to the
operations at HC&S in terms of what you do during

1 what time of the year?

2 A Generally from -- you know, we try and
3 start harvesting in mid February to beginning of
4 March and finish sometime in December. That
5 down-time allows us to do much needed maintenance on
6 the mills, the power plant when we're not grinding
7 December, January, February.

8 Because of our weather conditions, starting
9 in March we slowly ramp up to -- we meet our maximum
10 harvesting, planting, land prep demand sometime in
11 the summer when the weather is really good, where
12 weather impacts are probably going to be less of a
13 problem on our harvesting operations, out planting
14 operations, and then we slowly down ramp until we get
15 to December.

16 Q And the reason for having the down-time for
17 the mill in December, January, February is what?

18 A It's mainly to refit, repair, maintain.
19 Processing of cane is a brutal operation, like I'm
20 sure you've seen on the community tour. You know,
21 we're basically crushing anything and everything that
22 comes in with the cane plant, including rocks,
23 derelict vehicles if they're left in our fields,
24 things of that nature. So the mechanical apparatus
25 in the mill takes a beating.

1 And biomass boilers generally are higher
2 maintenance, because you're not burning just one
3 types of fuel, you're burning many types of fuel.

4 So all of those components need quite a bit
5 of maintenance after a harvesting campaign.

6 Q So that explains why you need a shutdown
7 period. Is there a reason why it tends to be in
8 December through February as opposed to some other
9 three months of the year?

10 A My understanding is the risk of weather.
11 There's a much greater chance of having rain showers
12 across the entire plantation, you know, December
13 through February than say June, July or August.

14 Q Paragraph nine you talk about the
15 irrigation needs as determined by daily
16 evapotranspiration rate. Then you go onto describe
17 how it's defined.

18 Earlier Mr. Hew was shown an exhibit that
19 referred to a water balance model. Are you familiar
20 with the water balance model?

21 A Yes.

22 Q Could you describe it?

23 A Our water balance model at HC&S is mainly a
24 managerial prioritization tool. It also tracks what
25 we, say, we apply to the field. What it does is take

1 the inputs of 12 of our major evapotranspiration
 2 weather stations or meteorological stations that
 3 compute the plantation's specific area
 4 evapotranspiration. We use that evapotranspiration
 5 in what is called a modified Penman equation. Which
 6 then produces what our water balance or our water
 7 status is for each field, based on the inputs of both
 8 the weather station and our irrigation.

9 It then prioritizes the field, based on
 10 what field should receive water next. That's what we
 11 use as a management tool to determine what needs to
 12 be irrigated.

13 Q Again, when we talk about applying water to
 14 the fields, let's just talk about the West Maui
 15 fields, since we're focusing on this in this
 16 proceeding. Are there days when water is applied via
 17 the irrigation system to all the fields
 18 simultaneously?

19 A On the West Maui system, as far as I know,
 20 we do not have the ability to run every single field
 21 off of the ditch system.

22 Q What are the limiting factors?

23 A Mainly the ditch system. The ditch system
 24 has a finite amount of water that it can carry. A
 25 general rule of thumb is under irrigation with our

1 drip system and our application rates, a million
 2 gallons will roughly irrigate about 45 acres. So you
 3 can do the math.

4 Q You mean in a day?

5 A Million gallons per day.

6 Q So if the water is originating from Waiale
 7 Reservoir, what is the maximum amount that you can
 8 apply from Waiale Reservoir to West Maui fields in a
 9 day?

10 A If water is in Reservoir 73 and the valves
 11 are open completely, we can take out 45 million
 12 gallons per day.

13 Q And then in practice, I think there is a
 14 description somewhere in the testimony of applying
 15 rounds of irrigation. What does that mean, a round
 16 of irrigation?

17 A A round of irrigation can consist of
 18 anything any where from 24 hours up to 72 hours of
 19 continuous irrigation. In some cases it may be
 20 slightly longer than that. In the case of
 21 germinating cane where you want to ensure that water
 22 gets to the seed piece, and it may be shorter than
 23 that, perhaps when you're fertilizer or you're trying
 24 to chlorinate the drip system. Rounds are basically
 25 the way we move water from one field to the next, or

1 from one part of the plantation to the next.

2 Q So at any given time only a particular
3 fraction of the fields are actually receiving water?

4 A That's right.

5 Q As the rounds change, different fields
6 receive water?

7 A Right. Every day we have fields starting
8 and stopping. And they may be different sets of
9 fields, and based on field conditions, soil
10 conditions, crop age, the rounds vary for individual
11 fields.

12 Q In terms of length and the frequency?

13 A That's right.

14 Q Now, are there reasons, other than matching
15 the evapotranspiration of the plant, that you would
16 apply water to a field?

17 A Yeah. One of the obvious ones is ripening.
18 In that case we're not specifically applying water to
19 meet evapotranspiration, but instead we're trying to
20 dry off the cane.

21 In the early, say first ten to 11 months of
22 the cane crop, there are numerous reasons to apply
23 water other than just for irrigation.

24 When you're planting and you're trying to
25 achieve germination, that water, all of it is not

1 being consumed for irrigation but mainly to keep the
2 soil around the seed piece wet and moist so water is
3 available for the root development.

4 Q So you don't want the interruption in the
5 moisture of the soil for seed cane?

6 A For the seed piece.

7 Q Whereas in other fields they can go without
8 water in between rounds without deleterious effects?

9 A Right, once a cane plant is established,
10 you can alter the frequency between rounds without
11 much visible effect.

12 Some of the other reasons we apply water
13 not specifically for irrigation would be to apply
14 fertilizer. We do what is called fertigation or
15 chemigation. That means all of our fertilizers are
16 applied through the drip tubing to the root zone, so
17 it's very efficient.

18 We try to time those with our irrigation
19 rounds so as not to have to irrigate specifically
20 just to apply fertilizer, but with 35,000 acre
21 delivery systems, water availability, it does happen.

22 Herbicide application is something in
23 recent years that we have looked at. We are using
24 what we call hotter herbicides. Cane is a grass, so
25 if you apply anything that would normally kill grass,

1 Roundup is a good example, that will kill everything,
2 it will kill the cane.

3 But there are specific herbicides for broad
4 leaves. Specific herbicides that can control other
5 types of grasses that are noxious or that we don't
6 want growing in the cane fields. It doesn't kill the
7 cane, but it does hurt the cane.

8 So we need to apply irrigation water
9 previous to the herbicide application and immediately
10 after the herbicide application to ensure that the
11 cane does not die back.

12 Q So that could exceed the amount that if
13 you're just doing a strict evapotranspiration
14 analysis would be indicated?

15 A That's correct.

16 Q But you're not over-irrigating, are you?

17 Do you like that term, over-irrigating?

18 A I don't like that term.

19 Q Is that something you try to avoid?

20 A We tried to avoid that at all cost, because
21 actually over-irrigation of sugarcane can have some
22 detrimental effects. One common one that has been
23 seen in literature, we even saw some of it in early
24 December after the 12-inches of rain is what is
25 called wet feet. That's when the root zone is so

1 saturated with water the roots can't breathe, there's
2 no aeration. Those generally happen after large rain
3 events, flooding, things like that.

4 So you don't want to over-irrigate. You
5 don't want to apply that much water to the root zone.
6 Q On page four of your testimony, this is in
7 connection with describing the drip system. The last
8 sentence in paragraph A says: Under drip irrigation
9 it is assumed that 80 percent of the water applied is
10 delivered to the sugarcane plant.

11 Do you understand what that means?

12 A Yes. And I think this has been a source of
13 confusion for some people. This is not an efficiency
14 factor, it's not assuming that 80 percent of the
15 water we apply is used by the cane plant. It's
16 uniformity factor.

17 And this was developed when drip irrigation
18 was first introduced back in the '70s. They called
19 it a uniformity factor. It's with 80 percent -- with
20 a degree of confidence you can assume that 80 percent
21 of all the water you applied got to all the cane
22 plants at the same rate? So it's not -- there's no
23 waste of water. There's no loss of water. It's just
24 that you can say with a good degree of confidence
25 that 80 percent of that water got to each plant at

1 the same rate.

2 Q Look at paragraph 14. It refers to Exhibit
3 E-5. Take out E-5.

4 A Okay.

5 Q E-5, I guess there is a bunch of numbers
6 there obviously, the right-hand column -- well,
7 there's a gallons per acre per day column, third one
8 from the left, and this table relates to the Waihe'e
9 Hopoi fields; is that right?

10 A That's correct.

11 Q Now, gallons per acre per day. And this is
12 by three years, in particular 2004, 2005 and 2006.

13 Is gallons per acre per day used by HC&S? Is that a
14 number that is regularly calculated and used by you
15 in managing HC&S' operations?

16 A No. And it was not previous to these water
17 hearings.

18 Q Can you explain why not?

19 A It becomes dangerous when you start dealing
20 with averages. This number here, if taken at face
21 value, and we're meeting the average
22 evapotranspiration of the plantation at any given
23 time is okay. But if we're applying twice as much
24 water in the winter that we need and not enough water
25 in the summer than what we need, the average will

1 come out okay, the cane plant will not respond and
2 the yields will not be where we need them to be.

3 So to use this as a management tool is very
4 difficult. Averages generally don't work out well
5 for agriculture.

6 Q So, in fact -- well, when you actually make
7 a decision each day about how much water or where to
8 apply water, it's not done in gallons per acre per
9 day?

10 A That's right, it's not.

11 Q It's done in what?

12 A We actually use what we call a soil
13 moisture storage level, and it's a percentage ranging
14 from zero to a hundred. Fields that are at a hundred
15 percent SMS, which is what our water balance model --
16 that is what it's out put is in percentage, tells us
17 that we have adequately met the evapotranspiration
18 rate for that field, and it no longer needs to be
19 irrigated. As you go down in the percentage list,
20 those fields require water to meet the
21 evapotranspiration rate.

22 If something is at zero, that basically is
23 implying that we have not met the evapotranspiration
24 rate for a few days up to that point, and that the
25 soil itself is holding no moisture available to the

1 cane plant.

2 Q Now, in preparing this Exhibit E-5, this is
3 an attempt to sort of like effectuate a translation
4 from the way you actually operationally run the
5 irrigation system into something that would yield
6 something that is measured in gallons per acre per
7 day, so to the extent that that is considered
8 relevant to the Water Commission, that the Water
9 Commission would have that information?

10 A Yes, that is what they asked for, that's
11 what we attempted to provide.

12 Q So going across this table, acres
13 irrigated, on the left, that's -- where does that
14 number come from, 3,844?

15 A That comes from our acre inventory for that
16 year, 2004, the acres that we felt were under
17 irrigation from the Waihe'e Hopoi system during that
18 year.

19 Now, because we're on a -- every two years
20 we're replanting harvesting, on that kind of a
21 sequence, it's not uncommon to see fluctuations in
22 acres from year to year as we add acres that weren't
23 in production previously, as we take in more lands as
24 we survey field boundaries to see what actual acres
25 are. So that sometimes you can see why there is some

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discrepancy in the acreage.

2 Q Next column, delivery to Waiale Reservoir.
3 Is that basically -- what is that?

4 A My understanding is that's the continuous
5 gauging recordings from the Waihe'e Ditch at Hopoi
6 minus whatever water was determined passed by the
7 Hopoi Ditch, so that would be relevant in 2006, as
8 well as the Spreckles Ditch at Wailuku gauging
9 station, the combination of those two.

10 Q And then the next column you have, pumped
11 from HC&S Well 7?

12 A That's basically our yearly ground water
13 report for Well 7, what we say we pumped.

14 Q Then you total that. And then you move
15 into the usage which is on the right-hand side of the
16 table. Where did the usage numbers come from?

17 A The usage numbers say for 2006, what we
18 have done is query our water balance database for the
19 entire compilation of the fields that make up the
20 Waihe'e Hopoi system, and determine how many hours,
21 how many irrigation hours were charged to that field.

22 We then have an application rate, because
23 we know what the application rate is based on our
24 drip tubing that we use. So there's some math there,
25 and conversion from acre inches to gallons per acre

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1 per day, or million gallons total, actually.

2 Q So this isn't a case of going out and
3 reading the meters, because, as you described, that
4 are on the out-puts of the main lines that go to the
5 fields?

6 A No.

7 Q This is a calculation based on hours of
8 application at a specified rate?

9 A That's right. Our water balance program is
10 based on -- we try to simplify the accounting for our
11 farm managers. What they're required to keep track
12 of is how many hours each individual field -- and
13 actually each field is broken down into irrigation
14 management units, which are much smaller. A hundred
15 acre field, for example, could be broken up into two
16 or three irrigation management units. These are
17 individual units within the field that irrigation can
18 be turned on or off.

19 They report daily what the previous day's
20 hours run were for each field in their section.

21 Q And this particular table, does it on an
22 annual average?

23 A Yeah. I believe what we did was took the
24 aggregate of all the hours run for each field
25 multiplied by the application rate.

1 Q And then the right-hand side you have the
2 differential between delivery and usage, that's both
3 in absolute gallons and then in mgd?

4 A That's correct.

5 Q And in your testimony you talk about -- by
6 the way, before we went through the exercise of doing
7 this early last year, had you gone through an
8 exercise like this before?

9 A I've never calculated gallons per acre per
10 day. And I do not believe that we have ever done an
11 accounting of deliveries versus usage on a daily
12 basis.

13 Q So then at that time there's the
14 differential column, and so naturally the question
15 arises, what's the difference? What have you
16 concluded about the difference?

17 A The difference, as you go through the
18 testimony, we do lease some land to Monsanto, which
19 we meter. They use some water for seed corn
20 production. That generally is in the range of one to
21 two million gallons per day. We do have system
22 losses, and we do have seepage.

23 Now, there's other water that may not be
24 accounted for. In the discussion of the sand
25 filters, one part of their operation is, as they're

1 filtering the water, there is an accumulation of
 2 material in the sand filter. That eventually has to
 3 be discharged, otherwise the filter will plug. So we
 4 go through an operation called back-flushing.
 5 Wherever it's possible, that back-flush water, which
 6 basically the filter is running in reverse. It's
 7 sending water from the outlet to the inlet through a
 8 three-way valve that now discharges what we call
 9 dirty water.

10 Where possible that water is returned to
 11 the irrigation ditch and eventually reused down the
 12 line. Now, there are areas in the plantation, and
 13 specifically in the Waihe'e Hopoi fields that it's
 14 not possible to get that water to another irrigation
 15 ditch.

16 And I believe one of those was actually
 17 cited in the waste complaint, was actually a
 18 back-flush pipe that was shown discharging into the
 19 field.

20 We put in a perforated PVC pipe that
 21 applies that water to a sugarcane field. That water
 22 is not accounted for. We have no way of metering
 23 that. So that water kind of -- everything else falls
 24 into system losses or seepage.

25 Q So if we go to E-6, this is a similar

1 table, but this one is the 'Iao-Waikapu Fields
 2 including Field 920?

3 A Correct.

4 Q Here we don't have all the entries about
 5 water deliveries because this water doesn't get
 6 delivered to HC&S and goes through the reservoir?

7 A That's right.

8 Q So instead, all you have is the year, the
 9 acres irrigated and the usage and gallons per acre
 10 per day?

11 A Right, and the usage is similarly
 12 calculated with irrigation hours.

13 Q And just to be clear, no information in
 14 Exhibit E-6 is something that was given to you by,
 15 say, Walluku Water Company, saying this is what we
 16 delivered to you up there?

17 A No, this was solely from our data base.

18 Q And nor is it a reading of the meters on
 19 the line, main lines for these fields, correct?

20 A No, it's not.

21 Q Strictly hours in operation based on your
 22 computer records?

23 A Right.

24 Q Times the rate to calculate the amount?

25 A Multiplied by application rate per acre.

1 Q Is this the most reliable way for you to
2 calculate or estimate what is being applied to the
3 fields? This is both in the case of the Waihe'e
4 Hopoi fields and the 'Iao-Waikapu fields?

5 A I think it's both convenient and reliable.
6 It's much easier for a manager to remember a two
7 digit hour, than it is to remember a ten digit gallon
8 reading if you're working off a totalizer.

9 We do independently check using the
10 totalizer and the instantaneous flow reading to
11 verify that our application rates are at least in
12 ballpark.

13 And the other thing we need to remember is
14 that these are agricultural meters. Their tolerance
15 levels and accuracy levels are in the five to seven
16 percent range, whereas your domestic water meter may
17 be less than one percent accuracy.

18 Q And then E-7 is a similar type table but
19 this time excluding Field 920.

20 What was the reason for calculating this
21 with the exclusion of Field 920?

22 A Well, one good thing that came out of this
23 exercise of doing the gallons per acre per day was to
24 see that the usage in Field 920 alone was much higher
25 than any of the other fields, both in the

1 'Iao-Waikapu and the Waihe'e Hopoi.

2 So the exercise was to take that 920 out
3 and see what the rest of the 'Iao-Waikapu fields
4 looked like to, say, in comparison to the Waihe'e
5 Hopoi fields.

6 Q I'm just going to ask you to look over
7 again -- I guess you've looked over it numerous
8 times, but the first written testimony. Just ask
9 you, to the best of your knowledge, is that true and
10 correct at this time? I'm not going to ask you about
11 all the rest of the information.

12 A Yes, with the clarification of the acres
13 that we had reported. If you look at total acres in
14 that Waihe'e Hopoi area, it should be with the
15 addition of Field 921 and 922, about 300 more acres.

16 Q Now, your second written testimony
17 declaration that was submitted October 26, again,
18 there is a lot of information here, I don't intend to
19 ask you about it all.

20 Could you just kind of take a look at that,
21 and tell me whether that is all true and correct to
22 the best of your belief and understanding?

23 A The only clarification would be on page
24 five. I guess this is paragraph -- continuation of
25 paragraph 13, the last sentence, actually the last

1 half of the paragraph talks about Field 715 which we
 2 talked about before. That field was scheduled to be
 3 harvested on December 2nd of last year.

4 So when we did this scenario, what if, it
 5 was assumed that it would have been planted in
 6 January. Unfortunately, we got 12 inches of rain on
 7 December 4th or December 5th, and we still had cane
 8 on the field that was not -- the harvesting operation
 9 was not completed.

10 So this whole scenario of having to plant
 11 it and not having water available to Field 715 would
 12 not be accurate.

13 Q Well, it's just been deferred?

14 A Yes.

15 Q I mean it would still be true but just for
 16 a different month?

17 A Right.

18 Q Anything else?

19 A That's it.

20 Q And then your third one, November 16.

21 A One change on page two, paragraph four, the
 22 calculation for what our loss revenue would be if we
 23 had to use that power to pump Well 7 instead of
 24 making it available to Maui Electric, the \$2,400 per
 25 day should actually be 2,900 per day, and that's with

an updated figure for the first quarter of 2008.

Q So it's not a change, it's an update?

A It's an update.

Q So this is correct for the last quarter?

A That's correct.

Q So could you explain then the revenues that
 HC&S receives from power delivered to MECO is
 adjusted quarterly, is that --

A It's adjusted quarterly, correct.

Q All right. So the best you can do is do an
 estimate based on the most recent quarter?

A Correct.

Q And if we did that, this number would go
 from 2,400 per day to 2,900 per day?

A Right. And then in paragraph six, same
 thing 24 to 29, and from 48 to 58.

Q And then what it does in the future is
 based on the market?

A The avoided cost for fossil fuel.

Q Which depends on what the oil market, et
 cetera?

A That's right.

Q If you could look for a moment at paragraph
 ten of this last written testimony, this paragraph
 talks about -- I mean the earlier part of the

1 testimony you basically calculated what some of the
 2 cost impacts would be of having to rely more heavily
 3 on Well 7 if surface water from West Maui were to
 4 become diminished or unavailable.

5 And then in paragraph ten you say: The
 6 foregoing estimates do not include any consideration
 7 of the effects on HC&S' costs -- of potential
 8 increases to the salinity of the brackish water
 9 pumped from well No. 7 if pump, if it is pumped
 10 heavily for sustained periods of time, and
 11 groundwater recharge from the use of fresh surface
 12 water from the West Maui ditch system is
 13 correspondingly reduced.

14 Do you see that?

15 A Yes.

16 Q Obviously your time with the company is
 17 essentially after the period when HC&S used to use
 18 Well 7 more heavily, correct?

19 A That's correct.

20 Q But you have some familiarity with what the
 21 past usage of Well No. 7 has been?

22 A I've reviewed the groundwater use reports.

23 Q And in connection with the wells that are
 24 operated on the eastern side of the plantation,
 25 you're involved in managing the level of pumping that

could be sustained with those pumps?

A Sure. We take monthly well sampled, so we
 actually sample the water that's being pumped from
 each well whenever it's in operation. And we measure
 things like chloride content, conductivity. We also
 look for different metals or any minerals that may be
 present in the water that could be harmful to the
 cane. So we are familiar with overall the trends of
 those elements in the water.

Q Is there -- I mean, you pump more heavily,
 you see a corresponding change in salinity,
 generally?

A You know, without doing a statistical
 analysis, the generalization can be made that as we
 pump more heavily, we see salt levels increase. We
 see conductivity increase. And many of those levels
 can be reduced by simply shutting down the pump for a
 period of time.

Q And that is something you measure on a
 regular basis on the eastern side?

A We do, and it's critical to the cane plant,
 because cane is somewhat tolerant of salt, but too
 much salt, especially at the wrong time in the crop
 cycle could reduce the amount of sugar that you
 actually store. The cane plant will actually store

1 salt, different types of salt, potassium, sodium,
2 instead of actually storing sucrose.

3 Q So with regard to groundwater recharge from
4 use of fresh surface water, how does that factor in
5 it?

6 A In reviewing the various pump reports and
7 the studies that the USGS did, there's a direct
8 correlation in groundwater recharge to sustainability
9 of pumping. That's been proven in many of the
10 literature that they have produced.

11 Some of it is prior to our conversion to
12 drip irrigation, when we were in furrow, when much
13 larger quantities of water were applied to much
14 smaller areas.

15 So we look at that. There is a correlation
16 to the amount of irrigation recharge that we actually
17 get on the groundwater to determine how much we can
18 actually pump.

19 Q So you know what, I think you'll have an
20 opportunity to elaborate on that much further during
21 cross-examination. So I'll just leave that further
22 development to cross-examination. Let me just check
23 my notes.

24 Other than that correction on your update
25 rather than correction on your third testimony,

anything else in there that needs clarification, or
is that true and correct to the best of your
knowledge and belief?

A To the best of my knowledge.

Q Since we're close to 4:30, can I take a
short break to see if I got any more direct?

HEARINGS OFFICER MIIKE: Two minutes.
(Recess taken.)

HEARINGS OFFICER MIIKE: Obviously we're
not going to cross today, but we will finish off here
and break.

MR. SCHULMEISTER: I do see one thing I
didn't cover.

Q There was one more thing I was going to ask
you. That is, I mean you've discussed this reliance
that HC&S places on the water balance model and the
collection of data from the weather stations to
determine the evapotranspiration needs of the cane,
and in addition to that there is other factors that
contribute to the decisions to apply water to
particular fields such as weed control, germination
of seed cane, et cetera.

But in general, when you have a field
that's growing, you're not doing weed control, and
it's past the germination stage, what does HC&S do to

1 make sure that water is not being wasted, either
 2 because too much water is being applied, there's a
 3 break in the system, there is a leak? What measures,
 4 what quality control measures do you use to -- as a
 5 check, on a check and balance on whether or not
 6 you're really applying the water efficiently?

7 A Well, what we don't do is we don't manage
 8 from the office. The water balance program is a
 9 prioritization and a management tool, but ultimately
 10 the decision to irrigate, what fields to irrigate,
 11 and when is made in the field. The water balance
 12 program is just a tool that my managers use to make
 13 those decisions.

14 We joke about it, but probably the most
 15 important tool that we have is a shovel. In the back
 16 of my truck I've got a shovel, a spare tire and a
 17 fire extinguisher, that's all I need.

18 That literally means going out to the field
 19 and seeing, after I run the fields for 24 hours,
 20 where is my water level. Have I got the water out to
 21 the cane plant? Does the cane plant look stressed?
 22 Does the cane plant look fine? Can I move the water
 23 someplace else?

24 There's been many times that the water
 25 balance program says this field needs to be

1 irrigated. And when you look at the field, when you
 2 actually inspect it, when you do biomass -- when you
 3 actually look at the biomass that's been created, it
 4 doesn't need the water, another field needs the water
 5 that's showing drought stress, or showing for
 6 whatever reason maybe a variety specific trait that
 7 requires more water in the summer than another
 8 variety.

9 The point is that the management needs to
 10 take place out in the field. And to do that we have
 11 one farm manager who's responsible for roughly
 12 one-fourth of the plantation. And under that manager
 13 there are three other supervisory positions that are
 14 responsible for one-third of that one-fourth, so
 15 roughly 3000 acres each.

16 And they're on the ground -- you know, we
 17 have people on the ground in the field seven days a
 18 week, and their responsibility is not only the
 19 irrigation, fertilization of the fields, but actually
 20 scouting and fixing, repairing any problems with the
 21 irrigation system, any problems with the ditch
 22 delivery system and management of the water.

23 Q So these tubes are fairly -- are they
 24 fragile -- they're certainly more fragile than the
 25 PVC?

1 A Sure.

2 Q So if you have a break, how do you know?

3 A If we have one break in a 400-acre field,

4 nobody will know. If it is large cane, if it's in

5 the middle of the field, that's something that we

6 won't pick up from the ground. So one thing that we

7 do, is we do an aerial survey every month, and we try

8 and take pictures of the entire plantation.

9 We're looking for multiple things. We're

10 looking for areas that are green that shouldn't be

11 green. That's an indication of a leak. We're

12 looking for areas that are dry that shouldn't be dry.

13 That's an indication of water not getting where it's

14 supposed to be.

15 We have various problems with the drip

16 tubing. It can be associated to mongoose and rats.

17 We al have two legged rats that decide to cut tubing

18 and do alternative agriculture in the fields from

19 time to time.

20 And aerial surveys are one way of finding

21 those things, finding the problems and correcting

22 them.

23 Q And what do you do with the shovel?

24 A What do I do with the shovel?

25 Q Right. You said it's your most important

1 tool. What do you do with it?

2 A Generally digging. That's usually a good

3 use for the shovel. We dig and we see. We dig soil

4 pits see, you know, after a certain amount of

5 irrigation, what kind of water improvement we have.

6 We actually grab the soil and feel what the moisture

7 content is.

8 Like I said, we don't want to rely on a

9 computer model to dictate to us what to do out there.

10 The model is simply a guide. I rely on my managers

11 and my supervisors out there on a daily basis,

12 inspecting the fields, inspecting the soil, deciding

13 how and when to irrigate.

14 Q So if you dig a pit, I guess near the roots

15 of the cane row, is that what you do?

16 A You can dig a pit adjacent to the drip

17 tubing and out into the row, because we plant with

18 one drip tube line. We plant on either side of a

19 cane line. So one drip tube line actually services

20 two different cane lines.

21 So you could dig a pit at the actual drip

22 tube line to see how much water you get when you turn

23 it on, and also right outside of the cane line to see

24 the water move out, how long that takes.

25 Q And you can tell just by looking at it?

1 How do you tell?

2 A You grab the soil, you ball it up. You can
3 feel the moisture. In some of the clay areas, if you
4 grab that soil and it actually holds its form, you
5 probably have adequate moisture. If it crumbles and
6 falls apart, you don't have adequate moisture.

7 In the sandy fields it's a little more
8 difficult. Sandy soils do not necessarily hold
9 together real well. But you can -- sand is one that
10 you can actually feel the moisture pretty easily.

11 Q Anything I forgot to ask you?

12 A No.

13 Q Anything else you want to say?

14 A I'm sure we will cover it under cross.

15 Q I have no further questions.

16 HEARINGS OFFICER MIKE: Why don't we end
17 for the day and start with the cross tomorrow
18 morning. Who will start first. Ms. Bunn?

19 MS. BUNN: I'll go first.

20 HEARINGS OFFICER MIKE: So we'll start
21 with cross. When and if we get through with you
22 tomorrow, which I expect a long cross, then we'll
23 move on to Mr. Holaday.

24 (The proceedings recessed at 4:30 p.m.)

25

COPY

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

'Iao Ground Water Management) CASE NO. CCH-MA06-01

Area High Level Source Water)

Use Permit Applications and)

Petition to Amend Interim) Volume XVI

Instream Flow Standards of)

Waihe'e, Waiehu, 'Iao & Waikapu)

Streams Contested Case Hearing)

_____)

CONTESTED CASE HEARING

Held on January 30, 2008, at MOE, Wailuku, Maui,
Classroom 1, commencing at 9:00 a.m.

BEFORE: Jean Marie McManus, CSR #156

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A That's correct.

Q What percentage of that is sold to Maui Electric?

A The six megawatts is internal to our grid. So what Maui Electric sees is either steam produced electricity or hydroelectric electricity. There is no percentage.

Q So you don't know what is residual to you after you satisfy your contract with Maui Electric?

MR. SCHULMEISTER: Let me just object. I think that there is an ambiguity in the question.

When you're asking about the percentage, you're just talking about hydropower or in total?

MR. MANCINI: No, excluding the hydropower. If you can answer it, fine.

A Our firm power commitment to Maui Electric is for 12 megawatt hours for 14 hours throughout the day, and eight megawatt hours through the remaining ten hours a day. So that divided by 30 would be the percentage.

Q Thank you for your time.

HEARINGS OFFICER MIKE: Let's break for five.

(Recess taken.)

REDIRECT EXAMINATION

1 BY MR. SCHULMEISTER:

2 Q Mr. Volner.

3 A Mr. Schulmeister.

4 Q How are you doing?

5 A I'm still here.

6 Q Just one follow up here.

7 Do you have E-5 and page 35 of A-141 handy?

8 A Page 35 of A-141, right?

9 Q Right.

10 A Yes.

11 Q These are two tables that both have a

12 column which represents, depending on which one

13 you're looking at, water use or water delivery to the
14 Waihe'e Hopoi fields; is that right?

15 A That's correct.

16 Q While you were being cross-examined, I
17 guess there was a question that came up with the

18 source of the HC&S -- if you look at Exhibit A-141,

19 page 35, under the column HC&S Waihe'e/Hopoi fields

20 there is numbers there for 2000 through 2004; is that
21 correct?

22 A That's correct.

23 Q And then on E-5 for 2004 there's also a

24 number for delivery to Waiale Reservoir, but they're
25 not quite exactly the same; is that right?

13.21-89

McMANUS COURT REPORTERS 239-6148

A That's right.

Q And you were asked whether you understood
why they would be different. Have you had time to
think about that?

A On further review and after lunch, I
believe the table in A-141, page 35 under the column
HC&S Waihe'e/Hopoi, that number was actually the
total deliveries minus the usage of the sod farm,
Monsanto corn farm, and the DeCoite Trucking, and
landfill. I believe if you add those to that number
you are much closer, if not exactly on the same
number as Exhibit E-5.

Q So that would reconcile?

A I believe so, yes.

Q No further questions.

HEARINGS OFFICER MIIKE: Are you going to
cross on something specific to this point or
something else you thought about?

MR. MORIWAKE: Something specific that was
raised.

HEARINGS OFFICER MIIKE: To the redirect?

MR. MORIWAKE: Well, raised in the

cross-examination Mr. Mancini, which frankly was more
in the line of a redirect.

HEARINGS OFFICER MIIKE: That's his

13.21-90

McMANUS COURT REPORTERS 239-6148

1 prerogative. I'll let you try, but I may stop you,
 2 but go ahead. Who's going to go, Ms. Bunn or Mr.
 3 Moriwake?

4 MR. MORIWAKE: I am.

5 HEARINGS OFFICER MIIKE: But I'm not going
 6 to keep letting you guys go and come up with
 7 questions on somebody else's cross-examination, not
 8 too much. I'm being pretty liberal about this,
 9 because you're just getting another crack at it.

10 MR. MORIWAKE: Well, I just have one line
 11 of questions, and it's regarding the revelation for
 12 the first time in this proceeding after three or four
 13 years of this continuing that there's going to be one
 14 more field added to the list of fields that HC&S is
 15 proposing to cultivate.

16 We didn't see this in Mr. Volner's direct
 17 testimony yesterday. We didn't see this in any of
 18 the testimonies to date. We didn't see this in Mr.
 19 Volner's direct testimony yesterday, and in
 20 cross-examination by Mr. Mancini it was brought up
 21 for the first time in this proceeding.

22 And I'm frankly shocked, you know, of this
 23 last minute revelation at this point. And I think
 24 his entire cross-examination was more in the form of
 25 a redirect anyway, but that's is the precise point I

would like to question Mr. Volner.

HEARINGS OFFICER MIIKE: Go ahead.

RE-CROSS EXAMINATION

BY MR. MORIWAKE:

Q Now, you recall just a little while ago Mr.
 Mancini, in his cross-examination, asking you about a
 new field I believe called 767?

A Yes.

Q And was that field ever mentioned in any of
 your testimony submitted in this case?

A Not in the previous testimony, no.

Q Or any of the testimonies submitted by HC&S
 by any other witness?

A Not as of November 16, no.

Q You didn't mention it in your direct
 either, right, in your direct testimony in this
 hearing?

A I do not believe so.

Q Can you take a look at your Exhibit E-1.
 That's your field map for HC&S, correct?

A That's correct.

Q Now, this is based on I guess -- is this a
 snapshot in time, as some people use the term, or is
 it sort of an understanding of what HC&S has been
 over a certain period -- you know, a certain length



January 11, 2008

Commission on Water Resource Management
State Department of Land and Natural Resources
P. O. Box 621
Honolulu, HI 96809

Re: State Water Resource Protection Plan Update

Dear Commissioners:

The purpose of this letter is to provide comments on behalf of Hawaiian Commercial and Sugar ("HC&S") to the Commission on Water Resource Management ("CWRM") regarding the October 1, 2007 Public Review Draft Water Resource Protection Plan ("WRPP"). Specifically, HC&S takes exception to the values recommended in Table 3-13 as being the sustainable yields for the Kahului, Paia and Makawao aquifer systems because they do not account for irrigation return, as substantial volumes of surface water are imported by HC&S into the Paia and Kahului aquifers, nor do they account for the interaction between these aquifer systems in the form of down gradient ground water movement from the Makawao into the Paia aquifer and from the Paia into the Kahului aquifer.

The Draft WRPP recommends a sustainable yield of <1 mgd for the Kahului aquifer (Aquifer Code 60301), which is a reduction from the sustainable yield of 1 mgd established in 2006. For the Paia aquifer (Aquifer Code 60302), it recommends a sustainable yield of 7 mgd, a reduction of 1 mgd from the sustainable yield of 8 mgd established in 2006. For the Makawao aquifer, (Aquifer Code 60303), it recommends a sustainable yield of 7 mgd, identical to the 2006 figure. In the aggregate, this amounts to a recommended sustainable yield of between 14 and 15 mgd for these three contiguous aquifer systems. It is clear from the discussion at pp. 3-55 and 3-56 of the Draft WRPP that these values were developed without any consideration of contributions from return irrigation water or ground water movement from adjacent aquifers.

HC&S irrigates significant acreage overlying the Kahului and Paia aquifers. In addition, HC&S has brackish water wells in the Paia and Kahului aquifers which it uses to help meet the irrigation needs of its 35,000 acres of cultivated sugar cane. On average, HC&S imports from 170 to 180 mgd of surface water from outside of the Kahului and Paia aquifers to irrigate HC&S' more than 30,000 acres of sugar fields located within these aquifers. Most of this water, at least 150 mgd, is delivered to HC&S via the East Maui Irrigation (EMI) system. The balance is delivered via the West Maui ditch system operated by Waiuku Water Company and HC&S.

Commission on Water Resource Management

Page 2

January 11, 2008

HC&S has five brackish water wells in the Kahului aquifer, being State Well Nos. 5226-01, 5226-02, 5128-02, 5227-04 and 5227-05. HC&S has an additional eleven brackish water wells in the Paia aquifer, being State Wells Nos. 4727-01, 5323-1, 4825-01, 5424-01, 5224-01, 5520-01, 5522-01, 5423-02, 5422-02, and 5321-01. Since 1986, HC&S has filed monthly ground water use reports with CWRM detailing the quantities withdrawn each month from each of these wells. Over the last twenty years, the daily average rate of withdrawal, by year, for all 16 of these wells combined has ranged from approximately 40 mgd to as much as 112 mgd – far in excess of the combined sustainable yield of between 7 and 8 mgd for the Kahului and Paia aquifers recommended in the Draft WRPP. Several of these wells have been in operation for more than a hundred years, and all have been in place and operated for many decades without any long term deterioration in water quality.

In addition to recharge from irrigation return water, there is down gradient ground water movement from the Makawao to the Paia and the Paia to the Kahului aquifers that also contributes to recharge of the Kahului aquifer. To expand upon this point, HC&S intends to supplement this letter shortly with a letter from hydrologist Tom Nance suggesting that the Makawao, Paia and Kahului aquifer systems be treated as a single unit, rather than as three separate systems.

Based on the foregoing facts, and the soon to be submitted letter from Tom Nance, HC&S respectfully requests that CWRM revisit the recommended values for the sustainable yields of the Kahului, Paia and Makawao aquifers and consider treating them as a single aquifer system.

Very truly yours,

HAWAIIAN COMMERCIAL & SUGAR COMPANY



Rick W. Volner, Jr.
Senior Vice President, Agricultural Operations

Field	Bk	Acres	Acres	Year:	2008	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
104	1	209.6				P	HAIK	HAIK	HAIK via	11	11AB	none		
105	1	147.2				P	HAIK	HAIK (2) 12	11	11AB	none			
107	2	67.3				P	HAIK	HAIK or	11	11AB	none			
107	3	51.7				P	HAIK	HAIK or	12	11AB	none			
108	1	105.4				P	HAIK	HAIK	12	11AB	none			
108	2	183.3				P	HAIK	HAIK	11	11AB	none			
210	1	61.6				P	HAIK	HAIK or	11	11AB	none			
211	1	48.8				P	HAIK	HAIK or	11	11AB	none			
211	2	75.5				P	HAIK	HAIK or	11	11AB	none			
212	1	163.5				P	HAIK	HAIK or	11, 12, 13	12, 13AB	none			
213	1	149.6				P	HAIK	HAIK or	11, 12, 13	12, 13AB	none			
214	1	147.8				P	HAIK	HAIK or	11, 12, 13	12, 13AB	none			

13.23-2

13.23-1

22

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED FOLLOWED
600	1	94.7		P	HAIKU	HAIKU	Haiku	11,12,13, 16 &/or 16AD, 12, 13AB, 11A, 11B, none	4 &/or 4 none		
600	2	233.4		P	HAIKU	HAIKU	Haiku or Well 4	11,12,13, 16 &/or 16AD, 12, 13AB, 11A, 11B, none	4 &/or 4 none		
601	1	156.6		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4 16AD, 12, 13AB, 11A, 11B, none	4 &/or 4 none		
601	2	48.0		P	HAIKU	HAIKU	Haiku or Well 2	11,12,13, 16, 4 16AD, 12, 13AB, 11A, 11B, none	4 &/or 4 none		
602	1	189.5		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4 16AD, 12, 13AB, 11A, 11B, none	4 &/or 4 none		
602	2	163.9		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4 16AD, 12, 13AB, 11A, 11B, none	4 &/or 4 none		

13.23-3

603	1	166.4		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4 16AD, 12, 13AB, 11A, 11B, none	8/or 2		
604	1	377.2		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4, 2 16AD, 12, 13AB, 11A, 11B, none	2, &/or 9		
604	2	138.6		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4, 2 16AD, 12, 13AB, 11A, 11B, none	2, &/or 9		
605	1	276.6		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4, 2 16AD, 12, 13AB, 11A, 11B, none	2, &/or 9		
605	2	157.4		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4, 2 16AD, 12, 13AB, 11A, 11B, none	2, &/or 9		
606	1	130.9		P	HAIKU	HAIKU	Haiku	11,12,13, 16, 4, 2 16AD, 12, 13AB, 11A, 11B, none	2, &/or 9		

13.23-4

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump
611	1	133.6		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 4	none
611	2	79.7		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 4	"
611	3	107.3		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 4	"
706	1	215.7		M	HAIKU	HAIKU	Well 4	8 &/or 19	6AB, 8 &/or 19, 19C's	none
706	2	78.7		M	HAIKU	HAIKU	Well 4	8 &/or 19	6AB, 8 &/or 19, 19C's	none
707	1	338.5		M	HAIKU	HAIKU	Well 4	8 &/or 19	6AB, 8 &/or 19, 19C's	none
708	1	224.9		M	HAIKU	HAIKU	Well 4	8 &/or 19	6AB, 8 &/or 19, 19C's	none
709	1	31.9		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 9	none
709	2	47.7		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 9	none

13.23-6

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump
606	2	0.0		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 9	none
607	1	188.9		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 4	none
608	1	146.0		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 4	none
608	2	155.2		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 4	none
609	1	200.7		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 4	none
610	1	174.1		P	HAIKU	HAIKU	Well 4	11,12,13, 16 &/or 19	11A, 11B, 12, 13AB, 16AD, &/or 9	none

13.23-5

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
915	1	167.9		M	HAIKU	HAIKU	Haiku via 6 &/or 8 & 19	6 &/or 8 & 19	6AB	none		
916	1	297.4		M	HAIKU	HAIKU	Haiku via 6 &/or 8 & 19	6 &/or 8 & 19	6AB	none		
917	1	204.7	7717.7	M	HAIKU	HAIKU	Haiku via 6 &/or 8 & 19	6 &/or 8 & 19	6AB	19C's		
111	1	23.2		P	HAMK	HAMK	Hamakua via Pala Hydro & Fentstock/none	Hamakua via Pala Hydro & Fentstock/none	none	none		
113	1	61.5		P	HAMK	HAMK	Hamakua via Pala Hydro & Fentstock/none	Hamakua via Pala Hydro & Fentstock/none	none	none		
116	1	162.1		P	HAMK	HAMK	Hamakua via (2) 12" (3) 5/6" Hydro & Fentstock/none	Hamakua via (2) 12" (3) 5/6" Hydro & Fentstock/none	none	none		
116	A	0.0		P	HAMK	HAMK	lease to Maui Pineapple	lease to Maui Pineapple	none	none		48.9
118	1	0.0		P	HAMK	HAMK	lease to Maui Pineapple	lease to Maui Pineapple	none	none		25.4
118	2	0.0		P	HAMK	HAMK	lease to Maui Pineapple	lease to Maui Pineapple	none	none		36.8
119	1	0.0		P	HAMK	HAMK	lease to Maui Pineapple	lease to Maui Pineapple	none	none		48.5
119	2	0.0		P	HAMK	HAMK	lease to Maui Pineapple	lease to Maui Pineapple	none	none		111.3

13.23-8

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
914	2	82.1		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	none	
914	1	163.6		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	19C's	
912	1	167.6		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	none	
911	4	81.6		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	none	
911	3	83.7		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	19C's	
911	2	94.0		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	none	
911	1	127.5		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	19C's	
901	1	165.8		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	none	
900	1	156.8		M	HAIKU	HAIKU	Haiku	6 &/or 8 & 19	6 &/or 8 & 19	6AB	19C's	
717	2	112.3		M	HAIKU	HAIKU	Haiku Ditch via Res. 90 or 8 or 7 (Mill Ditch) Ditch or Waihee	6 or 8 or 7 or 19 (Mill Ditch) Ditch or Waihee	6A, 6B, 8ABD, 19AB, or 7A, or 7CHL	19C's		
717	1	145.3		M	HAIKU	HAIKU	Haiku Ditch via Res. 90 or 8 or 7 (Mill Ditch) Ditch or Waihee	6 or 8 or 7 or 19 (Mill Ditch) Ditch or Waihee	6A, 6B, 8ABD, 19AB, or 7A, or 7CHL	19C's		

13.23-7

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
200	1	180.8		P	HAMK	HAMK	Hamakua & Kahaka	Hamakua	none	none		
300	1	73.0		K	HAMK	HAMK	Hamakua	none	none	none		
300	2	222.3		K	HAMK	HAMK	Hamakua	none	none	none		
300	3	105.8		K	HAMK	HAMK	Hamakua	none	none	none		
301	1	75.3		K	HAMK	HAMK	Hamakua	none	none	none		
301	2	274.9		K	HAMK	HAMK	Hamakua	none	none	none		
302	1	97.4		K	HAMK	HAMK	Hamakua	none	none	none		
302	2	166.1		K	HAMK	HAMK	Hamakua	none	none	none		
303	1	111.1		K	HAMK	HAMK	Hamakua via F300	chile	none	none		
304	1	34.2		K	HAMK	HAMK	Hamakua via F301	chile	none	none		
304	3	145.0		K	HAMK	HAMK	Hamakua via F301	chile	none	none		
307	1	129.9		K	HAMK	HAMK	Hamakua	none	none	none		
312	1	33.1		K	HAMK	HAMK	Hamakua	none	none	none		
312	2	64.3		K	HAMK	HAMK	Hamakua	none	none	none		
312	3	97.2		K	HAMK	HAMK	Hamakua via Res 20	Hamakua	none	none		
313	1	171.1		K	HAMK	HAMK	Hamakua via F302/307	chile	none	none		
314	1	28.4		K	HAMK	HAMK	Hamakua	none	none	none		
314	2	157.2		K	HAMK	HAMK	Hamakua	none	none	none		
400	1	103.9		K	HAMK	HAMK	Hamakua	none	none	none		

13.23-9

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
400	2	224.0		K	HAMK	HAMK	Hamakua via Res 40	Hamakua	none	none		
401	1	57.2		K	HAMK	HAMK	Hamakua	none	none	none		
401	2	111.6		K	HAMK	HAMK	Hamakua	none	none	none		
401	3	359.4		K	HAMK	HAMK	Hamakua via Res 40	Hamakua	none	none		
408	1	29.2		K	HAMK	HAMK	Hamakua via Res 40	Hamakua	none	none		
409	1	48.5		K	HAMK	HAMK	Hamakua via Res 40	Hamakua	none	none		
410	1	116.0		K	HAMK	HAMK	Hamakua	none	none	none		
410	2	74.9		K	HAMK	HAMK	Hamakua	none	none	none		
413	1	80.5		K	HAMK	HAMK	Hamakua	none	none	none		
413	2	96.6		K	HAMK	HAMK	Hamakua via Res 40	Hamakua	none	none		

13.23-10

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
712	5	0.0	0.0	L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
712	6	40.0	40.0	L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
713	1	0.0	0.0	L	HMIL	HMIL	Fallowed	8 & 19	8 & 19	8A/B/D	Res 70		
713	2	0.0	0.0	L	HMIL	HMIL	Fallowed	8 & 19	8 & 19	8A/B/D	Res 70		
713	3	0.0	0.0	L	HMIL	HMIL	Fallowed	8 & 19	8 & 19	8A/B/D	Res 70		
714	1	148.8	455.4	L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
100	1	246.0		P	HPLQ	HPLQ	H'poko-Lowte	none	none	none	none		
101	1	63.3		P	HPLQ	HPLQ	H'poko-Lowte	none	none	none	none		
101	2	99.8		P	HPLQ	HPLQ	H'poko-Lowte or Pump	17	17	17	17		
102	1	77.8		P	HPLQ	HPLQ	H'poko-Lowte	17	17	17	17		
103	1	32.3		P	HPLQ	HPLQ	H'poko-Lowte	17	17	17	17		
103	2	120.0		P	HPLQ	HPLQ	H'poko-Lowte	17	17	17	17		
103	3	101.6		P	HPLQ	HPLQ	H'poko-Lowte	17	17	17	17		
106	1	64.2		P	HPLQ	HPLQ	H'poko-Lowte	17	17	17	17		
106	2	62.8		P	HPLQ	HPLQ	H'poko-Lowte	17	17	17	17		

13.23-12

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
413	3	197.6		K	HAMK	HAMK	Hamakuia via Res 40	none	none	none	none		
710	1	5.0		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
710	2	39.9		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
710	3	22.0		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
710	4	7.4		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
710	5	9.8		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
711	1	35.6		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
711	2	53.9		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
712	1	38.1		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
712	2	52.1		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
712	3	2.8		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
712	4	0.0		L	HMIL	HMIL	Puu	8 & 19	8 & 19	8A/B/D	Res 70		
505	1	174.3	4087.6	L	HAMK	LOWR	Ditch & Res 35	18	18	18AB	18C1/C2		

13.23-11

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
107	1	69.7		P	HPLO	HPLO	Pump 17 Ditch via 10"	17				
109	1	132.5		P	HPLO	HPLO	Hpoko- Lowte none					
110	1	99.4		P	HPLO	HPLO	Hpoko- Lowte none					
114	1	140.3		P	HPLO	HAUK	Haiku or Pump 17 11	11AB				
115	1	156.4		P	HPLO	HPLO	Ditch Pump 17 17	17				
115	1	156.4		P	HPLO	HPLO	Ditch Pump 17 17	17				
204	2	65.9		P	HPLO	HPLO	Hpoko- Lowte 17	17CX				
207	1	120.7		P	HPLO	HPLO	Pump 17 Ditch 17	17				
207	2	71.9		P	HPLO	HPLO	Pump 17 Ditch 17	17				
208	1	80.6		P	HPLO	HPLO	Lowte via Res 25, Ditch & Res 26 17	17				
208	2	134.5	1939.7	P	HPLO	HPLO	Res 25, Lowte via Res 25, Ditch & Res 26 17	17				
111	2	133.9		P	KAUk	KAUk	Kauhiko/ Hamakua Chule via Res 21 & (1) 12" none					

13.23-13

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
112	1	0.0		P	KAUk	KAUk	Res 10 & Kauhiko via (1) 12" none					
113	2	93.1		P	KAUk	KAUk	Kauhiko/ Hamakua Chule via Res 21 & (1) 12/10" Kauhiko via Res 10 & Kauhiko none					
117	1	211.7		P	KAUk	KAUk	Res 10 & via Res 10 & (2) 10" Kauhiko none					
120	1	0.0		P	KAUk	KAUk	Res 10 & via (1) 10" Kauhiko none					120.0
200	2	185.4		P	KAUk	KAUk	Kauhiko/ Hamakua chule via Res 23 Kauhiko or via Res 22 Hamakua 18 via Chule none					
201	1	93.3		K	KAUk	KAUk	KAUk or via Res 22 Kauhiko 18	18AB				
201	2	161.2		K	KAUk	KAUk	Kauhiko via Res 22 18	18AB				
202	1	49.0		K	KAUk	KAUk	via Res 22 Kauhiko 18	18AB				
202	2	189.5		K	KAUk	KAUk	Kauhiko 18	18AB				
203	1	31.3		K	KAUk	KAUk	Kauhiko 18	18AB				

13.23-14

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
306	1	149.6		K	K	K	Kauhikoa via F303 chile	18	18AB	18C1/C2		
306	2	114.6		K	K	K	Kauhikoa via Pump Ditch to Res 34 via 8"	18	18AB	18C1/C2		
308	1	35.6		K	K	K	Kauhikoa	18	18AB	18C1/C2		
308	2	100.2		K	K	K	Kauhikoa	18	18AB	18C1/C2		
308	3	145.4		K	K	K	Kauhikoa via Pump Ditch	18	18AB	18C1/C2		
309	1	347.3		K	K	K	Kauhikoa via Res 33	18	18AB	18C1/C2		
310	1	132.1		K	K	K	Kauhikoa	18	18AB	18C1/C2		
310	2	207.0		K	K	K	Kauhikoa via Pump Ditch	18	18AB	18C1/C2		
311	1	199.3		K	K	K	Kauhikoa via Pump Ditch	18	18AB	18C1/C2		
402	2	89.9		K	K	K	Kauhikoa	18	18AB	18C1/C2		
403	1	67.7		K	K	K	Kauhikoa	18	18AB	18C1/C2		
404	1	161.0		K	K	K	Kauhikoa via Res 42	18	18AB	18C1/C2		

13.23-16

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
203	2	163.4		K	K	K	Kauhikoa	18	18AB	18C1/C2		
204	1	72.3		P	K	K	HPLO Kauhikoa via F11/113 chile or Lowrie	17	17CX	none		
205	1	93.0		P	K	K	LOWR Kau'koa via F201/202 chile	16 &/or 18	16A or D 16C	18AB none		
206	1	84.8		P	K	K	Kauhikoa via Pump Ditch	18	18AB	18C1/C2		
209	1	52.4		L	K	K	LOWR Kauhikoa via Pump Ditch to Res 34 via 8"	16 &/or 18	16A or D 16C	18AB none		
303	2	59.7		K	K	K	Kauhikoa	18	18AB	18C1/C2		
304	2	28.7		K	K	K	Kauhikoa	18	18AB	18C1/C2		
304	4	44.8		K	K	K	Kauhikoa via Res 32	18	18AB	18C1/C2		
304	5	22.2		K	K	K	Kauhikoa via Res 33	18	18AB	18C1/C2		
305	1	96.4		K	K	K	Kauhikoa	18	18AB	18C1/C2		

13.23-15

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
500	1	85.8	85.0	L	KAU	KAU	Lowrie Kauhikoa 16 &/or Ditch via Pump 18	16A or D	18AB	16C	none	
501	1	85.0	85.0	L	KAU	KAU	Ditch via Pump Kauhikoa 18	18AB	18AB	18C1/C2		
502	1	211.7	211.7	L	KAU	KAU	Lowrie Ditch or via Pump Kauhikoa 18	18AB	18AB	18C1/C2		
503	1	67.6	67.6	L	KAU	KAU	via F309/310 Kauhikoa chute	18AB	18AB	18C1/C2		
504	1	134.4	134.4	L	KAU	KAU	LOWR chute & F309/310 via Kauhikoa	18AB	18AB	18C1/C2		
506	1	125.6	125.6	L	KAU	KAU	Ditch or Lowrie Ditch Kauhikoa via Pump Ditch to Res 41 & Ditch	18AB	18AB	18C1/C2		

13.23-18

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
404	2	119.1	119.1	K	KAU	KAU	Kauhikoa Ditch to via Pump Ditch Res 41 &	18AB	18AB	18C1/C2		
405	1	178.6	207.4	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
406	1	207.4	142.4	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
407	1	142.4	142.4	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
408	2	318.5	86.7	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
409	2	86.7	86.7	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
409	3	195.6	195.6	K	KAU	KAU	Kauhikoa	18AB	18AB	18C1/C2		
411	1	83.4	83.4	K	KAU	KAU	via Res 43 Kauhikoa 18	18AB	18AB	18C1/C2		
411	2	160.7	160.7	K	KAU	KAU	Kauhikoa	18AB	18AB	18C1/C2		
412	1	244.6	244.6	K	KAU	KAU	via Res 43 Kauhikoa 18	18AB	18AB	18C1/C2		
414	1	166.7	166.7	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
415	1	38.3	38.3	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
415	2	159.1	159.1	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
416	1	108.7	108.7	K	KAU	KAU	Kauhikoa	18AB	18AB	18C1/C2		
417	1	51.0	51.0	K	KAU	KAU	via Res 45 Kauhikoa 18	18AB	18AB	18C1/C2		
417	2	0.0	0.0	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
417	3	133.5	133.5	K	KAU	KAU	Kauhikoa 18	18AB	18AB	18C1/C2		
418	1	176.5	176.5	K	KAU	KAU	via Res 45 Kauhikoa 18	18AB	18AB	18C1/C2		

13.23-17

0.0
60.5
0.0
162.0
48.8
299.1
0.0

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
501	2	84.9	158.6	L	LOWR	LOWR	Lowrie	16 &/or 18	16A or D 16C	18AB none		
501	3	158.6	64.9	L	LOWR	LOWR	Lowrie	16 &/or 18	16A or D 16C	18AB none		
501	4	64.9	76.8	L	LOWR	LOWR	Lowrie via Res 51	16 &/or 18	16A or D 16C	18AB none		
501	5	76.8	88.3	L	LOWR	LOWR	Lowrie	16 &/or 18	16A or D 16C	18AB none		
504	2	189.8		L	LOWR	LOWR	Lowrie	16 &/or 18	16A or D 16C	18AB none		
505	2	150.9		L	LOWR	LOWR	Lowrie	16 &/or 18	16A or D 16C	18AB none		
506	2	44.5		L	LOWR	LOWR	Lowrie	16 &/or 18	16A or D 16C	18AB none		
507	1	127.7		L	LOWR	LOWR	Lowrie via Res 51	16 &/or 18	16A or D 16C	18AB none		
500	3	264.1		L	LOWR	HAUK	Lowrie via Res 50 & 12" Ditch via Haiku or Res 51	16 &/or 18	16A or D 16C	18AB none		

13.23-20

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
800	1	173.0		L	KAUK	KAUK	Ditch to Res 41 & via Pump	18	18C1/C2			
801	1	75.9		L	KAUK	KAUK	Ditch to Res 41 & via Pump	18	18C1/C2			
802	1	78.0	7255.4	L	KAUK	KAUK	Ditch to Res 41 & via Pump	18	18AB	18C1/C2		
205	2	155.9		P	LOWR	LOWR	Ditch	16	16A or D 16C	18AB none		
206	2	129.2		P	LOWR	LOWR	Lowrie	16 &/or 18	16A or D 16C	18AB none		
209	2	48.9		L	LOWR	LOWR	Lowrie	16	16A or D 16C	18AB none		
209	3	119.7		L	LOWR	HAUK	Lowrie via Res 50 & 12" Ditch via Haiku or Res 51	16 &/or 18	16A or D 16C	18AB none		
209	2	132.7		L	LOWR	LOWR	Lowrie	16	16A or D 16C	18AB none		

13.23-19

Field	Blk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
511	1	144.5		L	LOWR	LOWR	LOWR	16 &/or 18 &/or 9A	16A or D 18AB none 9C & 9CX	16C		
511	2	139.9		L	LOWR	LOWR	Res 52 & Well 9 via Ditch or Res 52	16 &/or 18	16A or D 18AB none 9C	16C		
512	1	151.0		L	LOWR	LOWR	Lowrte	18	18AB none	16C		
700	1	29.2		L	LOWR	LOWR	Lowrte via Res 84	16 &/or 18 &/or 9	16A or D 18AB 9C & 9CX none 9A 9A 6C w/6A 6D1 & 6D2	16C		
700	2	56.5		L	LOWR	LOWR	Well 6 via or Ditch Pmp 6 Res 80 to 18 &/or 16 &/or 9	16A or D 18AB 9C & 9CX none 6A/B 6A/B 6D1 & 6D2	16C			

13.23-22

Field	Blk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
507	2	133.8		L	LOWR	LOWR	Lowrte via Res 52 & Ditch or Well 9 via Res 52	16 &/or 18 &/or 9	16A or D 18AB none 9C	16C		
508	1	76.5		L	LOWR	LOWR	Lowrte via Res 52 & Ditch or Well 9 via Res 52	16 &/or 18 &/or 9	16A or D 18AB none 9C	16C		
509	1	86.0		L	LOWR	LOWR	Lowrte via Res 52 & Ditch or Well 9 via Res 52	16 &/or 18 &/or 9	16A or D 18AB none 9C	16C		
510	1	192.1		L	LOWR	LOWR	Lowrte via Res 52 & Ditch or Well 9 via Res 52	16 &/or 18 &/or 9	16A or D 18AB none 9C	16C		

13.23-21

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
703	1	194.3		L	LOWR	LOWR	Lowrie via Res 84 or Well 6 via Pump 6 Ditch	"	"	"		
704	1	195.0		L	LOWR	LOWR	Well 6 via Pump 6 Ditch or Well 6 via Pump 6	"	"	"		
801	2	73.4		L	LOWR	LOWR	Lowrie	16 &/or 18 &/or 9A	18AB none 9C & 9CX	16C		
802	2	906.0		L	LOWR	LOWR	Lowrie	16 &/or 18 &/or 9A	18AB none 9C & 9CX	16C		
803	1	179.1		L	LOWR	LOWR	Well 3 via Res 81 or Well 3 via Res 81	16 &/or 18 &/or 9A	18AB none 9C & 9CX	16C		
803	2	104.0		L	LOWR	LOWR	Well 3 via Res 81 or Well 3 via Res 81	"	"	"		

13.23-24

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
701	1	74.1		L	LOWR	LOWR	Lowrie via Res 84 or Haiku Ditch &/or Well 6 via Pump 6	16 &/or 18 &/or 9A	18AB none 9C & 9CX	16C		
701	2	286.6		L	LOWR	LOWR	Lowrie via Res 84 &/or Haiku Ditch via Pump 6	"	"	"		
702	1	129.1		L	LOWR	LOWR	Lowrie via Res 84 &/or Haiku Ditch via Pump 6	"	"	"		
702	2	121.4		L	LOWR	LOWR	Well 6 Ditch &/or Haiku or Ditch Pump 6 Res 80 to Lowrie via Ditch	"	"	"		

13.23-23

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
805	1	79.0		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		
805	2	50.4		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		
806	1	162.5		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	16 &/or 18 &/or 9	18AB none 9A	16C none 9C & 9CX		
807	1	156.5		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		
808	1	143.9		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	16 &/or 18 &/or 9	16A or D 18AB none 9A	16C none 9C & 9CX 3B		
809	1	263.0		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		
810	1	145.9		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		

13.23-25

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
810	2	194.6		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		
811	1	102.2		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		
811	2	109.9		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	16 &/or 18 &/or 9	16A or D 18AB none 9A	16C none 9C & 9CX 3A or 3B		
812	1	198.9		L	LOWR	LOWR	Lowrte via Well 3 or Res 81	"	"	"		
813	1	272.9		L	LOWR	LOWR	Lowrte via Well 6 or Pump 6	16 &/or 18 &/or 9	16A or D 18AB none 9A	16C none 9C & 9CX 6D1 & 6D2		

13.23-26

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
816	1	215.2		L	LOWR	LOWR	Lowrte via Ditch or Well 3 via Res 82	"	"	"		
817	1	120.7		L	LOWR	LOWR	Well 1 via Res 83 &/or Well 3 via Res 83	1	3A or 3B	none		
817	2	232.2		L	LOWR	LOWR	Well 3 via Res 83 &/or Well 3 via Res 83	1	3A or 3B	none		
818	1	121.5		L	LOWR	LOWR	Lowrte via Res 82 & Res 82 Ditch	16 &/or	16A or D	16C		
819	1	71.5		L	LOWR	LOWR	Lowrte via Ditch or Well 3 via Res 82	3	3A or 3B	none		

13.23-28

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
813	2	180.2		L	LOWR	LOWR	Lowrte via Well 6 via Pump 6 Ditch to Res 84 & Res 84	16 &/or	16A or D	16C		
814	1	214.0		L	LOWR	LOWR	Lowrte via Ditch or Well 6 via Res 84	"	"	"		
814	2	138.4		L	LOWR	LOWR	Lowrte via Ditch or Well 6 via Res 84	"	"	"		
815	1	118.6		L	LOWR	LOWR	Lowrte via Res 82 & Res 82 Ditch	16 &/or	16A or D	16C		

13.23-27

13.23-30

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
							Updated 10/12/2007 Revised 6/5/2008					

Field	Bk	Acres	Acres	Farm	SMS Ditch	SMS Ditch - Drought	Water Source	Well Source	Well Pumps	Booster Pump	LEASED	FOLLOWED
819	2	140.0		L	LOWR	LOWR	Res 82 Ditch or Well 3 via Lowrte via	"	"	"		
820	1	56.4		L	LOWR	LOWR	Res 83 &/or Well 3 via Well 1 via	1	3A or 3B	none		
821	1	168.3		L	LOWR	LOWR	Res 83 &/or Well 3 via Well 1 via	1	3A or 3B	none		
822	1	131.6		L	LOWR	LOWR	Res 82 & Res 82 Lowrte via Well 3 via Well 1 via	16 &/or 18 &/or Well 3 via Ditch	16A or D 18AB none 9C & 9CX	16C		
823	1	117.0	9014.7	L	LOWR	LOWR	Res 82 Ditch or Well 3 via Ditch	"	"	"		
Totals	248	30,471	30,471									

13.23-29

143.5
128.0
905

510

14.0 Jace Hobbs



"Jace Hobbs"

To <dlnr.cwrmm@hawaii.gov>

cc

05/10/2008 08:01 AM

bcc

Subject traditional water rights on Maui

You at the DLNR are corporate shills for the corporate domination of these islands. I cannot tell you with what contempt that i feel when i see resource depletion while you twiddle your thumbs at the state. the only thing i can think of is completely removing your sorry sojourn with a return to sovereign rights for hawaiians. Get the water flowing in the east Maui streams or resign your position. Jace Hobbs

15.0 Michele K. Hoopii

April 10, 2008

To: Department of Land and Natural Resources-State of Hawaii,
The Commission on Water Resource Management
Laura H. Thielen, Chairperson,
Chiyoame L. Fukino, M.D.,
Meredith J. Ching,
James A. Frazier,
Neal S. Fujiwara,
Donna Fay K. Kiyosaki, P.E.,
Lawrence H. Milke, M.D., J.D.

From: Michele K. Hoopii
Kahului, Maui

Subject: East Maui Stream Restoration Petition.

To the above Committee Members

I submit the following written testimony to the Commission on Water Resource Management (CWRM).

I grew up in a family that raised taro in Waiehu, Maui. My parents still raise taro in Waiehu and I, like many "native Hawaiians" am deeply concerned for the people and limited resources presently available throughout our islands.

With all due respect to each member, how is it the commission has allowed Alexander and Baldwin to hoard all the water from the East Maui Streams while the petitioners who are taro farmers and the "native Hawaiian" beneficiaries of a public trust given nothing?

In light of this and the fact that I have personally witnessed recent testimony by Avery Chumbley and Clayton Suzuki of Wailuku Water Company in the contested hearings presided over by CWRM Commissioner, Lawrence H. Milke, M.D., J.D. I have come to believe it is because we "native Hawaiians" live a simple, less material life than western foreigners, and because we "native Hawaiians" are looked down upon as a lower-class or people socially and economically by corporate business such as Alexander and Baldwin and perhaps because we are non-white, brown-skin people is why the failure to return waters to the streams for "native Hawaiians" has been allowed by CWRM to exist.

Because of this racism, remedial action by CWRM of The East Maui Stream Restoration Petition has not taken place.

Please take remedial action NOW!

Thank you,



Michele K. Hoopii

16.0 Michael Howden



Michael Howden



05/27/2008 11:47 AM

To: dlnr.cwrn@hawaii.gov

cc: Lee Adridge [REDACTED]

bcc:

Subject: East Maui Water Diversions

Dear Sirs: I would like to comment formally on the continuing diversions of public trust waters in East Maui for the primary benefit of HC&S.

Though HC&S' diversions of substantial amounts (nearly all) of the running waters in the East Maui watershed for the benefit of their sugar operations in Central Maui have continued for more than 120 years, the diversions have worked against the underlying mandate specified by the Kingdom of Hawaii, that the rights and uses of kuleana landowners makai of these diversions ("downstream users") not be adversely affected. Most of these streams run dry for much of the year, and what remains in them, does not allow enough water to grow taro and other crops reliably. In many instances, lack of water has forced kuleana landowners and their families to move, and to abandon an agriculture practiced by their families for many hundreds of years. This is clearly a "taking" by a corporate entity (HC&S) that must be ended.

Arguments in favor of the continued taking of these waters by HC&S are specious, and usurp the guaranteed rights of native landowners and agricultural practitioners. It seems myopic to allow the massive diversion (which comes to at least 160 million gallons a day, for which HC&S pays two-fifths of one cent) to feed a water-hungry tropical grass in the sandy and desertified area of the Maui Saddle. Better and more appropriate crops for energy production can be grown there, without the attendant and persistent health hazards attendant upon the burning of the sugar cane and the extensive use of agricultural poisons.

A jointly-run water district, with extensive community representation, would help return control and management of these waters to the communities of which they are a vital part.

Thank you, Michael S. Howden, L.Ac., Member, Maui County Board of Water Supply

17.0 David M. K. Inciong, II



Tane [REDACTED]
 05/28/2008 04:56 AM
 To: <dlmr.cwrm@hawaii.gov>
 cc
 bcc

Subject: Listen to the farmers! Water is life for all.

I remember from my childhood, my youth, and adulthood, the freshwater streams on Maui and Kauai where we would gather food. The common practice was to go inland and work your way down the stream. This way you don't over-harvest in one area. You only take what you need. There were many stories my na kupuna would share with us; some spooky, some hilariously funny, some mystical, some thought-provoking, and all awe-inspiring, learning experiences.

The best time to catch o'opu was after a big rain when the streams overflowed and wash the fish down stream. The kupuna would fasten baskets under the small rippling cascades to trap the fish. They were always vigilant not to leave the baskets unattended after the rainfall. Opa kuhiwi was worth collecting. We would turn over the stream stones along the banks and scoop with our small nets to collect them. Hihwai clung to the rocks and hard surfaces in the water. At the mouth of the stream in brackish water was limu for condiments to various food we ate. The fries of the akule need the brackish water to flourish. Things were plentiful when I was a kid; not anymore. Auwe no ho'i ei!

As I reminisce, I feel saddened that my younger siblings, nieces and nephews never got to experience some of these things. I, myself, miss those days; it made me feel really alive. We were taught to respect and appreciate what we have and erase traces of we ever having been there.

Gathering around the table eating or just to pupu on our catch, talking stories, sharing, laughing, pule in thanksgiving, kanikapala and singing familiar songs, playing games; a sense of belonging and relaxing in a wonderful atmosphere was the order of the day. It was a time for bonding and catching up on the news. These are what I miss when reflecting on those days. It was the way that made us feel waiwai. Our richness was in the water.

By taking our water away from us; one is robbing us of our wealth, sustenance, and the zest of life. There is more than one way to kapulu our water; so it is our kuleana to preserve it in balance. The enrichment is not for one; but for all. The fauna and flora need it as much as humans. They all contribute in enriching our lives through being pono. There is a balance in using it properly and not being sated in gluttonous actions to enrich just oneself as there are others in the world that we need to be concerned about and to consider. There is no price you can put on water as it belongs to all people, plants and animals as is the air we breathe. We mahalo ke Akua for these gifts; not man.

o wau iho no, he Hawai'i au,

Tane
 AKA: David M. K. Inciong, II
 [REDACTED]

18.0 Tiana Kaauamo

To Whom It May Concern:

Aloha, My name is Tiana Pobelena Kahalelaukoa Kaaumano and I am a student attending Ke Kula Kaiapuni o Kekaulike at King Kekaulike High School in Kula. I am a seventeen year old senior, who lives in Kahului with my mother. Although I live in the "city" I was raised in Keanae on the east side of Maui by my grandparents, who live their.

For many years I have watched my grandparents, aunts, and uncles try and return the waters back to the streams. It seems like no one cares to keep the Hawaiian Culture, but to increase the growth of Sugar Cane and the Governments money. Well as Kanaka Maoli we think to Malama the Land, Malama the Culture, Malama the Water.

I am personally concerned about the amount of water that is being withdrawn from the streams and believe that the amount taken should be drastically decreased for the sake of our culture. We need to protect our water and stream life, there needs to be a stream flow from the top to the bottom of all Ahupua'a, for all life including us. The stream life beginning from the top of the Ahupua'a includes the 'Opae, 'O'opu, Hihiwai, ect. Also the stream life at the bottom of the Ahupua'a for example the Aholehole, before they mature they live in brackish water, where the fresh water meets the salt, and also for our ancestor Haloa. Kalo plays a large roll in many 'ohanas lives on all parts of Maui. Without any/enough water flowing down to the taro patches their is no Kalo. ALL LIFE NEED'S WATER!!!

I strongly believe that we need to preserve the water, for our cultures sake. We need to Malama what we have before we loose it, and theirs no way of turning back. So please Malama your kuleana and our 'aina. Give back the water to streams and give continues life to all life from mountain to the sea.

ALOHA,



18.0-1

No Wai Paha Kuleana:

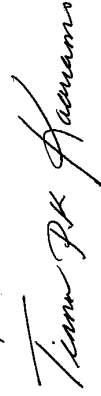
Aloha, 'O Tiana Pobelena Kahalelaukoa Ka'auamo ko'u inoa a he haumana au e ukali ana ma Ke Kula Kaiapuni o Kekaulike ma Ke Kula Ki'eki'e King Kekaulike ma Kula. He wahine au ma ka Papa 'umikumalua i pihai i na makahiki he 'umikumahiku, a noho au me ko'u makuahine ma Kahului. 'Oiai noho au ma Kauna, ua hanai 'ia au ma Keanae ma ke komohana o Maui e ko'u mau kupuna i noho ma laila.

No he mau makahiki ku nana au i ko'u mau Kupuna, 'Anake, a me ko'u mau 'Anakala e ku'e i keia ku'e e ho'ihoi i ka wai i na kahawai. Me he mea ia, 'a'ole nana 'ia ka Mo'aukala Hawaii, nana wale 'ia ka ho'onui ana i ka 'oihana mahi ko a me ke kala i 'ohi'ohi e ke Aupuni. Aka, no na kanaka maoli mana'o makou i ka malama o ko kakou aupuni, 'Aina a me ko kakou Wai e ola.

He kanaka ho'okahi au i pili i keia hana o ka heluna o ka wai i lawe 'ia mai na kahawai, and mana'o a pilwi au pono e ho'emi ka heluna o ka wai i lawe ai no ka pono o ko kakou Mo'aukala. Pono kakou e malama i ke ola i loko o ke kahawai, pono ke kahawai e kahe ma'i mauka a i makai no ke ola a pau loa. He mau mea i ola ai ma loko o ke kahawai ma mauka aia ka 'Opae, 'O'opu, Hihiwai, a pela aku. Ma makai aia na 'ia ma Kahakai e like me ka Aholehole i noho ma ka muluwai i kona wa keiki. 'O ke kalo kekahi mea kanu i pono ka wai ma makai. 'O Haloa ko kakou kupuna, aia na 'ohana he nui i malama kalo ma na wahi a pau ma Maui, he Kuleana ko kakou e Malama i na kupuna. PONO KA WAI E NA MEA OLA!!!

Pilwi au me ka ikaika i ka malama o ka wai. Pono kakou e malama i na mea loa a i 'ole e nalo wale ana 'ia, a 'a'ole hiki ke loa'a hou 'ia. No laila e hana i kou kuleana a e malama i ko kakou 'aina. E ha'awi i wai i kona mauka a e ho'ola i ke ola ma ke kahawai ma'i mauka a i makai.

ALOHA,



18.0-2

19.0 J. Ekela Kaniaupio-Crozier

The source of life for Kalo...
The source of life for stream habitat...
The source of life for the Hawaiian culture...

**RELEASE ADEQUATE, COLD, FLOWING WATER INTO
 THE 27 STREAMS OF EAST MAUI!!!**

As a member of the Hawaiian Community, a student of Water Community College,
 & a resident of the State of Hawaii, I urge the Commission on Water Resource
 Management to set instream flow standards that will:

- Rejuvenate stream life habitat, such as the Hihiwai, Opa, & Opu.
- Be sustainable for Kalo cultivation; that any given quantity of water is below
 77 degrees Fahrenheit.
- Be monitored by an individual or group of individuals who have no special
 interests vested in Alexander & Baldwin, Na Moku Aupuni o Ko'au Hui,
 the State of Hawaii, or in any party that may cause a conflict of interest.

V. Ekela Kaniawao-Grover (Print Name)
(Signature)

19.0-2

Commission on Water Resource Management
 Department of Land and Natural Resources
 P.O. Box 621
 Honolulu, Hawaii 96809


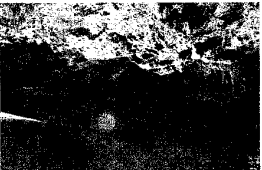

RECEIVED
 JUL 13 1993
 ATTN: Instream Flow Standard
 Assessment Reports

POSTAGE WILL BE PAID BY ADDRESSEE

008 PM 3 1

HONOLULU HI 968

(Signature)

19.0-1

20.0 Kipahulu Ohana, Inc.



**Scott Crawford - Kipahulu
Ohana**

06/09/2008 06:46 PM

To: dnr.cwrm@hawaii.gov

cc

bcc

Subject: Support return of stream water for taro farmers

Aloha, To Whom It May Concern,

I am writing on behalf of the Kipahulu Ohana to express our support for the taro farmers of the Ko'olau moku, including Honopou, Hanehoi, Piinaau, Waioakamilo and Walluanui.

The Kipahulu Ohana operates a taro farm in Haleakala National Park in Kipahulu, where we are fortunate to not suffer large-scale diversion of the streams. Even with plenty of water, taro farming is a challenging enterprise. But in our view it is one of the single more important activities that we need to encourage and support in the islands. It is extremely valuable on many different levels - spiritual, cultural, nutritional, ecological, social, educational, historical, self-sufficiency.

It is heinous shame and violation that generations of taro farmers in Ko'olau have been subjected to insufficient stream flow to practice their traditional subsistence lifestyles. It is a form of cultural genocide. And it is equally shameful that the Commission has been complicit in this ongoing travesty, enabling EMI to drag its feet and find every excuse to delay justice and avoid releasing water.

The burden should be on EMI to prove how much water it can reasonably take, not on the taro farmers to prove how much they need while they continue to be deprived of their birthright, Ra Wai Ola O Kane, the water of life, and the ability to farm taro, the single most important plant in Hawaiian culture.

Release the water now!

Mahalo,
Scott Crawford
Executive Director

--
Scott Crawford
Executive Director
Kipahulu Ohana, Inc.

[Redacted]
<http://www.kipahulu.org>

Buy and sell on eBay Giving Works to support the Kipahulu Ohana.
Click here to start: <http://kipahulu.org/ebay>

21.0 Leilani and Earl Kuailani, Jr.

INSTREAM FLOW STANDARD ASSESSMENT REPORTS (IFSAR)

For the Hydrologic Units of Horopou (6034), Hanehoi (6037), Piinaau (6053), Waioakamilo (6055), and Wailuanui (6056)

Public Fact Gathering Meeting: Thursday, April 10, 2008, 5:00 p.m. to 9:00 p.m., Haha Community Center, 1008 Hana Highway, Hana, HI 96708. Website: http://www.hawaii.gov/dlnr/cwrm/

Please provide any comments you wish to offer on the public review drafts of the INSTREAM FLOW STANDARD ASSESSMENT REPORTS for each of the hydrologic units.

All the water in all the rivers and streams should be free to flow, no one person should have the authority to take this water. Alexander & Baldwin the number one thief, diverting billions of gallons of water per year for their crops, crops that are exported & not native to this area. The kaid should be Hawaii's #1 priority - kaid is native. Pineapple & sugarcane have both had its time on the market, it is time to allow kaid farmers to thrive and live by producing our most important food source. Now is the time to make it right again, for too many years we have been fighting for the land to be returned & water as well. The land & water do not belong to anyone, we belong to the land & together water belongs to the land. Weed and eradication have been destroying Hawaii, it is time to restore her. Our beautiful Hawaii Nei is being sacrificed, she is dying of thirst, why would anyone do that on purpose? For too long the dollar bill has been chased, riches for us Hawaiians are the water, water = kaid growing in our hi, kaid = food on our table. Food = life, health, give it back already, enough is enough.

PLEASE PRINT Name: Leilani & Eam Kuailani Jr. Phone: [redacted] Affiliation: (if applicable) Kaid farmer in East Maui Address: [redacted] Email: NO MORE EMAIL

Submit this form (plus additional sheets, if any) via mail or fax. Comments may also be e-mailed. Mail: Mailing address located on the back. Facsimile: (808) 587-0219 E-mail: dlnr.cwrm@hawaii.gov. (Please include information in the shaded area with the e-mail)

All comments must be received 02/10/2008 marked by June 10, 2008. Mahalo!

INSTREAM FLOW STANDARD ASSESSMENT REPORTS (IFSAR)

For the Hydrologic Units of Horopou (6034), Hanehoi (6037), Piinaau (6053), Waioakamilo (6055), and Wailuanui (6056)

Public Fact Gathering Meeting: Thursday, April 10, 2008, 5:00 p.m. to 9:00 p.m., Haha Community Center, 1008 Hana Highway, Hana, HI 96708. Website: http://www.hawaii.gov/dlnr/cwrm/

Please provide any comments you wish to offer on the public review drafts of the INSTREAM FLOW STANDARD ASSESSMENT REPORTS for each of the hydrologic units.

We will soon be forced to retaliate against East Maui Irrigation, even if they are just supposed working for the water, do not push the Hawaiians, these Hawaiians are fearless & only want what is right. We are tired of not having, always wondering why is it this way or that way & not the right way. Bottom line - let the water flow. let the kaid grow.

I am a kaid farmer in East Maui, and it seems that you don't want Hawaiians to live & farm by not giving us back the right amount of water, which is not even yours to take. NO Hawaiians = NO Kaid. NO water = NO Kaid. NO Kaid = Anger Hawaiians - Hungry too!

PLEASE PRINT Name: Leilani & Eam Kuailani Jr. Phone: [redacted] Affiliation: (if applicable) Kaid farmer in East Maui Address: [redacted] Email: NO MORE EMAIL

Submit this form (plus additional sheets, if any) via mail or fax. Comments may also be e-mailed. Mail: Mailing address located on the back. Facsimile: (808) 587-0219 E-mail: dlnr.cwrm@hawaii.gov. (Please include information in the shaded area with the e-mail)

All comments must be received or postmarked by June 10, 2008. Mahalo!

22.0 Maui County Farm Bureau



Maui County Farm Bureau

*An Affiliate of the American Farm Bureau Federation and Hawaii Farm Bureau Federation
Serving Maui's Farmers and Ranchers*

June 9, 2008

TESTIMONY

INSTREAM FLOW STANDARD ASSESSMENT REPORTS

**FOR THE HYDROLOGIC UNITS OF
HONOPOU (6034), HANEHOLI (6037), PINAAU (6053),
WAIKAMILO (6055), AND WAILUANUI (6056)**

Maui County Farm Bureau on behalf of farmers and ranchers on Maui provides the following comments to the Instream Flow Standard Assessment Reports. MCFB is a general agricultural advocacy organization. Many of our members will be impacted by the decisions made regarding the instream flow standard for the 5 East Maui Streams.

Maui's agriculture plays a key role in our self sufficiency as deemed important by our State Constitution. It is our local agriculture that provides food, flowers and plants if ships or planes do not come to our ports as during the 9/11 catastrophe. It was Maui's agriculture that allowed the people of the island to have electricity hours before the people on Oahu after the huge earthquake in October of 2006. The power plant that uses the biomass residue from sugar production stayed on line providing assistance to the local utility during this emergency. Today, June 9, there is a nationwide alert about contaminated tomatoes. Hawaii is not included since all of our tomatoes are locally grown – so people of Hawaii can continue to have tomatoes in their hamburgers and salads. All of these examples serve to provide evidence of an industry striving to accomplish its' goal of providing towards Hawaii's self sufficiency. Hawaii is known as the most remote spot in the world...farthest from any adjacent land mass. And then, to make it worse, every one of our islands is separated by a body of water. The long term sustainability of Maui is dependent upon a strong agricultural base. It is this understanding that resulted in the Constitutional Amendment relating to Agricultural Lands in 1978.

Maui's farmers and ranchers want to provide for the people of Maui. However, forces outside of their control challenge their ability to do so.....and one of them is water. Our farmers have faced multi-years of drought. They farm not for the sheer pleasure of it but to provide for the people of Hawaii. When they fail, our ability to provide for Hawaii fails. The waters from the streams in the assessment reports play a role in our viability to provide the services addressing the very basic need of people food and energy.

We urge that these critical off stream uses be looked at not just from an economic perspective but from a more basic need of what the people of Maui need to continue with their daily lives. Paved fields cannot be turned into productive crop lands overnight. Agriculture must be sustained and nurtured for it to be of service when needs arise.

Thank you for this opportunity to voice our views on this subject important not only to farmers and ranchers but to everyone on Maui. If there are any questions, please contact Warren Waiamabe at 878-2688.

23.0 Maui Tomorrow Foundation

From Maui Tomorrow Foundation
PO Box 299 Makawao, HI 96768

June 9, 2008

The State Commission on Water Resource Management

**Re: IFSAR Comments
Haneho'i Stream Assessment.**

Thank you for the opportunity to prepare these comments on the IFSAR. I was asked to prepare these comments on behalf of Maui Tomorrow foundation, Inc because I am a longtime resident of the region and familiar with its streams and lands. I live in Waipio Valley, Maui and have observed Hanehoi stream for over 20 years.

We appreciate the effort to assemble information to move along the process of the IFS petition filed by Native Hawaiian Legal Corp over 7 years ago. It is disappointing that this has been sent out to the public to review before the results of the very user specific Towill study could be incorporated into it. That effort will greatly update our understanding of East Maui water use from the community perspective.

This assessment characterizes Hanehoi hydrological unit as having no "major village" and having a population of 181 people. The accuracy of that population figure is questionable and fails to take into account that residents who live outside the boundaries of the Hanehoi stream hydrologic area are using the stream water. While we have "no major village" in the sense of older times when Huelo had a plantation mill, a small railroad, store, a school etc. This assessment should acknowledge that the community includes two active churches and two agricultural education centers with visiting lecturers, classes, interns etc. All of these utilize Hanehoi stream as a resource for either domestic water or education/recreation.

Non-instream uses:

If the intention of the assessment report is to accurately depict the potential human and farming demands on stream waters, it should be mentioned that the Huelo area has no public water system. Hanehoi/Puolua stream supplies a private community water system that includes around 30 families and two active churches. Besides this, as the Assessment notes, both are also diverted four times by EMI ditch intakes, all of which are in relatively poor state of repair.

Another 25 to thirty families in the "hydrologic unit rely on rain catchment or private wells. Hanehoi stream water supplies families living near Waipio iki stream, which may technically be outside the "hydrological unit" boundaries.

23.0-1

1

A number of these families keep livestock: cattle or horses, who also depend upon Hanehoi stream water. Many families use the pools along Hanehoi stream for recreation and residents enjoy the aesthetic beauty of the lower waterfalls.

Many families farm diverse crops: flowers, sweet potatoes bananas, taro, fruit trees, clumping bamboo and vegetables. Others would like to have enough water available to farm. This unmet demand for additional stream flows is poorly represented in the assessment.

At least half a dozen families depend upon small springs to supply domestic and ag water. Springs also feed various sections of Hanehoi stream below the last EMI diversions and pools and waterfalls persist at some levels year round, independent of rainfall. The recharge that increased stream flows would provide is an important consideration to the viability of these local springs.

Cultural Importance

There appear to be a variety of cultural sites along the stream from the sea, up into the lands mauka of Hana Hwy. Acres of precontact taro lo'i are visible surrounding Puolua stream at around the 600ft elevation (currently overgrown with invasive bamboo). Other sites which appear to have been used for habitation or ceremonial purposes are evident along Hanehoi stream makai of Hana Hwy as well as ancient terraces, au wai and other cultural remains. A number of descendants of original Mahele era land grant families still live in Waipio valley. The Congregational church (Kaulanapueo) was first established in 1853. It's water supply comes from Hanehoi stream although it is located near Waipio iki stream

Instream use:

Native stream life still struggles to survive in Hanehoi stream. One local resident, a member of a kanaka maoli family long connected to Huelo gathers O'opu and Hiliwai at the stream mouth after storms subside and helps transport them upstream where there is more water.

Instream Flow Standard

While Hanehoi stream flow levels were not measured on Oct 8, 1988, at least one of those who registered water use the next year reported estimated stream flow levels in Hanehoi stream that they had measured through mechanical means. These are on record with the CWRM and it would be useful to have any estimates included in this report.

Instream Flow Process

Residents living along Hanehoi stream were treated cruelly by the long rounds of IFS hearings. They were basically told that even though the state constitution specifies that they are entitled to riparian or appurtenant rights, since there is rarely water available in their sections of the stream under present conditions and they are not using the stream water for their crops, since it is so infrequently

23.0-2

2

available, they are not entitled to increased stream flows to exercise their constitutional rights.

Drought

The Assessment did not connect any threat of drought to the hanehoi hydrological unit, but in fact, the area has experienced drought conditions a number of times in the past 25 years. Because Huelo/Hanehoi, unlike Kula is not connected to any outside source of water, times of drought are very challenging. Farmers watch their crops wither. Livestock often needs to be relocated to somewhere that has a reliable water supply and local families need to pay to have water trucked in. Drought conditions in Hanehoi are characterized by, dry dusty stream beds, springs and shallow wells drying up. There have been several periods of winter drought over the past 15 years as well.

Ironically, the water supplies available at the higher elevations of Hanehoi stream, which would still be present during times of decreased rainfall, are entirely unavailable to the area's residents and are instead transported away to feed agricultural and domestic water systems elsewhere. This defies common sense. Water distribution should make sure the needs of streamlife and residents within the ahupua'a (watershed) are met first, then the surplus water can be shared.

Ground Water

Ground water use figures presented in the assessment are not accurate. The assessment refers to Gingerich's work as evidence that their are two district groundwater levels in the Honopou aquifer separated by an unsaturated zone. Gingerich advances this as a hypotheses, but other hydrologists (former USGS Chief Bill Meyer) have suggested that the appearance of an "unsaturated zone" in Honopou and Haiku aquifer areas may be more connected to the high-volume, century long de-watering of the upper elevations of the streams, which has altered the hydrological profile of the aquifer strata. In other words, the much higher volumes of water that naturally would have flowed in the streams under pre- diversion conditions could have been expected to also seep into the mid levels of the geological strata creating more saturation between the two lava flows. From personal observation, mid portions of Hanehoi stream (above Lowery ditch) appear to be Honomanu Basalt as well., which is not reflected on the maps provided in Fig 2-3

Fig 2-7 Land cover: does not indicate any cultivated lands. This is inaccurate and perhaps reflects a data gathering inadequacy that only equates larger plantation style cultivation with evidence of "cultivated lands." Many of the ag land parcels of this hydrological unit are cultivated with typical crops being tropical flowers, dryland (and some wetland) taro, sweet potato, banana, papaya and fruit orchards. TMK numbers can be supplied if needed.

23.0-3

3

Fig 2-8 characterizes the coastal pali areas of Hanehoi watershed as being "very sparse vegetation to unvegetated." I have personally visited the entire coastal pali area and find that this is not an accurate description. Instead these areas have a number of typical native species: Ulei, Naupaka Kahakai, Akia, Lau'we and Hala mixed in with aliens such as Christmas berry, guava, banyan, vervain and grasses.

Fig 2-9 Several other wells exist within the hydrological unit which are not recorded (at least three.) Other wells have been drilled and recorded after 2004 which is the source of the data used.

Hydrology

Hanehoi & Puolua streams traditionally (pre- 1960's) ran year round in all sections except in times of extreme drought.

This is based on oral interviews of longtime residents. There is also archaeological evidence of extensive taro lo'i constructed along most of the length of the streams between sea level and 800 ft elevation or more. Ancient inhabitants would not have gone to the trouble of constructing the terraces, if water was not reliably available. Hanehoi stream was diverted near the present Hana Hwy by the Huelo sugar plantation in the late 1880's. This would seem to suggest that it had continuous flow prior to the extensive diversion systems that were added after the beginning of the twentieth century. As noted earlier, Hanehoi stream is also spring fed above its perennial pool areas.

Outdoor Recreational Activities

Many families use the pools along Hanehoi stream for recreation and residents enjoy the aesthetic beauty of the lower waterfalls. Local families teach their young children to swim in the perennial pools along Hanehoi stream and tone is referred to locally as "Moke's pond" in reference to Moses Kahiamoe.

Clark's description of the Huelo to Honomanu coastline does not take into account the large amount of neighborhood use and traditional subsistence use of the streams and nearshore habitats. Hanehoi stream for example has a variety of traditional trails leading to various reaches. It is surrounded on its Hana side by publicly owned (state) lands. Fishing activity at the stream mouth is well established, with small fishing shelters and caches of fishing gear evident there (confirmed by a recent visit). Small boats regularly fish off of Hoalua Bay where Hanehoi stream has its terminus.

The upper watershed lands of Hanehoi/ Puolua also have established trails that community members use for hunting and gathering purposes.

Nature study and education

While there are no public schools in the Hanehoi stream area, there is a recently established agricultural educational center on several properties that have access to the stream through traditional trails. Environmental education groups

23.0-4

4

such as the Sierra club have also offered periodic educational hikes to Hanehoi stream (the most recent having taken place this May.)

Access to the stream for educational purposes is offered periodically by the Shangnila- Hale Akua farm center and an established and maintained trail to the stream exists. Another educational center, specializing in bamboo and native plant restoration also has several traditional trails to the stream that originate on their property. Agricultural interns recruited through the international WOOF program (Willing Workers in Organic Farming) reside at both farm centers and access the Hanehoi pools as part of their educational activities.

HSA data

Huelo streams had very little data available to assess riparian, cultural, recreational or cultural resources and so they were not ranked. As mentioned above, local families are aware that native species once inhabited the streams and are making efforts to help the more diminished current populations survive. Cultural sites remain abundantly along both streams and neighborhood recreational use is constant. Residents have worked hard to keep Hanehoi-Huelo streams out of the tourist guidebooks.

Water Quality

It is ironic that Hanehoi stream is classified as a Class 2 water from sea level to 1200 feet since it is the primary source of domestic water for nearly 100 residents of the Huelo area. These residents draw their water from a pool in that elevation range. Over the years, outbreaks of Giardia and even rare instances of typhus have been recorded among families who depend upon the stream waters. As referred to in section 11.0, domestic use is one of the four uses specifically protected under the public trust. Public health must be factored into any assessment of the need for increased stream flows. The stream waters near the ocean are subject to a "rusty discharge" that should be noted. I can provide recent photos.

Conveyance of Irrigation and Domestic Water supplies

This assessment lists 5 registered diversions from Hanehoi/Puolua stream, and this information is in great need of updating. It does not at all accurately portray the great dependence that local residents have upon Hanehoi/Puolua stream or the limitations placed upon their activities because the stream flow standards are set at unrealistically low "status quo" diversion levels. The recent Towill study results must be incorporated into this document before any decisions are made.

One correction, on p. 67 Table 12-2 there is no Grant number listed for Caveny (TMK: 2-9-11-14) This parcel is part of Grant 2784.

23.0-5

5

As mentioned above, just one of the Hanehoi diversions serves around 30 families and two churches. This includes water for livestock, farming and all domestic use. At least one diversion is serving an active wetland taro cultivation effort. Others depend upon springs which would be nurtured by increased stream flows. Many struggle to farm because they cannot be assured of a reliable supply of stream water due to upper level diversions leaving insufficient flows for users makai of Hana Highway.

To be effective, this assessment needs to determine the amount of natural stream waters diverted from Honopou, Hanehoi & Puolua stream waters by the HC&S system each day. This has already been done for several of the Ke'anae area streams. With this information, a decision should be made on how much of that flow residents and landowners downstream are entitled to under the provisions of the state constitution and the water code. This amount cannot be based only upon what residents are using now, since their ability to use stream water is extremely limited. The commission must avoid the polite fictions and accept the reality that the legal and practical ability of Huelo residents to utilize the waters of Hanehoi, Puolua and Honopou streams is impacted by the HC&S diversions which result in severely reduced flows.

Ahupua'a

Fig 12-2 mentions the Hanehoi hydrological unit spanning three traditional ahupua'a: Waipionui, Honopou, and Hanehoi and credits this data to the state office of planning maps, c. 2007. I live in the area described as "Honopou ahupua'a" on this and subsequent maps and my property deed describes the ahupua'a as being "Puolua." This would make sense since Puolua (AKA Huelo) stream originates in this ahupua'a. Honopou stream is actually located several valleys to the west.

Table 13-3 ALISH Ratings

The ALISH ratings for Hanehoi lands fail to consider the political decisions that have limited access to available water. Agricultural potential for the Hanehoi lands is high, as archaeological remains indicate. Yet the ALISH maps tend to show lands adjacent to streams as suitable only for grazing. What is lacking is the water. The ALISH system tends to favor the flat central valley lands. This policy has justified diverting water from the lands that traditionally produced much food and other crops. The small ahupua'a size of the Hamakua lands like Hanehoi is an indication that they provided abundantly in the past when they had natural riparian systems. As is obvious, but not stated, the upper watershed lands which are held in conservation perform an important biological function. It would be more accurate to assess the lands of East Maui based upon their historic biological and food production potential, pre-diversion. This is what we are aiming for, a chance to restore natural systems and the potential of greater use of lands uncontaminated by modern ag chemicals to feed Maui's people.

Thanks for the opportunity to offer these comments

23.0-6

6

Lucienne de Naité
For Maui Tomorrow Foundation
Water Resources Committee.

23.0-7

7

24.0 Vicki McCarty



Vmcarty@aol.com
05/10/2008 05:28 PM

To: dlnr.cwrn@hawaii.gov
cc:
bcc:
Subject: Water on Maui

Please return the water to all of the streams on Maui so kalo can survive.

Wondering what's for Dinner Tonight? [Get new twists on family favorites at AOL Food.](#)

25.0 Mary McClung



Mary McClung

To: dnr.cwrn@hawaii.gov

05/18/2008 12:18 PM

cc

Please respond to
Mary McClung

bcc

Subject: EMI water issue

I am writing to request the restoration of water as required by the traditional water rights of taro farmers affected by EMI.

If the obvious correctness of returning this water is not enough, consider the Kingdom's lease to EMI which is subject to condition of no injury to water rights of downstream landowners in Keanae, Waiauani and other parts of East Maui.

I live near Waiau Falls in Kipahulu. I strongly value the return of waters here and all along the East coastal areas. As by law on Oahu, let the water be returned.

We are waiting.

Sincerely, Mary McClung

26.0 Earle and Mavis Medeiros



mavis.oliveira-medeiros

06/10/2008 12:01 PM

To dnr.cwrn@hawaii.gov

cc

bcc

Subject testimony for water in east Maui

Aloha commissioners for Water Resource Management:

I was just made aware that today is the deadline to testify for water in East Maui. I found out because I called our poi supplier in Keanae who will be supplying poi for my daughter's graduation luau on July 5th, only to find out he will not be able to supply all the poi we need because they are not getting enough fresh spring water and the taro is suffering because the water is too warm and there's not enough of it (water). In Hana, like most of East Maui, it is a Hawaiian tradition to make a luau when your child is one year old and also when they graduate. It has always been in my family for as long as I can remember, I'm 47. Already we have to hold back on catching too much opihi or too much a'ama crab...please don't force us to have to "hold back" on the poi too. By doing this, you are literally suppressing our way of life and culture. Hawaiians have suffered enough.

Another thing I want to testify about is that we have a fish pond on our aina and my husband stocks it every year with baby or fingerling mullet. He does this by going to the river mouths "muliwai" and catching them, putting them in our fish pond and raising them to give away to kupuna or family/friends once they mature, even to save for "rainy days" for us to eat. It helps to sustain all of us. Please let the rivers run in East Maui!!! We are one of a few "Last Hawaiian places."

Mahalo,

Earle and Mavis Medeiros, Haneo'o in Hana

27.0 Malama Minn



Melama Minn

To dlnr.cwrnm@hawaii.gov

06/09/2008 01:45 PM

Please respond to [redacted]

cc

bcc

Subject East Maui Water

To Whom it May Concern:

My testimony is in support of the East Maui taro farmers and Native Hawaiian tenants. I am originally from Hana in East Maui and I return there frequently to visit family and friends. Just in my lifetime, I have seen streams that once ran consistently when I was a child go dry for months at a time. Anyone who has lived in East Maui for more than 20 years will tell you the same thing. There is a difference between a drought period and a theft. During this same time period, Maui residents have witnessed and endured exponential growth in commercial and residential developments. Where is the water going? I think we all know the answer. At any rate, the water is not going to those who the law mandates it benefit: namely riparian and appurtenant users, Kuleana tenants and farmers, and Native Hawaiians. I urge the Commissioners to do their job and uphold the responsibilities entrusted to them. Native Hawaiians have a right to water for farming and domestic uses under the State Constitution and the Hawaii Water Code.

Moreover, East Maui is one of the last remaining taro producing communities in Hawaii. Losing the water means losing our heritage. I think that constitutes "injury". I understand that the Commission must review and calculate the impact of increasing water flow to East Maui. Seven years is more than enough time. If you didn't get the job done, others shouldn't be made to suffer any longer. Kalo is rotting and a way of life is disappearing. Do the right thing! Restore streamflow to East Maui!

Me ka ha'aha'a,

Melama Minn

28.0 Zachary Zoec Mosheyev



Zac Zeoc Mosheyev

05/11/2008 02:22 PM

To: dnr.cwrn@hawaii.gov

cc

bcc

Subject: Water in Nahiku

To whom it may concern,
I would like to see the water flow again in my streams in Lower Nahiku....the Kuiwa and Makapipi. The diversion of water is becoming more extreme each year and I need the water for my farm. It is getting to be a big problem in dry years like this one.
Mahalo.
Zachary Zeoc Mosheyev

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http://mobile.yahoo.com/._yt=Ahu0616zsR8HDTDypao8Wcj9tAcJ

29.0 Native Hawaiian Legal Coroporation

- 29.1 Testimony of Leimomi Khan, President, in Support of the Restoration of Streams for the Hydraulic Units of Honopou. Hanehoi, Piinaau, Waiokamilo and Wailuanui**
- 29.2 East Maui Property Owner' and Residents' Declarations and Testimonies, including Declarations and Testimonies of the Members of Na Moku Aupuni O Koolau Hui, In Support of Restoring Water to East Maui Streams**
- 29.3 Testimony before the Board of Land and Natural Resources, Wailuku Maui, May 25, 2001**
- 29.4 Testimony in Support of House Resolution 258**
- 29.5 Testimony in Support of House Resolution 275 and House Concurrent Resolution 343**
- 29.6 Complaint/Dispute Resolution Filing Form Filed by Na Moku Aupuni O Koolau Hui, Beatrice Kekahuna, Marjorie Wallett, Maui Tomorrow**
- 29.7 Additional Comments of Petitioners Kekahuna, Wallett, and Na Moku Aupuni O Koolau Hui on the Instream Flow Standard Assessment Reports for Honopou, Hanehoi, Piinaau, Waiokamilo, and Wailuanui**
- 29.8 Board of Land and Natural Resources, In the Matter of the Contested Case Hearing Regarding Water Licenses at Honomanu, Keanae, Nahiku, and Huelo, Maui
Petitioners' Motion to Enforce March 23, 2007, Findings of Fact, Conclusions of Law, and Decision and Order**



Association of Hawaiian Civic Clubs

P. O. Box 1135

Honolulu, Hawaii i 96807

TESTIMONY OF LEIMOMI KHAN, PRESIDENT
IN SUPPORT OF

**THE RESTORATION OF STREAMS FOR THE HYDRAULIC UNITS OF
HONOPOU, HANEHOU, PIINAOU, WAIOKAMILO AND WAILUANUI**

Commission on Water Resource Management
Public Fact Gathering Meeting date and time: April 10, 2008 5:00 - 9:00 pm
Haiku Community Center

Thank you for this opportunity to submit written testimony in support of the restoration of streams in East Maui which have been the subject of 27 petitions for the establishment of instream flow standards by the tenants, residents and descendants of taro farming and traditional subsistence practitioner families from Keanae-Wailuanui who are organized as Na Moku Aupuni o Kō'olau Hui.

The Association is a growing national confederation of fifty-three Hawaiian Civic Clubs, located throughout the State of Hawai'i and in the States of Alaska, California, Colorado, Illinois, Nevada, Utah, Virginia and Washington State. It initiates and works to support actions that enhance the civic, economic, educational, health and social welfare of our communities, and in particular, the culture and welfare of the Native Hawaiian community.

Attached to this testimony and incorporated by reference are three Resolutions passed by the Association which have a direct bearing on East Maui stream restoration.

Resolution 03-29 was passed at the Association's annual convention held November 15, 2003. This resolution notes that the historic and cultural heritage of the State is among its important assets and that the rapid social and economic developments of contemporary society threaten to destroy the remaining vestiges of this heritage. It further recognizes that cultural kipuka are areas where Native Hawaiians continue to live the traditional lifestyle, including cultivating taro and gathering for food and medicinal purposes. Finally, it notes that Keanae-Wailuanui has been recognized as a Cultural Landscape by the County of Maui and urges the state and county governments to preserve and protect these rich cultural resources, including the people and living environment of cultural kipuka.

Resolution 03-24 was also passed on November 15, 2003. The title of this Resolution is "Urging the Commission on Water Resources Management (CWRM) to Establish Instream Flow Standards as Required by the Water Code". This Resolution recognized that CWRM is responsible for implementing provisions of the Water Code; that it is required to establish minimum instream flow standards for all the streams in

Hawai'i; that establishing minimum instream flow standards is especially critical on state ceded lands in rural areas where some of the largest diversions in the United States are permitted; that establishing minimum instream flow standards would ensure adequate water for taro farming, support the return of 'opae, 'o'opu and bihawai to the streams, stimulate near-shore limu growth which create ko a, feeding and spawning grounds, for many varieties of reef fish essential to the Hawaiian diet; that establishing minimum instream flow is critical to the traditional Hawaiian lifestyle; and that lack of water works a great hardship in areas where Native Hawaiians are struggling to maintain their traditional lifestyle. Finally, the Resolution urges that CWRM act expeditiously on pending applications and petitions to establish instream flow standards.

Five years later, after no action by CWRM, the Association on November 30, 2007, passed Resolution 07-02, "Requesting the Board of Land and Natural Resources (BLNR) and its Division, the Commission on Water Resources Management (CWRM) to Report Why These Agencies have not Taken Proactive Measures to Enforce the Water Rights of East Maui Taro Farmers; that it Implement a Process to Investigate Violations of Water Rights Under the Hawai'i Constitution and State Statutes; and that it Immediately Process 27 Petitions that Have Been Pending Before it for the Past Six Years".

This Resolution describes the egregious failure of DLNR and CWRM to address the plight of East Maui taro farmers because of the massive water diversions of A&B / EMI and includes the following "be it resolved" clauses: that BLNR and CWRM are each requested to submit a report to the Association not later than July 1, 2008, explaining why these agencies have not taken proactive measures to enforce the water rights of East Maui taro farmers and continue to allow A&B / EMI to divert 60 billion gallons a year; that with respect to enforcement, the above report include an explanation of the level of budgeting and staffing required to promptly respond to complaints of interference with appurtenant water rights and instream flows necessary to support the continued ability of Hawaiians to pursue their traditional and customary practices; that the above report include CWRM's plans to develop a simple, clear and efficient administrative process for investigating reported violations, and conducting timely and frequent reviews of any disputes that arise at regularly scheduled meetings of BLNR and to publicize the terms of this process to any parties who might be affected, so these water rights issues are promptly resolved; and finally, that CWRM take immediate action on the 27 petitions to amend interim instream flow standards that have been pending for over six years and explain why it had not acted within the 180 days required by law.

From the above Resolutions, clearly the issue of East Maui stream restoration is of great and grave concern to Association members who reside throughout the state and beyond Hawai'i. On behalf of the Association of Hawaiian Civic Clubs, I strongly urge CWRM to act as expeditiously as possible on the petitions that have been pending for the past seven years.

Thank you for this opportunity to submit written testimony in support of East Maui stream restoration.

Attachments: Resolutions 03-29, 03-24 and 07-02.

ASSOCIATION OF HAWAIIAN CIVIC CLUBS

A RESOLUTION

URGING THE STATE OF HAWAII TO PRESERVE AND PROTECT CULTURAL KIPUKA

WHEREAS, the Constitution of the State of Hawaii recognizes the value of preserving and protecting cultural areas within the State for the public good; and

WHEREAS, the historic and cultural heritage of the State is among its important assets and the rapid social and economic developments of contemporary society threatens to destroy the remaining vestiges of this heritage; and

WHEREAS, State and County officials have expressed a desire to preserve the resources and activities which characterize the rich cultural history of Hawaii; and

WHEREAS, cultural kipuka are areas where Native Hawaiians continue to live the traditional lifestyles, including fishing, hunting, cultivating taro, and gathering for food and medicinal purposes; and

WHEREAS, in January 1994, the Department of Land & Natural Resources Cultural Landscape Task Force reported to the Legislature on the importance of cultural landscape preservation;

WHEREAS, cultural landscapes may encompass an area as small as a neighborhood or an entire island; and

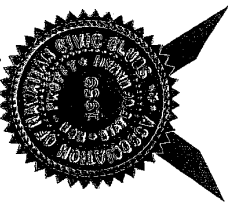
WHEREAS, a cultural landscape is a geographically definable area which clearly defines the settlement or use of the land, water or living systems (plants and animals) over a long period of time as well as cultural values, norms, and attitudes toward the land, water or living systems; and

WHEREAS, the Task Force identified a typology of cultural landscapes, such as 1) abandoned villages or agricultural systems; 2) taro-producing areas; 3) fishing areas; 4) religious and legendary sites; 5) fishponds; 6) traditional gathering areas; and 7) entire islands;

NOW, THEREFORE, BE IT RESOLVED, by the Association of Hawaiian Civic Clubs at its 44th Annual Convention at Nukoli'i, Kaula'i, Hawaii, this 15th day of November 2003, that it urge the Hawaii State and County governments to preserve and protect the rich cultural resources, including the people and living environment, of areas characterized as cultural kipuka, areas which have escaped urban modernization; and

BE IT FURTHER RESOLVED, that State and County governments promote the use and conservation of such areas for the education, inspiration, pleasure and enrichment of its citizens; and

BE IT FURTHER RESOLVED, that a certified copy of this Resolution be sent to the Governor and Lieutenant Governor of the State of Hawaii; the Director of the Department of Land & Natural Resources; and the four County Mayors.



The undersigned hereby certifies that the foregoing Resolution was duly adopted on November 15, 2003, at the 44th Annual Convention of the Association of Hawaiian Civic Clubs at Nukoli'i, Kaula'i, Hawaii

President 29.1-3

ASSOCIATION OF HAWAIIAN CIVIC CLUBS

A RESOLUTION

URGING THE COMMISSION ON WATER RESOURCES MANAGEMENT (CWRM) TO ESTABLISH INSTREAM FLOW STANDARDS AS REQUIRED BY THE WATER CODE

WHEREAS, the waters of the state are held for the benefit of the citizens of Hawaii;

WHEREAS, the people of Hawaii are beneficiaries and have a right to have the waters protected for their use; and

WHEREAS, the Water Code was passed by the Legislature in 1987 to carry out these policies; and

WHEREAS, the Water Code also provides specific protection for traditional and customary Hawaiian rights; and

WHEREAS, the Commission on Water Resources (CWRM) is responsible for implementing provisions of the Water Code, including comprehensive water resources planning and addressing problems of supply and conservation of water; and

WHEREAS, CWRM is required to establish minimum instream flow standards for all streams in the State of Hawaii; and

WHEREAS, establishing minimum instream flow standards determines the minimum amount of water that must be in a stream; and

WHEREAS, establishing minimum instream flow standards is especially critical on state ceded lands in rural areas where some of the largest diversions in the United States are permitted; and

WHEREAS, establishing minimum instream flow standards would ensure adequate water for taro farming; support the return of 'opae, 'o'opu and ihiiwai to the streams; and stimulate near-shore limu growth which create ko'a, feeding and spawning grounds, for many varieties of reef fish essential to the Hawaiian diet; and

WHEREAS, establishing minimum instream flow is critical to the traditional Hawaiian lifestyle in many rural areas; and

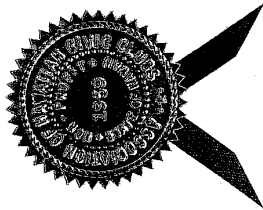
WHEREAS, lack of water works a great hardship in areas where native Hawaiians are struggling to maintain their traditional lifestyle; and

WHEREAS, the Hawaii courts have admonished CWRM to take a proactive role in establishing instream flow standards, rather than waiting until communities are in crisis and are forced to petition CWRM for relief;

NOW, THEREFORE, BE IT RESOLVED, by the Association of Hawaiian Civic Clubs at its 44th Annual Convention at Nukoli'i, Kaula'i, Hawaii, this 15th day of November 2003, that CWRM is urged to take a proactive role in establishing instream flow standards as required by the State Water Code; and

BE IT FURTHER RESOLVED, that CWRM is urged to act expeditiously on pending applications and petitions to establish instream flow standards; and

BE IT FURTHER RESOLVED, that a certified copy of this Resolution be transmitted to the Governor of the State of Hawaii; the Lieutenant Governor; the Director of the Department of Land & Natural Resources; the DLNR Deputy Director for COWRM; and the Chair, Board of Trustees, Office of Hawaiian Affairs.



The undersigned hereby certifies that the foregoing Resolution was duly adopted on November 15, 2003, at the 44th Annual Convention of the Association of Hawaiian Civic Clubs at Nukunui, Kanae, Hawaii.

President

ASSOCIATION OF HAWAIIAN CIVIC CLUBS

A RESOLUTION

07/02

REQUESTING THE BOARD OF LAND AND NATURAL RESOURCES (BLNR) AND ITS DIVISION, THE COMMISSION ON WATER RESOURCES MANAGEMENT (CWRM) TO REPORT WHY THESE AGENCIES HAVE NOT TAKEN PROACTIVE MEASURES TO ENFORCE THE WATER RIGHTS OF EAST MAUI TARO FARMERS; THAT IT IMPLEMENT PROCESS TO INVESTIGATE VIOLATIONS OF WATER RIGHTS UNDER THE HAWAII CONSTITUTION AND STATE STATUTES; AND THAT IT IMMEDIATELY PROCESS 27 PETITIONS THAT HAVE BEEN PENDING BEFORE IT FOR THE PAST SIX YEARS

WHEREAS, water diversions from 120 major streams in the East Maui Watershed, from Kipahulu to Haiku in the District of Hana, are the largest private commercial water diversions of its kind not only in the state of Hawaii; but in the entire western United States; and

WHEREAS, the Alexander & Baldwin (A&B) subsidiary East Maui Irrigation's (EMI's) Ko'olau Ditch diverts an average of 60 billion gallons of water a year, equal to all of the domestic water consumed by O'ahu's residents in a year; and

WHEREAS, the O'ahu population is at least five times greater than Maui's; and

WHEREAS, in 1902, the Commissioner of Public Lands issued lease number 538 to H. P. Baldwin, leasing lands in East Maui until 1933 for the development, storage, transportation, or other utilization of the water thereon, allowing construction of a ditch system; and

WHEREAS, this lease was issued subject to the condition that there be no interference with the vested interests in water of land owners in Ke'anae, Wailuani, or other parts of East Maui; and

WHEREAS, from ancient to modern times, Ke'anae-Wailuani has been the pre-eminent taro farming community on the island of Maui; and

WHEREAS, up until approximately fifteen years ago, there were more than 500 acres under taro cultivation in these two ahupua'a; and

WHEREAS, although the Constitution of the State of Hawaii, the Water Code, and other state laws render these diversions impermissible and illegal, the diversions continue unabated because DLNR and CWRM refuse to enforce the law; and

WHEREAS, after Native Hawaiian taro farming communities took legal action to stop the diversions, A&B/EMI challenged every legal decision in the Native Hawaiians' favor, resulting in many years of long, drawn out litigation and no change in the status quo, enabling A&B/EMI to continue the diversions to the present day; and

29.1-5

29.1-6

ALBKS-2007-071

WHEREAS, there are archival records of protests of A&B's diversions prior to 1850 and continuing up through the current struggle by East Maui taro farmers; and

WHEREAS, as a result of A&B/EMI's massive water diversions, all the streams along Hana Highway are completely dewatered, and whatever is found in the stream beds result from recent rains that quickly dry up; and

WHEREAS, A&B/EMI has over the years steadily increased the efficiency of the Ko'olau Ditch system so that every possible drop of water is captured and transferred out of the East Maui watershed; and

WHEREAS, Native Hawaiians who lived in the Hana District and who depended upon these streams for food, including 'opae, hihwai, 'o'opu and kalo, suffered severe hardship because of A&B/EMI's dewatering activities; and

WHEREAS, their descendants continue to suffer these hardships; and

WHEREAS, chapter 171, Hawaii Revised Statutes, authorizes BLNR to serve as the primary trustee to prudently manage the ceded lands over which most of A&B/EMI's Ko'olau Ditch system operates; and

WHEREAS, chapter 174C, Hawaii Revised Statutes, designates CWRM within BLNR as the agency responsible for protecting and managing all water resources, including all water streams on ceded lands; and

WHEREAS, the Board of Land and Natural Resources (BLNR) and its predecessors, who have been in charge of managing over 33,000 acres of ceded lands in East Maui for over 130 years, have continued to allow A&B/EMI to divert the 60 billion gallons at a current rate of one-fifth of a cent per thousand gallons, a tiny fraction of what other farmers pay for similar irrigation water; and

WHEREAS, Article XII, Section 7 of the Hawai'i State Constitution explicitly establishes the state duty to protect those rights traditionally and customarily exercised for cultural, subsistence, and religious purposes, including those who rely on free flowing streams to gather food; and

WHEREAS, Article XI, Section 7 of the Hawai'i State Constitution and HRS § 174C-63 explicitly recognizes the appurtenant rights of taro farmers and protects them from interference with those rights by those who divert from those water sources; and

WHEREAS, the BLNR has for decades failed to adequately and affirmatively act to protect the rights of these residents of East Maui in accordance with their trust duties in violation of clear constitutional and statutory requirements; and

WHEREAS, this deprivation of water rights has resulted in a chronic injury to the residents of Waiitama, Ke'anae, Honopou and many other East Maui communities and has fundamentally and negatively impacted their capacity to continue traditional and customary practices, contrary to sound public policy and constitutional protections; and

Alaska 2007 072

29.1-7

WHEREAS, the Commission on Water Resource Management, has failed to act on petitions filed more than six years ago to establish the minimum amount of water that must be left in a stream as it is required by law to do within 180 days of the filing of such a petition; and

WHEREAS, the Hawai'i Supreme Court has been repeatedly and pointedly critical of the failure of the CWRM to establish these minimum amounts of water that must be left in a stream permanent instream flow standards on a timely basis; and

WHEREAS, the State's failure to act results in ongoing harm to the superior constitutionally protected water rights of these East Maui taro farmers and subsistence gatherers.

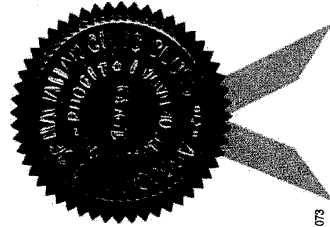
NOW, THEREFORE, BE IT RESOLVED, by the Association of Hawaiian Civic Clubs in convention at Anchorage, Alaska, this 19th day of October, 2007, that the Board of Land and Natural Resources and the Commission on Water Resource Management are each requested to submit a report to the Association not later than July 1, 2008, explaining why these agencies have not taken proactive measures to enforce the water rights of East Maui taro farmers and continue to allow A&B/EMI to divert 60 billion gallons a year; and

BE IT FURTHER RESOLVED, that with respect to enforcement, the above report include an explanation of the level of budgeting and staffing required to promptly respond to complaints of interference with appurtenant water rights and in-stream flows necessary to support the continued ability of Hawaiians to pursue their traditional and customary practices; and

BE IT FURTHER RESOLVED, also with respect to enforcement, that the above report include CWRM's plans to develop a simple, clear, and efficient administrative process for investigating reported violations, and conducting timely and frequent reviews of any disputes that arise at regularly scheduled meetings of the Board of Land and Natural Resources, and to publicize the terms of this process to any parties who might be affected, so these water rights issues are promptly resolved; and

BE IT FURTHER RESOLVED, that CWRM take immediate action on the 27 petitions to amend interim in stream flow standards that have been pending for over six years and explain why it had not acted within the 180 days required by law; and

BE IT FURTHER RESOLVED that a copy of this Resolution be transmitted to the Director, Department of Land & Natural Resources; and President, Na Mōku Aupuni o Ko'olau Hui.



Alaska 2007 073

The undersigned hereby certifies that the foregoing Resolution was duly adopted on November 30, 2007, at the 48th Annual Convention of the Association of Hawaiian Civic Clubs at Anchorage, Alaska

Ayiommi Han
President

29.1-8



NATIVE HAWAIIAN LEGAL CORPORATION

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EAST MAUI PROPERTY OWNERS' AND RESIDENTS' DECLARATIONS AND TESTIMONIES, INCLUDING DECLARATIONS AND TESTIMONIES OF THE MEMBERS OF NA MOKU AUPUNI O KO'OLAU HUI, IN SUPPORT OF RESTORING WATER TO EAST MAUI STREAMS

Submitted to the
Commission of Water Resource Management
at the Public Fact Gathering Meeting
on East Maui Instream Flow Standard
Assessment Reports

Haiku Community Center

April 10, 2008

29.2-1

Services made possible with major funding from the Office of Hawaiian Affairs.



Note: Upright, straight, stately, tall and straight, as a tree without branches; sharply peaked, as mountains. Fig., upright, correct.

29.2-2

DECLARATION

1. I/My family own(s) property adjacent to WAILUA-NUI Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to LA KINI Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to LA KINI Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to KULAWI + WAIKESHILS (KAPILA) Stream(s).

5. I/My family gather(s) OPAE, HIIHAWAI, O'OPU (list)

what you and your family gather in HONOHANU TO MAKAPILI Stream(s).

6. I/My family would grow kalo in MAKAPILI Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): NO CONSTANT WATER FLOW

ALSO BECAUSE OF LACK OF WATER FLOW AT LA KINI WE ARE UNABLE TO OPEN ALL OF OUR PLOTS AT WAILUA-NUI

7. I/My family would gather OPAE, HIIHAWAI, O'OPU in HONOHANU, WAIKESHILS Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): NOT ENOUGH FREE FLOWING WATER TO MAINTAIN THE KALO, OPAE, HIIHAWAI + O'OPU.

CHARLES L. BOULON
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to Pohakuli Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Keame Flume Stream(s).

5. I/My family gather(s) from kolea to maka-Pipi (list what you and your family gather) in Opae, Hiiwaa, Opa, ferns, plants Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather _____ in _____ Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): _____

DECLARANT: Charney K. Kimbree (Date) Signature

DECLARATION

1. uses property MY family own(s) property adjacent to _____ Stream(s).

2. MY family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. uses family MY family own(s) property adjacent to an 'auwai system connected to Palahala Stream(s).

4. family MY family grow(s) kalo on property adjacent to an 'auwai system connected to Palahala Stream(s).

5. uses family MY family gather(s) base Hihikawai, Opu, Hawaiian Forests, Fern Shrub, Ji-leaves, flowers etc. making mats what you and your family gather in Palahala Stream(s) of the Keolu Stream(s).

6. uses family MY family would grow kalo in Au Property next to me Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): We need constant flowing water at all times. Patches next to the flame catch is more likely to have a better growth then patches on the end cause the water pressure gets smaller and warmer.

7. MY family would gather everything in All Along the Koolau Valley Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

Our kalo growth would be massive if the water was left alone, we would not have all these sickness in our Loi. worked the loi all my life and never did see all the problems on our kalo a water till the years of late 1980 through now.

DECLARANT Paulina Jones Signature (Date) 11/29/01

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

LAK 3. I/My family ^{uses family} ~~owns~~ property adjacent to an 'auwai system connected to Palahulu Stream(s).

LAK 4. I/My family grow(s) kalo on ^{family} property adjacent to an 'auwai system connected to Palahulu Stream(s).

LAK 5. I/My family gather(s) OPAI, HIWAI, PRAWNS, HAWAIIAN HERBS, FERN SHOOTS, TI LEAVES, FLOWERS & PLANTS ^{TO MAKE} ~~LEIS~~ what you and your family gather in ALL STREAMS (KOLEA TO MAKAPII) Stream(s).

LAK 6. I/My family would grow kalo in KOLEA TO MAKAPII Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): Because of low water pressure

water is unable to reach lo'i furthest ~~from~~ from flume catchments and production is minimal and could be of higher quality.

This prevents all Kalo farmers & residents of this ahupua'a from utilizing all of ^{the} resources in this ahupua'a and making higher productivity ^{dependent} on the streams I/My family would gather everything of use in the KOLEA TO MAKAPII Streams

Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): Regular water flow once sustained the right environment for great populations of fish and other stream life, today disturbed water flow prevents stream life to increase population.

DECLARANT [Signature] 4/26/01
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to _____ Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to KEANAE FLOWE Stream(s).

5. I/My family gather(s) KOLEA TO MAKAPU PI

DEPU HIHAWA OPE, A9 AKUING, APONS (list what you and your family gather) in _____ Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather _____ in _____

Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words): _____

DECLARANT U. KUMAR 4/29/01
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to PANAKULU Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to KEANAE FLUX Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to KEANAE FLUX Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to KEANAE FLUX Stream(s).

5. I/My family gather(s) KOLEA TO MAKAPII OPU, HIHIAE, OPAE, WATER CRESS (list what you and your family gather) in Mountain KAILO + HAHA Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather OPU, HIHIAE, OPAE, WATER CRESS in STREAMS FROM KOLEA TO MAKAPII Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

LACK OF WATER

DECLARANT

Archie K. Kimo
Signature

1/28/01
(Date)

DECLARATION

(Describe problem in your own

1. I/My family own(s) property adjacent to Waikanae - (Lak Stream(s), Kuluhi, Waiokeamiro)
I/My family grow(s) kalo on property I/we own adjacent to Waikanae, Kuluhi, Waiokeamiro
Stream(s): Waiokeamiro

3. I/My family own(s) property adjacent to an 'auwai system connected to

Waikanae Stream(s): Kuluhi, Waiokeamiro
I/My family grow(s) kalo on property adjacent to an 'auwai system

connected to Waikanae Stream(s): Kuluhi, Waiokeamiro

5. I/My family gather(s) From Koluhi to Makapipi (list

what you and your family gather) in Opua, Opua, Kuluhi, Waiokeamiro Stream(s) but
Stream(s): everything

6. I/My family would grow kalo in Waikanae Stream(s) but
are unable to do so because there is insufficient water. (Describe problem
in your own words): lack of water

7. I/My family would gather Opua, Opua, Kuluhi, Waiokeamiro
in Koluhi to Makapipi Stream(s) but are unable to do so because there is insufficient water.

words): lack of water

DECLARANT
Monica D. Naitaka
Signature (Date)

DECLARATION

- 1. I/My family own(s) property adjacent to Pūinaau Stream(s).
lease
- 2. I/My family grow(s) kalo on property I/we own adjacent to Pūinaau/Palahū Stream(s).
flow

3. I/My family own(s) property adjacent to an 'auwai system connected to Same as #1 & 2 Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Same as #1 & 2 Stream(s).

5. I/My family gather(s) hīhīwai / opae (list what you and your family gather) in Maikapipi - Honomanu Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather opae / hīhīwai in Palahū Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

Can not gather opae in Palahū stream because no water flow.

DECLARANT: [Signature] 4/16/01
Signature (Date)

DECLARATION

- 1. I/My family own(s) property adjacent to Maio kamilo Stream(s)
- 2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).
- 3. I/My family own(s) property adjacent to an 'auwai system connected to _____ Stream(s).
- 4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Maio kamilo } Stream(s) & Palau hulu } streams
Kelama }
Waiwani }
- 5. I/My family gather(s) Opae, hiwai, kahis, paawu (list
gala faka, paawa what you and your family gather) in Makapipi to Homomaru Stream(s).
- 6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____
- 7. I/My family would gather 'Opae, hiwai, kahis, gala faka in Maio kamilo, Kelama, Palau hulu, Waiwani, Homomaru Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

Insufficient water flow in our streams causes multiple problems. It decreases the production of food supply in our streams, causes an increase of bacteria in the water that remains in our streams causing harm to the people. & life that live in and around that area. Most importantly it destroys the essence of our life style of a taro farming community by causing damage to our taro.

DECLARANT
Aerline Paluano
Signature (Date)

PERMISSION FOR NA MOKU 'AUPUNI O KO'OLAUI HUI

TO ACT ON MY BEHALF FOR THE LIMITED PURPOSE OF SECURING

RESTORATION OF STREAM FLOW IN KE'ANAE-WAILUA NUI;

DECLARATION

I, Cindy Kuwipo Kaauamo, whose address is [redacted], give my permission for Na Moku 'Aupuni o Ko'olau Hui, by and through its Board of Directors and President ("Na Moku"), to act on my behalf to restore the instream flow and oppose renewal of any permit, license, or lease that results in the transfer of water out of the watershed upon which I rely for farming, gathering, and related uses within the ahupua'a of Ke'anae-Wailua Nui, Island of Maui. I give permission for Na Moku to recruit attorneys and other experts to assist in this effort. I understand that I am not personally liable for any debts incurred in connection with this effort and/or as a result of granting this permission. I understand that my name and involvement with this effort will be kept confidential at all times, unless I give my specific permission.

Na Moku is authorized to sign, deliver, as my act and deed, any legal writing, contract, or other written instrument which may be necessary or proper to carry into effect the special permission granted. I understand Na Moku will make every practical effort to consult with me before taking action on my behalf which may have a material effect on my interest as a property owner, taro farmer, traditional gatherer, or any related interest in connection with instream flow restoration. It is agreed that Na Moku will not enter into any settlement of this matter without first consulting me.

NA MOKU 'AUPUNI O KO'OLAUI HUI
[Signature]
Signature (Date) 5-8-01

DECLARANT
Cindy K. Kaauamo-Shioi
Signature (Date)

29.2-21

DECLARATION

- 1. I/My family own(s) property adjacent to Waiio kamilo Stream(s).
- 2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).
- 3. I/My family own(s) property adjacent to an 'auwai system connected to _____ Stream(s).
- 4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Waiio kamilo } Stream(s); Palaohulu } Streams
Kulani }
Waiio kamilo }
- 5. I/My family gather(s) 'Opae, Hiiwai, Prawns, _____ (list
'Opua & Gold Fish, Haha what you and your family gather) in Makapipi to Honomanu Stream(s).
- 6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____
- 7. I/My family would gather 'Opae, Hiiwai, _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): Waiio kamilo, Kulani, Palaohulu, Piiinau, Honomanu

2
29.2-22

Water is a source of life to land and man. It is not for man to possess, but simply for man to use. However, the right to use water depends entirely upon the use of it. The people of Kearae-wailuanui Ahupua'a have respected the rights of water use for many generations. Our ancestors have taught us that water is of great value without it there is no life.

The decrease of water flow affects all life in, around and on this land. It prevents spawning of 'opae 'o'opu, disrupting the natural process of reproduction resulting in decrease food supply. In addition, making it harder for people to gather.

Insufficient water flow decreases water temperature causing stagnation, allowing small ponds to become host of bacteria, spreading disease among striving creatures, plant life and even man.

Finally, the interruption of natural water flow affects taro. Diseases, foreign pest, decrease in production, frustration among farmers and a threat to our Hawaiian Culture as well as our way of life.

Like our ancestors, the people of Kearae-wailuanui Ahupua'a understand the importance of water for all life. Because of this we have inherited the rights of trusteeship over our natural resources.

As a trustee, I ask that you answer this question... Do you value the comfort of man or the life of man? ... Think about it and do what is right. Restore our streams... Give life not death!

Cindy K. Kaauana
5/2/01

DECLARATION

1. I/My family own(s) property adjacent to LAKINI KAHANI Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to LAKINI KAHANI Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to LAKINI KAHANI Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to LAKINI KAHANI Stream(s).

5. I/My family gather(s) POPU, TATA, POHOLA, IHAHA, LUHA (list what you and your family gather) in KU, LOKA - KOLEA Stream(s).

6. I/My family would grow kalo in LAKINI KAHANI Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words):

7. I/My family would gather KOLEA in KOLEA Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): EMI is taking to much water.

DECLARANT

Samuel E. Pookamao

Signature

9/16/01

(Date)

DECLARATION

1. I/My family own(s) property adjacent to Ka'A Niho Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to Wai O'Ka Mito Stream(s).
LA KINE
Kulani

3. I/My family own(s) property adjacent to an 'auwai system connected to Wai 'Lua Nui Stream(s).
Wai O'Ka Mito Stream(s).
Kulani

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Wai 'Lua Nui Stream(s).
LA KINE
Kulani

5. I/My family gather(s) Opai, O'opu, Hihiwai, Haha, (list what you and your family gather) in MAKIPAPI to KOLEA Stream(s).
Wai O'Ka Mito
Wai O'Ka Mito
po hole, Leko, Polu

6. I/My family would grow kalo in Wai 'Lua Nui Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words):

There is Not enough water
flowing through the streams - but that
is one of the reason why
we have a lot diseases destroying
our taro; We have to depen on the rain-
to get more water flow -

7. I/My family would gather In the Above streams, (Not enough flow) Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

DECLARANT Samuel K. Kawano 4/17/01
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to Kaamilo Stream(s).
AKA: Uaia

2. I/My family grow(s) kalo on property I/we own adjacent to Lakini, Kulan, Waiokani Stream(s).
Waiuanui

3. I/My family own(s) property adjacent to an auwai system connected to Waiuanui Stream(s).
Waiokamilo

4. I/My family grow(s) kalo on property adjacent to an auwai system connected to Waiuanui Stream(s).
Lakini, Kulan

5. I/My family gather(s) Makapipi to Kolea

(list

what you and your family gather) in Opae, Oopu, Hihiwai, Uka, Pulu Stream(s).
Lelo, Pohole

6. I/My family would grow kalo in Waiuanui Stream(s) but

are unable to do so because there is insufficient water. (Describe problem

in your own words): Water way was constructed by the
state of HI. But insufficient water to feed water way.
Water has diminished since. Not enough water
to fill 8" of pipe, on a continuous flow.

7. I/My family would gather in most of these streams but not
enough water to sustain life
in _____

Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): Not enough water for Oopu to
move down stream to spawn. Today
there is no Oopu, but

DECLARANT

Salomon Kuanani (Date)
Signature 4-16-01

DECLARATION

1. I/My family own(s) property adjacent to WAIKO KAHILU, PIINAHU, PAHAHULU, KULANI Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to WAIKO KAHILU, PIINAHU, PAHAHULU, KULANI Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to WAIKO KAHILU, PIINAHU, PAHAHULU, KULANI Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to WAIKO KAHILU, PIINAHU, PAHAHULU, KULANI Stream(s).

5. I/My family gather(s) HIKWA, OPE, COPEWA, PRAWNS AHOLE, MULLET (list what you and your family gather) in HONOMANU TO MAKAPIPI S Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather HIKWA, OPE, COPE, PRAWNS in HONOMANU TO MAKAPIPI Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

MOST YEARS WE HAVE LOSSES TO OUR TAPED CROPS DUE TO DROUGHT. WATER TEMPERATURES CANNOT BE MAINTAINED COLO ENOUGH TO KEEP TAPED HEALTHY.

THESE FARMERS SLOWLY HAVE TO COMPETE FOR USE OF THE LIMITED WATER

DECLARANT

Heleka Kama 4/16/01

Signature (Date)

**PERMISSION FOR NA MOKU 'AUPUNI O KO'OLAUI HUI
TO ACT ON MY BEHALF FOR THE LIMITED PURPOSE OF SECURING
RESTORATION OF STREAM FLOW IN KE ANAE-WAILUA NUI;**

DECLARATION

I, Daniel Carmichael, whose address is [REDACTED], give my permission for Na Moku 'Aupuni o Ko'olau Hui, by and through its Board of Directors and President ("Na Moku"), to act on my behalf to restore the instream flow and oppose renewal of any permit, license, or lease that results in the transfer of water out of the watershed upon which I rely for farming, gathering, and related uses within the ahupua'a of Ke Anae-Wailua Nui, Island of Maui. I give permission for Na Moku to recruit attorneys and other experts to assist in this effort. I understand that I am not personally liable for any debts incurred in connection with this effort and/or as a result of granting this permission. I understand that my name and involvement with this effort will be kept confidential at all times, unless I give my specific permission.

Na Moku is authorized to sign, deliver, as my act and deed, any legal writing, contract, or other written instrument which may be necessary or proper to carry into effect the special permission granted. I understand Na Moku will make every practical effort to consult with me before taking action on my behalf which may have a material effect on my interest as a property owner, taro farmer, traditional gatherer, or any related interest in connection with instream flow restoration. It is agreed that Na Moku will not enter into any settlement of this matter without first consulting me.

NA MOKU 'AUPUNI O KO'OLAUI HUI

Daniel Carmichael
Signature (Date) 5/29/2013
BoD. fee.

DECLARANT

Daniel Carmichael 5-1-01
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to _____ Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to _____ Stream(s).

✓ 5. I/My family gather(s) opae, hihiniwa, oopae and a variety of fishes in the ocean (list what you and your family gather) in Hanalei - Palau haku, Piipipi, Haepehala - Uhihama Stream - Wejoka Molo aka Kamahe Stream(s), Keapeke - Karonu, Kepi'ima, Uaipeke, Ke'ea

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather a variety of opae in all streams between Kokee & Kuaulu Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): We do NOT have enough water
in all streams from Kelee to Kuahini
Nahiku for us to gather from mountain
to ocean and from boundary in the
Ahupua'a of Keame-Uhikuanui within the
Koala District.

DECLARANT

Signature (Date)

29.2-35

3

29.2-36

**PERMISSION FOR NA MOKU 'AUPUNI O KO'OLAUI HUI
TO ACT ON MY BEHALF FOR THE LIMITED PURPOSE OF SECURING
RESTORATION OF STREAM FLOW IN KE'ANAE-WAILUA NUI;**

DECLARATION

I, Benjamin Smith Sr., whose address is [REDACTED], give my permission for Na Moku Aupuni o Ko Olau Hui, by and through its Board of Directors and President ("Na Moku"), to act on my behalf to restore the instream flow and oppose renewal of any permit, license, or lease that results in the transfer of water out of the watershed upon which I rely for farming, gathering, and related uses within the ahupua'a of Ke'anae-Wailua Nui, Island of Maui. I give permission for Na Moku to recruit attorneys and other experts to assist in this effort. I understand that I am not personally liable for any debts incurred in connection with this effort and/or as a result of granting this permission. I understand that my name and involvement with this effort will be kept confidential at all times, unless I give my specific permission.

Na Moku is authorized to sign, deliver, as my act and deed, any legal writing, contract, or other written instrument which may be necessary or proper to carry into effect the special permission granted. I understand Na Moku will make every practical effort to consult with me before taking action on my behalf which may have a material effect on my interest as a property owner, taro farmer, traditional gatherer, or any related interest in connection with instream flow restoration. It is agreed that Na Moku will not enter into any settlement of this matter without first consulting me.

NA MOKU 'AUPUNI O KO'OLAUI HUI
Benjamin Smith Sr. Signature (Date) 23-2-37
By Benjamin Smith Sr. Signature (Date) Ma. 5-17-01
Benjamin Smith Sr. Signature (Date) Nov 1, 1985

DECLARATION

1. I/My family own(s) property adjacent to Maui Nui Stream(s) _____
2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).
3. I/My family own(s) property adjacent to an 'auwai system connected to Maui Nui Stream(s).
4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to _____ Stream(s).
5. I/My family gather(s) opoi, kibiwai, opoi _____ (list what you and your family gather) in HAWAII, KAPALAN, KAPILUA, KAPAKAKA, EAST WAILUA, IRI, HONOLULU, MUKAPU Stream(s).
6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): We subsist on what ever water that is not diverted. Since 1985 our streams are dry, we need more water that we are accustomed to before Hawaii be come a state
7. I/My family would gather opoi, kibiwai, opoi in all streams between Koloa & Kuahuna Stream(s) but are unable to do so because there is insufficient water.

PERMISSION FOR NA MOKU 'AUPUNI O KO'OLAU HUI

TO ACT ON MY BEHALF FOR THE LIMITED PURPOSE OF SECURING RESTORATION OF STREAM FLOW IN KE ANAE-WAILUA NUI;

DECLARATION

I, Luauik L. Smith, whose address is

[Redacted], give my permission for Na Moku 'Aupuni o Ko'olau Hui, by and through its Board of Directors and President ("Na Moku"),

to act on my behalf to restore the instream flow and oppose renewal of any permit, license, or lease that results in the transfer of water out of the watershed upon which I rely for farming, gathering, and related uses within the ahupua'a of Ke anae-Wailua Nui, Island of Maui. I give permission for Na Moku to recruit attorneys and other experts to assist in this effort. I understand that I am not personally liable for any debts incurred in connection with this effort and/or as a result of granting this permission. I understand that my name and involvement with this effort will be kept confidential at all times, unless I give my specific permission.

Na Moku is authorized to sign, deliver, as my act and deed, any legal writing, contract, or other written instrument which may be necessary or proper to carry into effect the special permission granted. I understand Na Moku will make every practical effort to consult with me before taking action on my behalf which may have a material effect on my interest as a property owner, taro farmer, traditional gatherer, or any related interest in connection with instream flow restoration. It is agreed that Na Moku will not enter into any settlement of this matter without first consulting me.

NA MOKU 'AUPUNI O KO'OLAU HUI

Signature: [Redacted] Date: 29.2.39

DECLARANT

Signature: Luauik L. Smith 5-17-01 Date: NONE phone 110 4 1000 21 2 10 00 00

DECLARATION

1. My family own(s) property adjacent to Wai La Nui Stream(s).
2. My family grow(s) kalo on property I/we own adjacent to Stream(s).

3. My family own(s) property adjacent to an 'auwai system connected to Wailua Nui Stream(s).
4. My family grow(s) kalo on property adjacent to an 'auwai system connected to KAMALO Stream(s).

5. My family gather(s) OPAI, Ahi WAI, etc (list)

what you and your family gather in ANAHI, MAKAPII, Kapihaha KAPAKA, East West WAILUA Iki, etc, WAILUA Stream(s). HONO ANAHI

6. My family would grow kalo in Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words):

7. My family would gather OPAI, Ahi WAI, etc in streams between Kelea & Kua'ahu Stream(s) but are unable to do so because there is insufficient water.

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to

Wai'uanui Stream(s) and Waiokamilo

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Wai'uanui and Waiokamilo Stream(s).

5. I/My family gather(s) _____ (list what you and your family gather) in _____ Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather 'opae, 'o'opu, hihawai, in Wai'uanui and Waiokamilo Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words): _____

DECLARANT

Maui Kaseama 4-16-2001
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to Wei Kani Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to _____ Stream(s).

5. I/My family gather(s) _____ (list what you and your family gather) in _____ Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather _____ in _____ Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

Water flow in streams at times are reduced to 0 which goes back the same streams would flow continuously.

DECLARANT

Frank Keanno Signature
4-16-1 (Date)

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to ^{here} _____ Stream(s).
Kulani Waiokeke

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Kulani Stream(s).
Waiokeke

5. I/My family gather(s) opae + hikiwai + oope _____ (list)

6. what you and your family gather in from Makapi'i to Stream(s).
Honohone

7. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

8. I/My family would gather opae at Palakelu in Keanae Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words):

getting water to a few of our pitches when my neighbor doesn't let any water down.

DECLARANT: Russell Kekiwa 4-16-01
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to Kulawi, Kamilo Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to Wai O Kamilo Stream(s).
Lakini, Koluhi

3. I/My family own(s) property adjacent to an 'auwai system connected to

Wai O Kamilo Stream(s).

Lakini, Koluhi

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to _____ Stream(s).

5. I/My family gather(s) from Honomanu to

makapipi _____ (list

what you and your family gather) in Opae, Wiliwili, Opa Stream(s).

6. I/My family would grow kalo in Wai Kaula Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): The water is unable

to reach the land because there is no access or irrigation to go to the kalo patch.

7. I/My family would gather Opae, Wiliwili, Opa in Kotea, Honowai

Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): When the rain stops, the water flow in wai'ua streams drop to almost nothing. It is hard to grow kalo with no water in the patches

DECLARANT

James Kikini, Jr.
Signature

(Date)

4/16/01

DECLARATION

- 1. I/My family own(s) property adjacent to Waikamohi Pinaa Streams
- 2. I/My family grow(s) kalo on property I/we own adjacent to Waikamohi Pinaa Stream but water from Puna that comes from Palauhulu also
- 3. I/My family own(s) property adjacent to an 'auwai system connected to Waikamohi Pinaa Puna & Aloh Waipio
- 4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to Waikamohi Pinaa Stream(s)
- 5. I/My family gather(s) from Kolea to Makapipi (list

what you and your family gather) in Opae, Hihwai Stream(s).

I/My family would grow kalo in Waipio Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): there is lack of water to even reach the stream.

- 7. I/My family would gather from Makapipi to Kolea & Waipio in Honouliuli Waikamohi Pinaa Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): is the mountain of Palauhulu

(Describe problem in your own

words): the problem is, not all of the water in the streams meet the sea.

DECLARANT
B. Pauz M. Palouhulu
Signature (Date)

DECLARATION

1. I/My family own(s) property adjacent to LAKINI AND UAIORAKAHIWA, KULANI

2. I/My family grow(s) kalo on property I/we own adjacent to LAKINI AND UAIORAKAHIWA
KULANI
Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to
LAKINI, KULANI,
UAIORAKAHIWA Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system
~~connected to~~ LAKINI, KULANI, UAIORAKAHIWA
~~Stream(s).~~ Stream(s).

5. I/My family gather(s) KOLES
KOHOMANU TO MAKAPPI
(list

what you and your family gather) in OPAI KIHUNA OOPU
Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but
are unable to do so because there is insufficient water. (Describe problem
in your own words): _____

7. I/My family would gather ~~at~~ OPAI KIHUNA OOPU
in UAIORAKAHIWA - UAIORAKAHIWA
Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own

words): CAUSE NOT ENOUGH FREE FLOWING
TO ENHANCE AQUATIC LIFE AND TO ASSIST
IN GOOD TADPOLE GROWTH

Robert Weeds
Signature (Date) 4-16-01

DECLARATION

1. I/My family own(s) property adjacent to _____ Stream(s).

2. I/My family grow(s) kalo on property I/we own adjacent to _____ Stream(s).

3. I/My family own(s) property adjacent to an 'auwai system connected to _____ Stream(s).

4. I/My family grow(s) kalo on property adjacent to an 'auwai system connected to _____ Stream(s).

5. I/My family gather(s) opua, hihi, uia, opua _____ (list what you and your family gather) in from Honouliuli to Waikepihi Stream(s).

6. I/My family would grow kalo in _____ Stream(s) but are unable to do so because there is insufficient water. (Describe problem in your own words): _____

7. I/My family would gather opua in Palaehouli, West Waiwai Stream(s) but are unable to do so because there is insufficient water.

(Describe problem in your own words)

As a child we had all the water we needed to gather a grow healthy taro. When Hawaii became a state, our ahupua'a is left with little or no water to grow healthy taro and other. Our fishing areas are depleted. We need the water for this native (Kamae ma'oi) ahupua'a where people have existed here since time immemorial!

DECLARANT: Aurora Carmichael
Signature (Date)

BEFORE THE BOARD OF LAND AND NATURAL RESOURCES
Wailuku, Maui - May 25, 2001

TESTIMONY OF AWAPUHI KAAUAMO CARMICHAEL

Aloha, my name is Awapuhi Kaaumo Carmichael. I am opposed to any further diversion of waters from East Maui. I object to having this meeting in Wailuku instead of in our community. I also feel that a lot of people are unable to make this meeting because they work during the daytime. A matter of such importance to us should have been held nighttime in East Maui.

I was born in Hana and raised by my grandmother Ellen Kapeka Kaaumo in Keanae - Wailuanui. My family traces its origins to Keanae - Wailuanui to at least 7 generations, as early as the 1700s. My family farmed wetland taro for home consumption. My family farmed the kalo organically and according to ancient principles. Our auwai was connected to Kamilo Stream and Paulai Stream.

I would go with my grandmother to gather opae, hihiwai, and o'opu in Wailuanui Stream, East and West Wailuaiki, Kopii'ula, Waiohue, Kapa'ola, Kapa'akea, Kamilo (aka Waioakamilo), Palauhulu, Noailua, Honomau, and Wahinepe'e. The fresh water which flowed to the ocean made the shoreline very productive. Makai we would fish for aholehole which thrived in the brackish waters. My grandmother and mother taught me to gather opihii, limu kohu, limu pahe'e, limu aupupu, limu maneneo, limu nei, limu 'ele'ele, limu pakanaka within the Ko'olau District from Maka'iwa all the way to Ula'ino.

My mother and grandmother also taught me to gather awa, mamake, noni, pahole fern, tree ferns, liko lehua, and wild haha of the aweoweo taro for food, medicine, and for planting. My father and uncles hunted for pigs and gathered the loulou and other edible plants.

Our gathering practices have been impacted by the diversion of water from our streams. The water no longer flows through the lowlands, so we are forced to gather further up the mountain.

29.3-1

In 1985, our taro patches dried up as a result of the diversion of water. Several farmers had to dig out their taro with the o'o because the taro was dried up and had to be cleaned with domestic water instead. The hardest hit were my extended family and other farmers whose auwai connected to Wailuanui Stream. Currently, EMI has been diverting water out of 116 streams along East Maui. Where once our streams ran perennially, many of them are now bone dry nearly year-round. It has had a devastating impact on our ability to farm lo'i kalo. Each year the water situation seems to get worse for us, with less and less water to farm. Most of my family still farm kalo, but it is getting increasingly harder for them to do so. For the past 16 years, there hasn't been enough water to grow healthy taro. Many farmers have abandoned their lo'i because there is no water.

I oppose any further issuance of permits to withdraw water from our streams. Our lifestyle and ability to perpetuate our farming and gathering traditions have been sacrificed for the sake of Central Maui's selfish and abusive water practices. I hold dear the teachings of my kupuna. It is my desire to be able to pass down to my mo'opuna the heritage, knowledge, and experience of my kupuna. Water is the life of the land and without it we cannot survive and we cannot give to our children the inheritance which we received from our kupuna.

Mahalo for this opportunity to testify.

29.3-2

BEFORE THE BOARD OF LAND AND NATURAL RESOURCES
Wailuku, Maui - May 25, 2001

TESTIMONY OF BEATRICE KEPANI KEKAHUNA

Aloha, my name is Beatrice Kepani Kekahuna. I am opposed to any further diversion of waters from East Maui and particularly from Honopou Stream. I am very concerned that residents who rely on the multiple streams of East Maui, Nāhiku, Keamae, Kailua, Huelo, Peahi, and Haiku will not have a chance to testify about something which impacts their lifestyle. I object having this meeting in Wailuku instead of in our community. I also feel that a lot of people are unable to make this meeting because they work during the daytime. A matter of such importance to us should have been held nighttime in East Maui.

I am 68 years old and live on kuleana lands in Honopou where I was born and raised. My 'ohana and kupuna have lived in Honopou since time immemorial. From when I was a little girl, I remember my 'ohana raising kalo. My father cared for the lo'i. We had about 20 wet taro patches covering about 3 acres of land. Honopou Stream fed our auwai. The auwai always flowed abundantly with cool water. Honopou Stream always ran year-round. Kalo was our life. My family used to sell kalo and make poi for mea 'ai. Kalo was part of our main diet.

We used to play in the stream. We would catch o'opu and hihiwai from the stream. We caught opae oha'a from our auwai and taro patches. The fresh water also sustained an abundance of fruit in our yard, such as mango, lychee, orange, lemon, lime, longan, star fruit, wi, papaya, guava, sweet potato, coconut, pineapple, ti leaf (to lawalu our o'opu), white and red mountain apple. We never went hungry.

Since the first diversion in the 1960s, I noticed a change in the flow and temperature of the water. I witnessed at the same time our stream drying up, especially during summers. When water does flow through Honopou, the water level is very low. Our auwai is also very low. The stream water that flows through our auwai is warm. As a result, the luau leaf of the taro is less in number, smaller in size, and turns yellow instead of green. Kalo usually takes a year and a half to grow. But with the water

29.3-3

reduction and hot temperatures, the kalo rots before harvest. I no longer can grow any taro.

Our lifestyle has changed rapidly. My 'ohana and I still relies on the water for our domestic needs, to shower, wash dishes, and garden. We feel the changes in a very real sense. There is no o'opu and hihiwai in the stream to gather. There is no opae oha'a to get from the auwai and lo'i. No lo'i kalo can thrive here anymore. I cannot effectively transmit to my mo'opuna what I have learned because the water which is the lifeblood of our 'aina has been stolen.

It is my wish to revive Honopou, bring the water back into our streams so that my mo'opuna can learn more of our customs and traditions. I want to see the o'opu, hihiwai, opae ha'a return here and my land be put back into kalo cultivation. Were the waters of Honopou to return, I would be able to reopen the 20 lo'i patches which have laid fallow on our kuleana land for too long.

Mahalo for this opportunity to testify.

29.3-4

BEFORE THE BOARD OF LAND AND NATURAL RESOURCES
Wailuku, Maui - May 25, 2001

TESTIMONY OF HANNAH KUULEIALOHA SHELDON KAAUAMOO

Aloha, my name is Hannah Kuuleialoha Sheldon Kaauomo. I am opposed to any further diversion of waters from East Maui. I object to having this meeting in Wailuku instead of in our community. I also feel that a lot of people are unable to make this meeting because they work during the daytime. A matter of such importance to us should have been held nighttime in East Maui.

I've resided in Pawalu, East Maui for 31 years. My husband is Sol Kaauomo who was born in Hana and raised in Keanae. My children all work the lo'i kalo. I was raised in Kahaluu on Oahu. I remember the streams there were so full of water and we'd catch opae. My Tutu-wahine used to rub tobacco in her goggles and catch o'opu in the stream by hand. But as I grew up, I experienced the withdrawal of our surface waters and witnessed the decline of our traditional subsistence lifestyle. A lot of families had to abandon their lo'i.

My family and I moved from Oahu to Pawalu, to my husband's homeland. We were struggling financially and so we gathered opihii, pupu lo'i, guava, and grew taro commercially to supplement our income, build our home, and provide a college education to our daughters. My children and I worked every day. We taught our children from early on all the phases of planting and harvesting taro.

When I first moved to Pawalu, the waters were just as I remembered in the early days of Kahaluu before the diversion. My mother-in-law would go to Waiokamilo Stream and gather enough opae to feed the family. We all gathered opae in Waiokamilo and Hanawi Streams. The waters flowed abundantly at that time. We relied on the land and waters to provide for our needs. My children caught huge o'opu as big as 1 foot in the auwai. There were lots of Hawaiian goldfish in the streams which we ate for subsistence. In the lo'i kalo, my children could gather as much as 20 edible green frogs from one patch. Nowadays with the water diversions, the frogs are rare. The water in the lo'i is stale now.

29.3-5

When the water from East Maui was first diverted, I recall Maui County had arranged in Waikani for the people in the uplands to have their lo'i watered. But EMI has been withdrawing more and more water to the point that no lo'i in Waikani receives water. When I returned to Kahaluu two years ago and saw the streams flowing again, it warmed my heart and brought me back to the days of my childhood.

I oppose any further issuance of permits to withdraw water from our streams. Here in East Maui, I see the decline in the water level of our streams just as I had witnessed on windward Oahu during the time of the diversion. It has impacted our traditional lifestyle. Keanae - Wailuanui is one of the last places where the customs and traditions of our kupuna continue uninterrupted. Water is the foundation of our lives where cultural perpetuation takes place on a very basic level. When we work our lo'i kalo, we know that our feet are planted in the same soil which our kupuna stood and toiled.

Mahalo for this opportunity to testify.

29.3-6

TESTIMONY OF LINCOLN ALI'ILOA KIMOKEO

Aloha, my name is Lincoln Ali'iloa Kimokeo. I am opposed to any further diversion of waters from East Maui. I object to having this meeting in Wailuku instead of in our community. I also feel that a lot of people are unable to make this meeting because they work during the daytime. A matter of such importance to us should have been held nighttime in East Maui.

I am a native Hawaiian, 25 years old, born and raised in Ke'anae, East Maui. I've been living in Ke'anae all my life. I hunt for wild pig, spearfish and lay net for our mea 'ai. I gather hihiwai, o'opu, opae, and prawns from Keanae Flume and the streams of Opinahau, Palahulu, Waioakamilo, East and West Wailuaiki, Makapipi, and Hanawi. Since the diversion of water, I noticed that the streamflow is drastically less than what I remembered. After that, I cannot gather as much resources from the streams.

I work in my 'ohana's lo'i kalo and I work at the Na Moku Project which includes cultivating taro. We have 10 taro patches currently in cultivation, spanning over about 1/3 - acre. When the water was abundant in the days of my grandparents, we had about 20 lo'i spanning an acre of land. Our family land is situated at the bottom of other taro acreage. We experience the most impact to water diversion because the water we receive through our anwai is very warm. The pupu (apple snails) multiply when the water is warm. Overnight, the pupu makes holes in the corm, eats the huli (newly formed shoots) which we have just planted, and eats the taro stems and luau leaf. The water gets stagnant and slows the growth of the taro. The corm of the taro hardens and becomes deformed and unmarketable. We have to trim off the bad part of the corm and save the good part for home consumption only. When the water warms, the taro becomes prey to the mongoose.

I oppose any further issuance of permits to withdraw water from our streams because it impacts my ability to farm taro and gather mea 'ai from the stream. It is my intention to continue farming kalo. Growing kalo makes me feel good as a Hawaiian

because I am continuing what my 'ohana and kupuna have done for centuries. Taking care our lo'i keeps me in good shape, gives me a sense of mental and spiritual well-being; and celebrates my cultural identity and roots. Like my grandparents, Henry and Sarah Kaauamo, taught me how to farm kalo and imparted to me Hawaiian traditions and belief system, I want to be able to pass down what I have learned to the future generations. Without water, there is no life. Without water, we Hawaiians cannot live.
Mahalo for this opportunity to testify.

Board of Land and Natural Resources
May 25, 2001 Meeting
ILWU Hall

TESTIMONY OF MARJORIE WALLET

[REDACTED]

Aloha. My name is Marjorie Wallet. I am a resident of Honopou. Today, my grave concern over East Maui Irrigation's and Alexander & Baldwin's continuing diversions of water from East Maui streams generally and from Honopou Stream in particular compels me to speak. But first, I must tell you that I am disappointed that I had to travel from my home in Honopou to Wailuku to do so. Your decision here will no doubt have a significant impact on life in East Maui. Many more concerned residents of East Maui could have and would have attended today's meeting if it were held when and where it should have been held; in the evening and at a neutral site closer to East Maui. The time and place chosen for this meeting troubles me and supports the mistrust held by East Maui residents. Many East Maui community members have been, as a result, effectively silenced. For that, you should be ashamed.

My ohana has lived at Honopou along Honopou Stream since time immemorial. I recall a time when the flow in Honopou Stream supported native stream life and provided enough water to our kuleana through our auwai to irrigate our taro lo'i. We could and did gather o'opu, hihwai, opae, and other items from and around Honopou Stream. Water from Honopou Stream also met most of our domestic water needs.

I left Maui and Honopou in the 1950's for a job in California. I retired from that job and returned home in 1988. On my return, I was alarmed by the obvious lack of stream flow and stream life in Honopou Stream. Today, for all practical purposes, stream

29.3-9

flow through the stretch of Honopou Stream adjacent to my ohana's kuleana serves no beneficial use. There is not enough stream flow in Honopou Stream to support native stream life. Our gathering practices have suffered as a result. Taro cultivation on my ohana's kuleana is also impossible. The taro lo'i on our kuleana have not been used because of the lack of water. My ohana wants to grow taro. We have plans to revive our many lo'i. We also wish to reestablish our traditional and customary gathering rights in and around this stream and other East Maui streams.

For decades water has been diverted from Honopou and many other East Maui streams to irrigate agricultural crops in Central Maui at great expense to East Maui, its streams, stream life and people. This injustice must cease and so I strongly object to the continued diversion of any water from Honopou Stream and other East Maui streams. My ohana is resolved to strive for the return of the natural streamflow to Honopou Stream and other diverted East Maui streams. Mahalo for the opportunity to express my mana'o.

29.3-10

aloha for my community by holding this meeting in the evening at a place closer to East Maui. Mahalo for allowing me to testify.

Board of Land and Natural Resources
Meeting of May 25, 2001

TESTIMONY OF ELIZABETH LEHUA LAPENIA

My name is Elizabeth Lehua Lapenia. I am a Native Hawaiian resident of Huelo. My family has lived on our kuleana in Huelo for a very long time. When I was a child I remember working the lo'i kalo on my family's kuleana with my mother. These lo'i were fed by Hanehoi and Puolua (also known as Huelo) streams. I recall my mother taking me through these streams to clean them. We would also gather o'opu, hihiwai, opae, crayfish, medicinal and other plants and fruits along the way. Although I wish to, I can no longer gather o'opu, opae, crayfish, and other things from these streams because these things have disappeared.

My family's kuleana is a little more than three acres. Approximately two acres are lo'i kalo. My family and I are willing and ready to reopen these lo'i but are unable to do so because there is not enough water in Hanehoi and Puolua. The water we need and are entitled to for our lo'i to grow taro is being diverted upstream. My family and I are opposed to the continued diversion of water from Hanehoi, Puolua, and other East Maui streams because it has stripped us of our ability and right to exercise our Native Hawaiian traditions and customs. I am committed to ensuring that water is returned to our streams.

One last thing. I think you have prevented many concerned East Maui residents from attending this meeting and expressing their opinions by holding this meeting on a weekday morning in Waituku at the ILWU Hall. I think that you could have showed

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

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East Maui Native Hawaiians who need water to grow taro and gather traditional foods suffer because CWRM takes no action.

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Unless it rains, East Maui Streams are bone dry rock beds. This is a betrayal of the public trust and native Hawaiian rights. I demand that CWRM establish instream flow standards as called for by law.

ALVIN AULUAB

Print Name

29.4-1

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Spencer Peonier

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Chad Campbell

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East Maui Native Hawaiians who need water to grow taro and gather traditional foods suffer because CWRM takes no action.

By taking no action, CWRM has prolonged suffering of Native Hawaiians.

Unless it rains, East Maui Streams are bone dry rock beds. This is a betrayal of the public trust and native Hawaiian rights. I demand that CWRM establish instream flow standards as called for by law.


Print Name

29.4-16

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

Requesting the Commission on Water Resource Management to Establish Instream Flow Standards for all Streams in the Hana District

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Anne Holmes

Print Name

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CLARESSA K. HOOLELO

Print Name

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Lisa Ann P. Hookano
Print Name

29.4-19

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

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STEVEN HOOKANO
Print Name

29.4-20

**Requesting the Commission on Water Resource Management to Establish
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Dennis Johns

Print Name

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

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FRANCIS KAALANO SR

Print Name

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

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Akuaiki Kaunano

Print Name

29.4-23

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

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Mary Jane Kaunano

Print Name

29.4-24

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Print Name

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Kainani Kateraloha

Print Name

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Deatrice Akabuna

Print Name

29.4-27

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Puaala Nekiwi

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Raymond Kephner
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Shirley A. Kephner
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Summer J.K. Kimokeo

Print Name

29.4-31

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Print Name

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KINGSTON LINDSEY

Print Name



**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258
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Lynman Kyalaa

Print Name



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Unless it rains, East Maui Streams are bone dry rock beds. This is a betrayal of the public trust and native Hawaiian rights. I demand that CWRM establish instream flow standards as called for by law.

LOLA MARRAS

Print Name

29.4-35

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

Requesting the Commission on Water Resource Management to Establish Instream Flow Standards for all Streams in the Hana District

Thank you for this opportunity to submit testimony in support of establishing instream flow standards for all streams in the Hana District.

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By law, it is the Commission on Water Resource Management's (CWRM's) duty to determine how much water must be left in the stream to support a healthy stream and traditional uses. CWRM has had this responsibility, which it has largely not carried out, since it was created in 1987, twenty years ago.

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NORMAN D. MARTIN SR.

Print Name

29.4-36

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

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TRON T. MCCONNELL

Print Name

29.4-37

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JASON MEXLER 4-5-07

Print Name

29.4-38

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Francine Millheiser
Print Name

29.4-39

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Joseph Milligan
Print Name

29.4-40

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Nick McLeod
Print Name

29.4-41

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Dana O'Leah
Print Name

29.4-42

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

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SVEN OLUECH

Print Name

29.4-43

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Benjamin T.M. Pahua Kea

Print Name

29.4-44

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Terle-Diana M. Peltola

Print Name

29.4-45

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Andee Paris

Print Name

29.4-46

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Kekoa Pruet

Print Name

29.4-47

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Leila Pealo

Print Name

29.4-48

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Print Name

Michele Prevost

29.4-49

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 288

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Print Name

Luelyn Moana Scott

29.4-50

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Doug Sisker
Print Name

29.4-51

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Lorraine Silva-Haumanu
Print Name

29.4-52

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Doreen T. Souza Jr.
Print Name

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Melissa Ann Sorensen
Print Name

29.4-54

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CWRM is required by law to give priority to maintaining healthy streams and to protecting traditional Native Hawaiian uses, such as kalo cultivation. For 20 years, CWRM has failed to carry out its responsibilities.

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East Maui Native Hawaiians who need water to grow taro and gather traditional foods suffer because CWRM takes no action.

By taking no action, CWRM has prolonged suffering of Native Hawaiians.

Unless it rains, East Maui Streams are bone dry rock beds. This is a betrayal of the public trust and native Hawaiian rights. I demand that CWRM establish instream flow standards as called for by law.

Bruce R. Tetesault
Print Name

29.4-55

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 258

Requesting the Commission on Water Resource Management to Establish Instream Flow Standards for all Streams in the Hana District

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Kevin R. Waller
Print Name

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Wloneta Sabatt
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Lawrence J. Walker
Print Name

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Edwiso Wendt
Print Name

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Adam Woodruff
Print Name



**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
CONCURRENT RESOLUTION 343**

**Requesting the Board of Land & Natural Resources and the Commission
on Water Resources Management to Report Why Each Has Not Taken
Proactive Measures to Ensure the Water Rights of East Maui Residents and
to Establish a Simple, Clear and Efficient Process for Investigating
Violations of Water Use**

Thank you for this opportunity to testify in support of legislation that essentially asks that the State of Hawaii account for its failure to protect Ke'anae-Wailuanui streams and the people who have depended on that water from time immemorial from the abusive practices of East Maui Irrigation (EMI).

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The people do not want government to continue its long-standing collusion with EMI, which enables EMI to continue these abusive practices with impunity. The people need legal protection. The people need legal enforcement when violations occur.

Please pass HR 275 and HCR 343 and take the first steps toward protecting Hawaii's water resources and the people whose daily lives, subsistence, and cultural survival depend upon it.

Aluw Auwae

Print Name

29-5-1

**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Rosemary Auwae

Print Name

29-5-2

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Print Name

29.5-3

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Print Name

29.5-4

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Spencer Peamer
Print Name

29.5-5

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Debra Dougen
Print Name

29.5-6

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Devin Calasa
Print Name

29.5-7

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Chad Campbell
Print Name

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Patti Carcane
Print Name

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Aupahi Carmichael
Print Name

29.5-10

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Print Name

**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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**Requesting the Board of Land & Natural Resources and the Commission
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to Establish a Simple, Clear and Efficient Process for Investigating
Violations of Water Use**

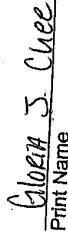
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Linda Chestnut
Print Name

29.5-13

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Kimo - Joseph V. Day
Print Name

29.5-14

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Donald DeHoff
Print Name

29.5-15

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Valerie Dettloff
Print Name

29.5-16

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Maudrey N. English
Print Name

29.5-17

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Print Name

29.5-18

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Print Name

29.5-19

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Print Name

29.5-20

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Kuday Hainman
Print Name

29.5-22

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Print Name

29-5-23

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CLARESSA K. HOOKANO
Print Name

29-5-24

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Print Name



**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
CONCURRENT RESOLUTION 343**

**Requesting the Board of Land & Natural Resources and the Commission
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Danny Johns
Print Name

29.5-27

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FRANCIS KAAUANO SR
Print Name

29.5-28

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Mary Jane Kaauano
Print Name

29.5-29

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MARYS KAAUANO
Print Name

29.5-30

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Selomon Kaauano Sr.
Print Name

29-5-31

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Print Name

29-5-32

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Kainani Kaleleleka
Print Name

29.5-33

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Justice Kabana
Print Name

29.5-34

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Raymond K. P. P.
Print Name



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Duaala Kekiki
Print Name



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Shirley A. Ryan
Print Name

29.5-37

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Sommer J.K. Kimokeo
Print Name

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Print Name

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Lymon Kulaaa
Print Name

29.5-40

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KINGSTON LINDSEY

Print Name

29.5-41

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subsistence, and cultural survival depend upon it.

Kehau Magana

Print Name

29.5-42

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
CONCURRENT RESOLUTION 343

Requesting the Board of Land & Natural Resources and the Commission
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Proactive Measures to Ensure the Water Rights of East Maui Residents and
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LOLA MARTIN

Print Name

29-5-43

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Norman D. Martin Sr.

Print Name

29-5-44

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TROY T. MCKONNELL

Print Name

29.5-45

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JASON MEYER 4-5-07

Print Name

29.5-46

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Joseph Milligan
Print Name

29.5-47

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Francine Miller
Print Name

29.5-48

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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DANA OLLECH

Print Name

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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SVEN OLLECH

Print Name

**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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**Requesting the Board of Land & Natural Resources and the Commission
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Benjamin T.M. Pahnkoo

Print Name

29.5-51

**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Print Name

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Andre Pavijs
Print Name

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Tiake-Diana M. Pehute
Print Name

**TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Lela Prados
Print Name

29.5-55

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Michelle Prevost
Print Name

29.5-56

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Kekoa Puet
Print Name

29.5-57

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
CONCURRENT RESOLUTION 343

Requesting the Board of Land & Natural Resources and the Commission
on Water Resources Management to Report Why Each Has Not Taken
Proactive Measures to Ensure the Water Rights of East Maui Residents and
to Establish a Simple, Clear and Efficient Process for Investigating
Violations of Water Use

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The people do not want government to continue its long-standing collusion
with EMI, which enables EMI to continue these abusive practices with impunity.
The people need legal protection. The people need legal enforcement when
violations occur.

Please pass HR 275 and HCR 343 and take the first steps toward
protecting Hawaii's water resources and the people whose daily lives,
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Lurlene Hoava Scott
Print Name

29.5-58

TESTIMONY IN SUPPORT OF HOUSE RESOLUTION 275 AND HOUSE
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Noah Shea

Print Name

29.5-59

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Pris Sister

Print Name

29.5-60

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BARRON T. SOUZA JR

Print Name

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Melissa Ann Souza

Print Name

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Druce Tetepu
Print Name

29.5-63

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Kevin K. Walleth
Print Name

29.5-64

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Monette Ballet
Print Name

29.5-65

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Ann Terry K. Walter
Print Name

29.5-66

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Leontine T. Walker
Print Name

29.5-67

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Edward Kelenor
Print Name

29.5-68

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ADAM WADKRAF

Print Name

ORIGINAL



State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

COMPLAINT / DISPUTE RESOLUTION
FILING FORM

Instructions: Please print in ink or type and send completed form with attachments to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. For further information and updates to this application form, visit <http://www.hawaii.gov/dlnr/owrm>.

For Official Use Only:
RECEIVED
09 MAY 29 P 3 : 58
Complaining Party Name: CHEN
RESPONSE PREPARED

1. Name: Na Moku Aupuni O Koolau Hui, Beatrice Kekahuna, Marjorie Walleit, Maui Tomorrow Date: May 29, 2008

Address: C/O Native Hawaiian Legal Corp.
1164 Bishop Street, Suite 1205 Honolulu, HI 96813
Daytime Phone No.: (808) 521-2302 Fax No. (808) 537-4268

2. Location of the violation or water problem: Island of Maui
Tax Map Key: unknown - HC&S's Sugar Plantation in Central Maui
Landowner's Name: Alexander & Baldwin, Inc.

Landowner's Address: 822 Bishop Street, P. O. Box 3440, Honolulu, HI 96801
Landowner's Phone No.: (808) 525-6611

3. The party I have a complaint about or dispute with is: (if more than one party, please attach additional sheets)
Name: East Maui Irrigation, a subsidiary of Alexander & Baldwin, Inc.
Address: Paia, Maui 96779

Phone No.: (808) 579-9516
If the party is not the landowner listed in Section 2 above, please describe the party's relationship to the TMK parcel described in Section 2.

4. Describe the complaint or reason for the dispute:
(Attach a sketch or photograph if that will help explain the problem.)

Na Moku Aupuni O Koolau Hui ("Na Moku") is a nonprofit corporation organized by Native Hawaiian residents of the Ke'anae-Wailuanui ahupua'a, which encompasses the Nahiku, Ke'anae, and Honomanu license areas. Na Moku was formed to promote the general welfare of the tenants and descendants of the ahupua'a of Ke'anae-Wailuanui and elsewhere, in social, spiritual, cultural, educational and economic affairs; to preserve, protect, and enhance the quality of the existing life of the people within the Ke'anae-Wailuanui ahupua'a, and to provide a formal voice and organization through which the residents of the community may participate fully and more meaningfully in the determination and development of policies and decisions affecting their destiny.

Marjorie Walleit and Beatrice Kekahuna are native Hawaiians and are residents of the Huulo license area. Each has a property interest in Kuleana land identified as TMK: 2-9-001-014, consisting of LCA 5595-E:1, Grant 1918:1, Grant 3101:2 and Grant 1082, located in Honopou, Maui. This land is riparian to Honopou Stream. Because Honopou Stream fed ancient lo'i on this land since at least prior to November 25, 1892, if not since the time of the Mahele, traditional and/or appurtenant rights and/or riparian use to water from Honopou Stream are associated with these lands.

Beatrice Kekahuna also has property interests in Kuleana land identified as TMK: 2-9-001-006 and 2-9-001-014, consisting of LCA 5459-X:2, which is located in Honopou, Maui, and is riparian to Honopou Stream. This stream has been the traditional source of irrigation water for lo'i on this kuleana since time immemorial.

In order to support their appurtenant and traditional and customary use of water to grow taro and gather from the stream, Ms. Kekahuna and Ms. Walleit seek to restore streamflow to Honopou and other streams affected by A&B/EMI ditch system diversions.

Maui Tomorrow, formally known as Maui Tomorrow Foundation, Inc. is a Hawaii nonprofit corporation. The mission of Maui Tomorrow is to foster responsible land use planning, community design and responsible growth for Maui County. Supporters of Maui Tomorrow like Neola Caveny and Ernest Schupp legally reside on property in East Maui and possess riparian and/or appurtenant water rights in streams with insufficient stream flow due to the EMI diversions. Both seek to enforce their appurtenant and/or riparian rights on these lands. This

statement, while submitted by attorneys for Na Moku, et al., covers the position of Maui Tomorrow as well.

The above parties will hereinafter be collectively referred to as Na Moku, et al.

In 1876, construction of the system of ditches and tunnels that diverts on average 160 million gallons of water per day ("mgd") from East Maui streams was commenced.

Construction of this ditch system was conditioned upon non-interference with the water and other rights of East Maui landowners. East Maui Irrigation ("EMI"), a subsidiary of Alexander & Baldwin ("A&B"), operates this system, consisting of at least four parallel levels of water ditches that run from east to west across the East Maui mountain range intersecting streams within the area and diverting stream flow to Central Maui.

Scope of diversions. Although the current average daily water delivery through this system is 160 mgd, it is capable of capturing and, during storm events, captures as much as 445 mgd. While some of the water diverted goes to domestic and other uses, the vast majority irrigates sugar cane in fields in Central Maui owned by Hawai'i Commercial and Sugar ("HC&S"), another A&B subsidiary. To place this volume in perspective, all domestic water uses on O'ahu total about 160 mgd.

Common Law Limitations. In a dramatically revealing irony, in or around 1900, approximately thirty years into its out-of-watershed diversion of East Maui stream water, HC&S filed a suit in equity for an injunction to restrain its competitor Wailuku Sugar Company from making out-of-watershed diversions of Wailuku Stream stream water. *Hawaiian Commercial & Sugar Company v. Wailuku Sugar Company*, 15 Haw. 675 (1904) ("HCS v. WSC").

In *HC&S v. WSC*, the Court ruled that Wailuku Sugar Co.'s diversions and resulting use of water could "not violate the requirement of the well established rule that such diversion shall be without injury to the rights of others." *Lonoaea, et al. v. Wailuku Sugar Company and Claus Sugar Co.*, 9 Haw. 651 (1895) ("*Lonoaea*"). Because the Court found that since 1894 Wailuku Sugar Co. had exceeded its rights as determined in *Lonoaea*, it issued an injunction restraining Wailuku Sugar Co. from continuing to "commit any acts in excess of its rights."

So, while A&B/EMI benefitted greatly from this precedent in the above case, and specifically agreed initially that it would not interfere with the rights of landowners in East Maui, it nonetheless continues to turn a blind eye to the rights Na Moku, et al. and other East Maui landowners and native tenants, ignoring these rights in its wholesale diversions of East

Maui stream flow.

Waste of Water by HC&S. It is abundantly clear that the State and its predecessors have never, in the 130-year history of A&B/EMI's diversions of East Maui stream flow, required A&B/EMI to justify its use by providing empirically verifiable facts of its actual water needs. Moreover, as Lee Jakeway made abundantly clear in his written and live testimony during the hearing on interim relief, A&B/EMI is wasting water. Using figures for average water consumption by A&B/EMI to supposedly irrigate their sugar fields, the interim hearings revealed that, in the wet winter months of November to April between 2002 and 2004, it applied 134 million gallons per day (MGD) to 7560 acres (of the 25,000 acres irrigated with the use of both ground and East Maui water). Therefore, in any given 2-day rotation schedule during that time period, A&B/EMI applied an average of **17,725 gallons per acre per day (gad)**.

In the dry summer months of May to October between 2002 and 2004, A&B/EMI applied 268 MGD on 7560 acres (of the 25,000 acres irrigated with the use of both ground and East Maui water). Therefore, in any given 2-day rotation schedule during this dry period, A&B/EMI applied an average of **35,450 gad**.

This extravagant use of water at a usage charge of next to nothing (0.2 cent per 1000 gallons) indicates the ludicrous position of this private commercial entity. Small farmers subscribing to state irrigation system water delivery typically pay 35 cents per 1000 gallons or more. A&B/EMI has no legal rights to this water, and is apparently wasting what it diverts, but has, through sheer inertia and economic power, trumped superior common law, and the constitutional and statutory rights of Na Moku, et al. See, Partial Transcript for November 15, 2006, of Lee Jakeway Testimony, attached hereto.

5. Describe how your water usage or water rights are specifically affected by the other party, if at all:

In this instance, Marjorie Wallett and Beatrice Kekahuna, are Native Hawaiian and each have legal interests in ancient lo'i in Honopou on which their ancestors lived and grew taro for generations. A&B/EMI's diversions adversely affect their and their 'ohana's rights to cultivate taro on these lands and to exercise traditional and customary rights in and around Honopou Stream and other streams.

Similarly, these diversions adversely affect members of Na Moku Aupuni O Ko'olau Hui's right to grow taro in their lo'i and to engage in other traditional and customary native

Hawaiian rights ensured by HRS 1-1 and 7-1, Article XI, §§ 1 & 7 and Article XII, § 7 of the Hawai'i Constitution, and HRS § 174C-63.

6. Date the problem was first noticed:

Although waste has long been suspected, confirmation of such was not received until November 15, 2006, and through the live testimony of Lee Jakeway. See, Partial Transcript dated November 15, 2006, of Lee Jakeway Testimony.

7. If this complaint or dispute is related to a water source, was the water source previously declared with the Commission on Water Resources Management?

Yes No Don't Know

If yes, what was the name and tax map key of the source?

8. Have you had any communication with the party/parties described in Section 3 above?

Yes No

If yes, list the communications and dates: (Attach copies if written communications were made)

Na Moku, et al. and A&B/EMI are parties to a contested case hearing before the Board of Land and Natural Resources regarding A&B's application for a long term lease and, alternatively, revocable permits from the BLNR. Complainants have also petitioned the Commission to amend the interim instream flow standards of 27 East Maui streams diverted by A&B. Although Na Moku, et al. and A&B/EMI have communicated with each other with respect to the issues involved in those matters, Na Moku, et al. have not had direct communications with A&B regarding its waste of water.

9. Have you sought resolution of this matter with any other entity?

(e.g., government agency, judicial body, or private entity)

Yes No

If so, with whom and what was the outcome?

(Please provide copies of any documentation of this process)

10. Describe what you believe a successful remedy might be:

A&B/EMI be ordered to prove, with empirically verifiable facts, (1) their actual water need, (2) that there are no feasible alternative sources of water to accommodate such need or any portion thereof, and (3), immediately return any and all waste to diverted East Maui streams.

I request that the Commission on Water Resource Management assist in resolving the matter described herein.

Ms. X. N. Hui III
Signature

5/29/08
Date

BOARD OF LAND AND NATURAL RESOURCES
STATE OF HAWAII
In the Matter of Contested BLNR File: 01-018-WA
(Honolulu, Kaneohe, Niihau and Maui)

CONTESTED CASE HEARING SCHEDULED FOR 11:00 AM ON NOVEMBER 19, 2008, COMMENCING AT THE HONOLULU COMMUNITY CENTER, HONOLULU, HAWAII.

2008 NOV 29 A 11:00

BEFORE: JEAN MARIE McMANUS
Hawaii, CSR #158, CA CSR #2419

1 HEARINGS OFFICER, JUDGE MCCONNELL: The hearing will commence at 11:00 AM. I am informed that all parties are present except for Mr. Freedman whom I'm informed will not be here today.

2 MR. SCHULMEISTER: He advised us before the hearing yesterday he would not be coming today, we'll substitute with the cross-examination of Mr. MURAKAMI. And we'll continue with the cross-examination of Mr. MURAKAMI.

3 MR. SCHULMEISTER: Actually, what we're going to do is take Mr. Holsaday out of order.

4 MR. HALL: I would object to that. I thought we were going to finish Mr. Holsaday. I had planned on that.

5 MR. MURAKAMI: So had I.

6 MR. SCHULMEISTER: The beginning of yesterday I specifically brought that up first order of business.

7 HEARINGS OFFICER, JUDGE MCCONNELL: How long is he going to be out of order?

8 MR. SCHULMEISTER: I'm just going to turn him over for cross.

9 MR. HALL: I don't agree to that. The only person I agreed to take out of order was Mr. Veselnie.

10 MR. SCHULMEISTER: That was the very first thing we were going to do this morning.

11 MR. HALL: No, it wasn't. You said you thought you were going to do Mr. Holsaday and then after that you were going to take your other two witnesses and then you were going to take them out today. You don't say you were going to take them out today.

12 HEARINGS OFFICER, JUDGE MCCONNELL: How long is Mr. Holsaday going to be?

13 MR. HALL: We talked about that yesterday.

14 HEARINGS OFFICER, JUDGE MCCONNELL: I'm just asking you to take your other two witnesses out of order. You don't have any direct examination?

15 MR. SCHULMEISTER: No, just getting in the declaration.

16 MR. HALL: How many of these witnesses are coming out of order? I think he thinks there's more than six.

17 HEARINGS OFFICER, JUDGE MCCONNELL: That's it, I hope.

18 MR. SCHULMEISTER: Well, I was planning to take Mr. Jakesway as well, although I think he's definitely more available.

19 HEARINGS OFFICER, JUDGE MCCONNELL: We will just do one.

1 any given day?

2 A. There's a report in cultivated areas that does for the remainder of acres. And that was the basis for the requirement for the irrigation system. So that would take into account the acres that were receiving water.

3 Q. But so you're saying you didn't commit it to memory and you can't say what that percentage of either irrigated lands was or lands not being irrigated at any given time?

4 A. That total would vary from day-to-day.

5 Q. Do you have an idea of what the range of that variation is in terms of the percentage of lands being irrigated or not being irrigated?

6 A. I would have to go back and review the records. I do not know that right at this moment.

7 Q. And you have no idea --

8 A. No.

9 Q. -- whether it was ten percent, 25 percent?

10 A. If you want a range, I can hazard a guess.

11 Q. Based on your best estimate and years of experience?

12 A. I would say it's less than ten percent.

13 Q. And you're not sure of the percentage?

14 A. I couldn't tell you exactly.

1 Q. What I didn't understand by that statement, I guess, is if it's equal to evaporation and transpiration, are you left with nothing for the actual plant to absorb?

2 A. Yes, that's correct. The definition is what the plant is -- water being taken up by the plant.

3 Q. It's going and leaving the plant.

4 A. Correct.

5 Q. Isn't there any water left over for the plant's evaporation and transpiration?

6 A. Yes, that's correct. The definition is what the moisture reservoir for the plant to grow healthy through whatever evaporation and transpiration is going on. So it's a combination of soil evaporation and transpiration through the plant.

7 Q. So you're basically assuming that whatever the moisture content of the soil is at the time, it's going to be used by the plant to absorb whatever needs it has for water?

8 A. It has to be maintained at a certain soil percentage level, soil moisture level, in order to maintain good growth crop in the growth of the plant.

9 Q. And, Mr. Jakesway, do you have any -- are you provided with any information as to what authority,

7 HEARINGS OFFICER: HONORABLE E. JOHN MCCONNELL
32 N. Market Street, Ste. 200
Honolulu, Hawaii 96813

8 BLNR ATTORNEY: LINDA CHOW, ESQ.
Deputy Attorney General
Honolulu, Hawaii 96813

9 For RMI and A&S: DAVID SCHULMEISTER, ESQ.
Cuba Schulte Firming & Construction
1000 Wilshire Street, Ste. 1200
Pineapple
444 Kalia & Mendenhall
Honolulu, Hawaii 96813

10 For Maui Land & Development, ESQ.
Pineapple
444 Kalia & Mendenhall
Honolulu, Hawaii 96813

11 For County of Maui: JAMES E. LOVELL, ESQ.
300 S. High Street
Honolulu, Hawaii 96813

12 For Maui Tomorrow: ISAAC HALL, ESQ.
2007 Waile Street
Honolulu, Hawaii 96813

13 For Ne Koku Aupuni: ALAN T. MURAKAMI, ESQ.
6000 Hui, 1st Floor
Honolulu, Hawaii 96813

14 For Ne Koku Aupuni: ALAN T. MURAKAMI, ESQ.
6000 Hui, 1st Floor
Honolulu, Hawaii 96813

15 For Ne Koku Aupuni: ALAN T. MURAKAMI, ESQ.
6000 Hui, 1st Floor
Honolulu, Hawaii 96813

1 thing we were going to do this morning.

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8 HEARINGS OFFICER, JUDGE MCCONNELL: That's it, I hope.

9 MR. SCHULMEISTER: Well, I was planning to take Mr. Jakesway as well, although I think he's definitely more available.

10 HEARINGS OFFICER, JUDGE MCCONNELL: We will just do one.

1 Q. So if that's true, then if we use generally a ten percent figure, then the figures I gave you earlier as to the gallons per acre would have been 10,000 gallons per acre per day. Is that correct?

2 A. Yes, that would be driven by whatever acres are requiring irrigation water.

3 Q. So that would be more in the neighborhood of 5,000 gallons per acre per day?

4 A. Yes, that would be more in the neighborhood of 5,000 gallons per acre per day per acre to 9,000 gallons per acre per day per acre, thereabouts. Is that correct?

5 A. According to that math, yes.

6 Q. So is it also true then -- let me ask this.

1 legal or otherwise, HC&S has with respect to being able to irrigate on the East Maui Irrigation Ditch system without respect for the water needs of faro farmers in East Maui?

2 MR. SCHULMEISTER: Beyond the scope of direct. Calls for legal conclusion.

3 HEARINGS OFFICER, JUDGE MCCONNELL: I'll sustain that.

4 MR. MURAKAMI: That's all I have.

5 HEARINGS OFFICER, JUDGE MCCONNELL: I just wanted to get a general idea. Irrigation of sugar obviously there's a great variation in seasons. But let's take the dry seasons.

6 Is a particular field being irrigated 24-hours-a-day? In other words, the water is turned on.

7 THE WITNESS: Normally the way the irrigation is planned is by irrigation rounds. So a field will get a round that lasts on average 48 hours. And that may be good for one week. And then during that time the soil moisture will be depleted, you have to come back and irrigate that field again. And that varies according to the weather.

8 HEARINGS OFFICER, JUDGE MCCONNELL: Right so in the winter you would have to do that less often.

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1 was called as a witness by and on behalf of A&S and E&L, was sworn to tell the truth, was examined and testified as follows:

2 HEARINGS OFFICER, JUDGE MCCONNELL: State your name, please, for the record.

3 THE WITNESS: G. Stephen Holsaday.

4 HEARINGS OFFICER, JUDGE MCCONNELL: P-H-Y

5 THE WITNESS: YES, YOUR HONOR.

6 BY MR. SCHULMEISTER:

7 Q. Mr. Holsaday, can you state your employer?

8 A. My employer is A&S and E&L.

9 A. I am a general manager.

10 Sugar Company and president of the agricultural group.

11 Q. You have in front of you a copy of a written declaration prepared to be signed by you on July 28th, 2008, is that correct?

12 A. Yes, that's true and correct copy of your written testimony in this case?

13 A. Yes.

14 Q. Is that testimony true and correct to the best of your belief?

1 As I understand your testimony, you need to irrigate the lands of HC&S based on the rate of evaporation and transpiration that you experience in those fields?

2 A. That is correct. We try to keep up with evapotranspiration rate.

3 Q. So what you would have to apply, as I understand your testimony, is the same rate by which water is evaporating or transpiring -- transpiration -- from the fields that are affected by your irrigation?

4 A. That is correct.

5 Q. At this point then, Mr. Jakesway, who has taken charge of the actual irrigation operations of HC&S?

6 A. You want a name?

7 A. Mr. Rodney Chin.

8 Q. So in essence was your position a new position, or one which was split off from your old position?

9 A. It was a new position.

10 Q. And Mr. Chin stepped into your position as general manager of irrigation operations?

11 A. That is correct.

1 THE WITNESS: During the cooler winter months when the evapotranspiration rate is lower.

2 HEARINGS OFFICER, JUDGE MCCONNELL: Okay Any other questions?

3 MR. MURAKAMI: Can I follow up with that line of questioning?

4 FURTHER CROSS-EXAMINATION

5 BY MR. MURAKAMI:

6 Q. As I understood your earlier testimony you said that at all times 27,000 acres were being irrigated, correct?

7 A. I did say that. Not all 27,000 acres were being irrigated.

8 Q. For the lands for which you're irrigating, excluding the lands under cultivation and/or some other form of operation where there is no planting, how many acres are being irrigated?

9 A. I said that 27,000 acres are being irrigated, correct?

10 Q. You said that 27,000 acres are being irrigated, correct?

11 A. Well, they're not all being irrigated. That's different than the answer you gave me earlier. My question to you was at any given time, how many acres were being irrigated outside of the

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1 cultivation and other operations where there are no
2 plants in the ground?
3 MR. SCHULMEISTER: When you say being
4 irrigated, you mean water is being applied?
5 MR. MURAKAMI: What else would it mean?
6 MS. LOVELL: I thought irrigation
7 schedules MR. MURAKAMI: I didn't say irrigation
8 schedule.
9 HEARINGS OFFICER JUDGE MCCONNELL: Well,
10 but it's obvious, Mr. Murakami, I mean, you know, you
11 don't have the water on all the time.
12 MR. MURAKAMI: That's not true for taro,
13 why should it not be true for sugarcane?
14 HEARINGS OFFICER JUDGE MCCONNELL: It is
15 true for taro.
16 MR. MURAKAMI: I'm sorry?
17 HEARINGS OFFICER JUDGE MCCONNELL: It is
18 true for taro, but anyway taro would have no
19 application. The question is how do you define
20 irrigation? What I understand the witness to be
21 saying is that they are providing water as
22 needed when measured by the soil
23 moisture. MR. MURAKAMI: Can I ask him a different
24 question?
25

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1 way?
2 HEARINGS OFFICER JUDGE MCCONNELL: Okay.
3 MR. MURAKAMI: During the winter months, what
4 percentage of time on the 20,000 acres being irrigated
5 is water being applied?
6 MR. SCHULMEISTER: You mean to a
7 particular acre?
8 MR. MURAKAMI: All 20,000 acres.
9 MR. SCHULMEISTER: That assumes they're
10 all being irrigated at the same time.
11 MR. MURAKAMI: I'm asking. Half of the
12 acreage?
13 MR. SCHULMEISTER: The number of the acreage?
14 Q. Yes.
15 A. You make the assumption of two days per week
16 and each irrigation round last two days, it would be
17 about 28 percent.
18 Q. That's 20,000 acres that would be receiving
19 irrigation water, that would be irrigated during that
20 time.
21 A. Basically -- wait, 2800, you said?
22 Q. A 28 percent of that 27,000.
23 A. And 28 percent of 27,000 acres is how many
24 acres?
25

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1 A. That's about 7,560 acres.
2 Q. 7,560 acres?
3 A. Yes.
4 C. If you took 134 million gallons per day
5 divided by that figure, what would you get?
6 A. That 134 million gallons a day represents an
7 average.
8 Ems. That's during the wet periods. I'm
9 asking you during the wet periods, I'm
10 asking you during the wet periods for 7,560
11 acres being irrigated at any given moment?
12 MR. SCHULMEISTER: Let me object. You
13 take a day, now you're transposing it to a moment? I
14 think it's lack of foundation. That doesn't make any
15 sense.
16 MR. MURAKAMI: I think it makes perfect
17 sense and I think it is admissible.
18 HEARINGS OFFICER JUDGE MCCONNELL: I won't
19 comment on whether it makes sense or not, but I'll
20 allow it.
21 MR. MURAKAMI: Thank you.
22 A. I come up with approximate number of about
23 18,000 gallons per day per acre?
24 Q. Per acre per day?
25 A. Yes.
26 Q. So is my understanding correct that on the

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1 average during the wet winter months, you're applying
2 at any given moment when there is a cycle of
3 irrigation on 28 percent of the lands, over 18,000
4 gallons per acre per day?
5 A. According to that math, yes, for two days out
6 of seven days a week, so you have to average that over
7 the entire seven days.
8 Q. I understand that. But if you go past the
9 two days, you're applying irrigation water to another
10 set of lands or about 7,560 acres on the average?
11 A. Yes.
12 Q. And you rotate that after that two days?
13 A. Yeah.
14 Q. So every two-day cycle you're applying
15 approximately the same amount of water on average to
16 7,560 acres.
17 MR. SCHULMEISTER: To a different acre --
18 or is there an objection?
19 MR. MURAKAMI: I'm sorry, is it argument
20 foundation, assumes facts not in evidence.
21 MR. SCHULMEISTER: The objection is lacks
22 foundation, assumes facts not in evidence.
23 I'm using all of his evidence.
24 HEARINGS OFFICER JUDGE MCCONNELL:
25 Clarify, please.

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1 Q. MR. MURAKAMI: So your testimony is there is
2 a rotation schedule for irrigation, correct?
3 A. That's correct.
4 Q. And that takes about two days at a time,
5 correct?
6 A. On average, yeah.
7 Q. The number of days during the winter months, what
8 is the average?
9 MR. MURAKAMI: The winter months, on
10 average, it's about two days.
11 Q. And you're saying that in any given average
12 cycle approximately 7,560 acres are being actually
13 irrigated with water during that two-day cycle,
14 correct?
15 A. If there was rainfall, then there wouldn't be
16 any irrigation rounds, but this is on an average.
17 Q. But you've already assumed some differences
18 in rainfall based on the peak and off-peak months,
19 correct? We're talking about the wet winter months,
20 correct?
21 A. So if you're applying
22 7,560 acres at a time approximately on the average,
23 and you're applying 134 million gallons a day on the
24 average to that acreage, then you are applying
25

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1 18,000 -- over 18,000 gallons per day per acre,
2 correct?
3 A. For that two day irrigation rounds, that is
4 correct.
5 Q. Then the next two days you'll be doing the
6 same thing?
7 A. For another area, yes.
8 Q. The next two days after that, the same thing?
9 A. For another area.
10 Q. Through out the year?
11 A. It's being driven also by the soil moisture
12 program. So if it requires irrigation --
13 Q. You might put more or you might back off
14 depending on need?
15 A. Correct.
16 Q. But we're talking on the average now,
17 correct?
18 A. Yes.
19 Q. So throughout the wet winter periods, you're
20 applying over 18,000 gallons per day per acre?
21 A. No, I wouldn't characterize that. We don't
22 do that continuously throughout the winter period.
23 I'm not asking you to do it continuously. I
24 said on the average you're applying 18,000 gallons per
25

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1 day per acre during the wet winter months?
2 A. That would be correct from the math that we
3 worked through.
4 Q. And if you moved on to the dry months, you
5 would be applying over 36, maybe 37 gallons per day
6 per acre during the dry months, peak months, correct?
7 It's double, basically double on the average, not on
8 throughout that period of time on the average.
9 MR. SCHULMEISTER: You mean on the average
10 day of the water being applied?
11 MR. MURAKAMI: An average peak period day
12 throughout the peak season, you would be applying
13 37,000-plus gallons per day per acre.
14 MS. LOVELL: Correct.
15 MR. MURAKAMI: I can't respond to that not
16 knowing what the incompleteness is.
17 MS. LOVELL: Reservoirs and tanks come to
18 mind.
19 MR. MURAKAMI: Your Honor, that has
20 nothing to do with it. Applying his figures to
21 what he says he applied to the tanks is nothing
22 to do with tanks and reservoirs. It probably
23 incorporates the notion of tanks and reservoirs. It's
24
25

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1 not my math.
2 HEARINGS OFFICER JUDGE MCCONNELL: Sound
3 like it to me. Anyway --
4 MR. MURAKAMI: I'd like to know, I'm
5 asking you to correct it, this is an important
6 point. I want you to correct it.
7 A. If that's what the water requirements are
8 required based on evapotranspiration requirements and
9 if that's what the math works out to be, that's
10 correct. It's just a different way of presenting it,
11 right? Another way of looking at the same problem.
12 A. Yeah.
13 MR. MURAKAMI: Thank you. That's all I
14 have.
15 HEARINGS OFFICER JUDGE MCCONNELL: Any
16 questions?
17 MS. LOVELL: I have a couple of questions.
18 Q. I'm Jane Lovell, one of the county's lawyers.
19 When you calculate water needs for the
20 30,000 acres that are available for cultivation, do
21 you also take into account water storage needs?
22 MR. MURAKAMI: Object, that's vague.
23
24
25

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1 permit it. THE WITNESS: No, we do not. That's based
2 on what the crop needs, so there is no consideration
3 given to keeping a reservoir full.
4 MS. LOVELL: That's what I was trying to get
5 at.
6 So the 18,000 gallon figure that we just
7 heard, that all would be applied to fields -- point of
8 that figure would go into tanks or reservoirs?
9 A. Some of that -- well, if we're dealing with
10 averages here that come from EMI, some of that could
11 go to reservoirs.
12 Q. I just explain generally how storage
13 of water in tanks and reservoirs fits into your
14 irrigation scheme?
15 A. We have several reservoirs that are located
16 throughout our ditch system, so during periods of high
17 flow when irrigation -- when we have peak irrigation
18 reservoirs in the ditches, we will store water in our
19 later on for irrigation rounds.
20 C. So is it fair to say that during the wet
21 winter months, reservoirs will be filled and then that
22 water will be drawn upon during the dry months?
23
24
25

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1 A. It will be drawn upon during the dry periods
2 during the winter seasons, because it's going to be
3 wet and the ground is going to be wet.
4 MS. LOVELL: Thank you.
5 HEARINGS OFFICER JUDGE MCCONNELL:
6 Anything else?
7 MR. MURAKAMI: Yes.
8 HEARINGS OFFICER JUDGE MCCONNELL: Are you
9 going to keep going with this?
10 A. I'll try to. He's giving inconsistent
11 answers. He just said that. He's giving inconsistent
12 answers. He just said that. He's giving inconsistent
13 answers. He just said that. He's giving inconsistent
14 answers. He just said that. He's giving inconsistent
15 answers. He just said that. He's giving inconsistent
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22 answers. He just said that. He's giving inconsistent
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24 answers. He just said that. He's giving inconsistent
25 answers. He just said that. He's giving inconsistent

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1 water amounts that you stated here is reflective of
2 what you're applying to the ground on the 7500 acres
3 at a time?
4 A. That would be correct.
5 Q. It doesn't include any amounts that you would
6 siphon off for storage in a reservoir?
7 A. I would not include excess flows during that time that
8 would not be used to irrigate the land. That would be
9 stored and then used to supplement the water that
10 this figure that is presented here in Paragraph 9.
11 Q. I'm not sure this is clear. Either amount,
12 the 134 million gallons per day or the 268 million
13 gallons per day, does any of that water -- is any of
14 that water being diverted for storage in the same
15 fashion that you just described in your earlier
16 testimony?
17 A. The numbers that are talked about in
18 Paragraph 9 refer to the evapotranspiration of the
19 water requirements of the crop typically during those
20 periods. So there could be water in the reservoirs
21 average need during that period to provide this need or this
22 amount.
23 Q. Maybe I'm not making myself clear. But those
24 two figures, 134 million gallons per day and 268
25 million gallons per day, is that water being applied

144
1 to the plant or ground, whichever you want to choose,
2 as opposed to any amounts being diverted for storage
3 in reservoirs?
4 A. On average that would be applied to the
5 plant.
6 Q. Thank you.
7 HEARINGS OFFICER JUDGE MCCONNELL: That's
8 all, thank you very much. Any other witnesses, Mr.
9 Schulte?
10 SCHULMEISTER: No.
11 HEARINGS OFFICER JUDGE MCCONNELL: Any
12 rebuttal?
13 MR. MURAKAMI: Yes, we do.
14 Q. You have, MR. MURAKAMI: I have at least two -- we
15 have three.
16 HEARINGS OFFICER JUDGE MCCONNELL: We'll
17 take a couple minutes.
18 (Recess was taken.)
19 HEARINGS OFFICER JUDGE MCCONNELL: We're
20 back on the record.
21 STEVEN GREG KAI HO'OKANO
22 was called as a witness by and on behalf of
23 Na Moku, et al, was sworn to tell the truth, was



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 COMMISSION ON WATER
 RESOURCE MANAGEMENT

May 29, 2008

Ken C. Kawahara, Deputy Director
 Commission on Water Resource Management
 State Department of Land and Natural Resources
 P. O. Box 621
 Honolulu, Hawaii 96809

RE: Instream Flow Standard Assessment Reports for East Maui

Dr. Mr. Kawahara:

Enclosed please find Petitioners' Beatrice Kekahuna's, Marjorie Wallett's, and Na Moku Aupuni O Ko'olanui's additional comments and supporting documents on the Instream Flow Standard Assessment Reports for Honopou, Hanehoi, Pi'ina'au, Waiokamilo, and Waihuani. Please confirm your receipt and inclusion of these comments and appendices into these reports. Please call Alan Murakami or me at (808) 521-2302 should you have any questions or concerns.

Mahalo,
Mrs. K. N. Kahu-tel
 Moses K. N. Haia III, Esq.
 Alan T. Murakami, Esq.
 Attorneys for Petitioners
 Beatrice Kekahuna
 Marjorie Wallett
 Na Moku Aupuni O Ko'olanui Hui

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Services made possible with major funding from the Office of Hawaiian Affairs.



Note: Upright, straight, closely, tall and straight as a tree without branches; sharply peaked as mountains. Fig. right/eous correct.

ADDITIONAL COMMENTS OF PETITIONERS KEKAHUNA, WALLETT, AND NA MOKU AUPUNI O KO'OLAUI HUI ON THE INSTREAM FLOW STANDARD ASSESSMENT REPORTS FOR HONOPOU, HANEHOI, PI'INA'AU, WAIOKAMILO, AND WAIHUANI

Section 6.0 - Maintenance of Ecosystems

Page 37 (Hanehoi), Page 41 (Honopou), Page 48 (Pi'ina'au), Page 44 (Waiokamilo), Page 47 (Waihuani).

"Native Hawaiians were only allowed to grow crops, hunt, fish, and gather materials within the limits of their ahupua'a, so there was substantial incentive for them to manage and conserve the resources within their living unit."

While Hawaiians sought to ensure their survival through effective management and conservation of all natural resources, as the following excerpt from the Pele Defense Fund v. Pate case confirms, their hunting, fishing and gathering practices were not necessarily limited to the ahupua'a in which they resided:

If, as argued by PDF, the customary and traditional rights associated with tenancy in an ahupua'a extended beyond the boundaries of the ahupua'a, then article XII, § 7 protects those rights as well. The drafters of the constitutional amendment emphasized that all such rights were reaffirmed and that they did not intend for the provision to be narrowly construed. We therefore hold that **native Hawaiian rights protected by article XII, § 7 may extend beyond the ahupua'a in which a native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner.**

PDF has presented evidence supporting the contention that the access and gathering patterns of tenants in Puna do not appear to have conformed to the usual notion that tenants exercised such rights only within the boundaries of a given ahupua'a. Affidavits suggest that Puna region ahupua'a tenants accessed all portions of the Puna Forest Reserve for hunting and gathering, and were not limited to just the narrow corridor of their ahupua'a. The practice of accessing the area as a common area for gathering and hunting by tenants of the Puna district may have commenced from the time of the Great Mahele and Kuleana Acts. One affiant testified that early trails accessed the Puna Forest Reserve from many ahupua'a, the lava tube extending into the Puna Forest Reserve extends across several ahupua'a and has entry points in more than one ahupua'a, and this area was associated with Pele and her family, and not with any particular ahupua'a. (Emphasis added).

Pele Def. Fund v. Pate, 73 Haw. 578, 620-621 (1992).

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As the above discussion confirms, although management and conservation of resources was central to traditional Hawaiian life, the exercise of traditional and customary native Hawaiian practices was not and is not necessarily limited to the ahupua'a of the practitioner.

Section 9.0 - Instream Hydropower Generation

Page 47 (Hanehohi), Page 51 (Honopou), Page 58 (Pi'ina'au), Page 55 (Waiokamilo), Page 59 (Waiuanui).

"Maui Electric saves an estimated 16,200 barrels of oil per year through purchase of hydroelectric power from HC&S."

(Section 13 - Noninstream Uses, Page 85 (Honopou), Page 74 (Hanehohi), Page 89 (Pi'ina'au), Page 83 (Waiokamilo), Page 86 (Waiuanui))

"The approximate oil savings from [sugar cane bagasse] is 44,770 barrels per year."

In *In Re Water Use Permit Applications*, 94 Haw. 97, at 160 ("*Waiahole I*"), the Court chastised the Commission for making "liberal allowances for offstream uses based on a mere 'prima facie' standard." "[T]he Commission's permissive view towards stream diversions, particularly while the instream flow standards remained in limbo[]" deeply "troubled" the Court. *Id.* This approach contradicted "the law and logic of water resource management in this state." *Id.*

While such efforts at conservation are commendable, the Commission must require more than mere assertions to support these claims. Na Moku, et al. therefore recommend that the Commission review the "Amended and Restated Power Purchase Agreement Between A&B Hawaii, Inc., through its division, Hawaiian Commercial & Sugar Company and Maui Electric Company, Ltd., attached hereto as Appendix "A". Before the Commission uses these unsubstantiated, self-serving claims in its decision making, it must require A&B and MECO to provide it with empirically verifiable facts. Otherwise, the Commission's approach in this instance may once again contradict "the law and logic of water resource protection in this state."

Section - 12.0 Protection of Traditional and Customary Hawaiian Rights

Page 56 (Honopou), Page 52 (Hanehohi), Page 63 (Pi'ina'au), Page 60 (Waiokamilo), Page 64 (Waiuanui).

"Appurtenant rights are rights to the use of water utilized by (non-riparian) parcels of land at the time of their original conversion into fee simple lands."

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Contrary to this statement, appurtenant rights are not limited to non-riparian lands. The fact that land is or is not riparian to a stream is of no consequence. "[A]ppurtenant rights are rights to the use of water utilized by parcels of land at the time of their original conversion into fee simple lands...When...the same parcel of land is being utilized to cultivate traditional products by means approximating those utilized at the time of the Mahele, there is sufficient evidence to give rise to a presumption that the amount of water diverted for such cultivation sufficiently approximates the quantity of the appurtenant water rights to which that land is entitled." *Reppun v. Board of Water Supply*, 65 Haw. 531, at 551, 554 (1982).

As such, in addition to riparian water rights, riparian lands which were used to cultivate traditional crops at the time of the Mahele may, in fact, be entitled to appurtenant rights. Furthermore, non-riparian and riparian lands may also be entitled to water based upon traditional and customary water use in addition to or separate from riparian and appurtenant rights.

Page 57 (Honopou), Page 53 (Hanehohi), Page 64 (Pi'ina'au), Page 61 (Waiokamilo), Page 65 (Waiuanui).

"In those cases where a Commission decision may affect an appurtenant right, it is the claimant's duty to assert the appurtenant right and to gather the information required by the Commission to rule on the claim."

While this may or may not be so when one seeks a permit for water use pursuant to HRS 174C-63, it is clearly not necessarily so when the Commission considers petitions to amend interim instream flow standards:

According to the Hawai'i Supreme Court,

[T]he exercise of Native Hawaiian and traditional and customary rights [i]s a public trust purpose.

In Re Water Use Permit Applications, 94 Haw. 97, at 137 ("*Waiahole I*").

Since Native Hawaiian traditional and customary rights are protected by the public trust, any use of water in pursuit of such right; i.e., appurtenant rights to irrigate taro, is also protected by the public trust.

The Court has also noted:

HRS 174C-71(2)(C) requires that petitions to adopt interim instream flow standards 'set forth data and information concerning the need to protect

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and conserve beneficial instream uses of water and any other relevant and reasonable information required by the commission.' The statute, however, does not assign any burden of proof, and we do not believe that the ultimate burden of justifying interim standards falls on the petitioner...[T]he Commission has an affirmative duty under the public trust to protect and promote instream trust uses. In accordance with this duty, the Commission must establish permanent instream flow standards of its own accord 'whenever necessary to protect the public interest in the waters of the State.' HRS 174C-71(1)...The Code also obligates the Commission to ensure that it does not 'abridge or deny' traditional and customary rights of Native Hawaiians. See HRS 174C-101(c) (1993); see also HRS 174C-63 (1993) (preserving appurtenant rights)...

Every concession to immediate offstream demands made by the Commission increases the risk of unwarranted impairment of instream values, ad hoc planning, and arbitrary distribution....The lack of full scientific certainty does not extinguish the presumption in favor of public trust purposes or vitiate the Commission's affirmative duty to protect such purposes whenever feasible...Uncertainty regarding the exact level of protection necessary justifies neither the least protection feasible nor the absence of protection...[A]lthough interim measures are merely stopgap measures, they must still protect instream values to the extent practicable... We have rejected the idea of public streams serving as convenient reservoirs for offstream private use... Thus, pursuant to its duties as trustee, and in the interest of precaution, the Commission should consider providing reasonable 'margins of safety' for instream trust purposes when establishing instream flow standards."

(Emphasis added). *Id.* at 153-156.

In its latest pronouncement on this issue involving the Commission, the Court left no uncertainty as to where the burden lies:

To the extent that harm to a public trust purpose...is alleged, the permit applicant must demonstrate that there is, in fact, no harm, or that any potential harm does not rise to a level that would preclude a finding that the requested use is nevertheless reasonable-beneficial.

(Emphasis added).

In the Matter of the Contested Case Hearing on the Water Use Permit Application Filed by Kukui (Molokai) Inc., 116 Haw. 481, 499 (2008) ("Kukui").

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Here, Petitioners have alleged harm to appurtenant rights. They have also alleged harm to other traditional and customary native Hawaiian rights. For Honopou, see pages 59 and 60 of Assessment Report for Honopou; for Hanehoi, see page 55 of Assessment Report for Hanehoi; for Waiokamilo and Wailuani, see Direct Testimony of Teresa M. "Teri" Gomes and Exhibit "B-12", attached hereto as Appendix "B". See also, Direct Expert Testimony of Davianna Pomaika'i McGregor, Ph. D., Direct Testimony of Kepa Maly, attached hereto as Appendix "C". See also, Kē'anae-Wailuani Cultural Landscape Study, July 1995 and Two Phased Study of the Cultural-historical resources on 72 ahupua'a in East Maui conducted by Kumu Pono Associates.

Therefore, and with respect to the 27 streams petitioned, and contrary to the staff's suggestion that the claimed holder of an appurtenant right must come forward with sufficient information, A&B must now "demonstrate that there is, in fact, no harm [to the public trust purposes identified], or that any potential harm does not rise to a level that would preclude a finding that the requested use is nevertheless reasonable-beneficial."

Id.

Until adequate scientific information becomes available, therefore, ongoing or further offfstream allocations not only subject instream values to unknown impairment and risk, but also undermine efforts at effective research...[T]he lack of instream flow standards modifies the nature of the Commission's analysis, but does not reduce the level of scrutiny it must apply. Similarly, such uncertainty does not excuse permit applicants [or, in this instance, stream diverters] from affirmatively justifying their proposed uses insofar as circumstances allow...The 'reasonable-beneficial use' standard and the related criterion of 'consistent with the public interest' demand examination of the proposed use not only standing alone, but also in relation to other public and private uses and the particular water source in question...At a very minimum, applicants [and diverters] must prove their actual water needs. The Code's 'reasonable-beneficial use' standard allows use only 'in such a quantity as is necessary for economic and efficient utilization. Furthermore, besides advocating the social and economic utility of their proposed uses, permit applicants [and other diverters] must also demonstrate the absence of practicable mitigating measures, including the use of alternative water sources. Such a requirement is intrinsic to the public trust, the statutory instream use protection scheme, and the definition of 'reasonable-beneficial use...[P]ermit applicants [and stream diverters] must still demonstrate their actual needs and, within the constraints of available knowledge, the propriety of draining water from public streams to satisfy those needs."

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Waiahole I, 94 Haw. at 158-162.

Section 13.0 - Noninstream Uses

Page 70 (Honopou), Page 65 (Hanehohi), Page 77 (Pi'ina au), Page 72 (Waiokamilo), Page 77 (Wailuanui).

"While the return of surface water to the stream would generally be considered a positive value, this introduces the need to consider water quality variables such as increased temperature, nutrients, and dissolved oxygen, which may impact other instream uses."

While Petitioners do not necessarily disagree with this statement, they believe such concerns are directly related to and affected by overall streamflow. In other words, the importance and significance of this concern is directly related to the manner and extent of streamflow diversion. For example, where EMI's diversions capture the entire baseflow of a stream, any water remaining which then flows through to downstream will likely have a greater impact on these variables as compared to a stream who's entire base flow is not diverted. However, that impact is more directly related to and dependent upon the nature and extent of EMI's diversion.

Page 78 (Honopou), Page 67-68 (Hanehohi), Page 82 (Pi'ina au), Page 76 (Waiokamilo), Page 79 (Wailuanui).

"Decreasing the amount of water diverted at the ditches located in East Maui affects the amount of water available for irrigation of crops in west and central Maui."

While decreasing diversions will always affect the amount of water available for offstream uses, this statement ignores the more relevant issue. The Commission is duty bound to require A&B to affirmatively prove (1) their actual need, (2) that there are no feasible alternative sources of water[] to accommodate that need, and (3) the amount of water diverted to accommodate such need does not, in fact, harm a public trust purpose, or "any potential harm does not rise to a level that would preclude a finding that the requested use is nevertheless reasonable-beneficial."

Kukui, 116 Haw. 481, 499.

If A&B fails or refuses to prove any one of the above, the Commission must end its inquiry as it cannot determine whether such use is a reasonable-beneficial use. *See*, *Waiahole II*, 105 Haw. at 16. ("The Water Commission's analysis should have ceased when [the applicant] failed to meet its burden of establishing that no practicable alternative water sources existed.")

29.7-7

Page 83 (Honopou), Page 72 (Hanehohi), Page 87 (Pi'ina au), Page 81 (Waiokamilo), Page 84 (Wailuanui).

"The total amount of water HC&S needs from EMI varies largely with weather and seasonal conditions, but ranges from a low of 134 million gallons per day in the winter months to a high of 268 million gallons per day during peak usage in the months of May to October." (Emphasis added).

The Commission points to the Findings of Fact, Conclusions of Law, and Decision and Order of the BLNR dated March 23, 2007.

We take issue with the Commission's conclusion that HC&S "needs" these amounts of water. HC&S has never established that these amounts are its actual needs. In fact, if the Commission's staff calculates HC&S's water usage using HC&S's own figures (which includes an average of 7,560 acres per irrigation period), it would see that HC&S is, on average, using:

- over 17,724 gallons per day per acre during the wet winter months
- over 35,449 gallons per day per acre during the dry summer months.

Lee Jakeway, A&B's witness, admits testified to these results as follows:

MR. MURAKAMI: I'd like to know. I'm asking you. If my math is wrong, this is an important point. I want you to correct it.

A. If that's what the water requirements are required based on evapotranspiration requirements and if that's what the math works out to be, that's correct. It's just a different way of presenting it.

Q. Another way of looking at the same problem, right?

A. Yeah.

See, Transcript (partial) of HC&S official Lee Jakeway dated 11/15/2005 from *In Re Contested Case Regarding Water Licenses at Honomani, Keanae, Nahiku, and Huelo*, DLNR Dkt. 01-05-MA at 164-174, attached hereto as Appendix "D".

The typical truck crop average water rate of 2,000 gallons per acre per day pales in comparison to this excessive and wasteful use of water. The Commission must demand that A&B/EMI explain this. The Commission should address this issue immediately and independently of its duty to amend the IIFS of these 27 East Maui Streams. Petitioners refer the Commission to their formal complaint on this matter.

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(Section 13.0 – Noninstream Uses. Page 85 (Honopou), Page 74 (Hanehoi), Page 89 (Pi'ina'au), Page 83 (Waiokamilo), Page 86 (Waiuanui))

"MLP estimates their water requirements from the EMI system at 4.5 million gallons per day from 2004 through 2009, and a reduction to approximately 4.4 million gallons per day from 2009 to 2016.

As with HC&S's needs claim, MLP has never established that the above amounts are its actual needs. Therefore, in acting upon these petitions to amend interim instream flow standards, the Commission must require HC&S and MLP to each (1) prove their actual needs, (2) establish that there are no practicable alternative sources to accommodate those needs, and (3) prove that any resulting diversion does no harm to public trust purposes or that any potential harm does not rise to a level that would preclude a finding that the requested use is nevertheless reasonable-beneficial.

Page 83 (Honopou), Page 72 (Hanehoi), Page 87 (Pi'ina'au), Page 81 (Waiokamilo), Page 84 (Waiuanui).

RE: Discussion of agribusiness revenues.

In order to appropriately analyze these numbers, the Commission must take into account any federal and state subsidies, price supports, or cost allowances provided to A&B's sugar growing enterprise. For example, the State of Hawaii leases 33,000 acres of ceded lands to A&B for what amounts to a fifth of a cent per thousand gallons of water diverted. See, Transcript (partial) of EMI official Garrett Hew dated 11/14/2005 from *In Re Contested Case Regarding Water Licenses at Honomani, Keanae, Nahiku, and Huelo*, DLNR Dkt. 01-05-MA at 164-174, attached hereto as Appendix "E", at page 150, line 16 to page 157, line 22. The Commission must also ensure that any conclusion it reaches is supported by empirically verifiable facts. In analyzing this part of the equation, the Commission must not lose sight of the Code's 'reasonable-beneficial use' standard [which] allows use only 'in such a quantity as is necessary for economic and efficient utilization.

The 'reasonable-beneficial use' standard and the related criterion of 'consistent with the public interest' demand examination of the proposed use not only standing alone, but also in relation to other public and private uses and the particular water source in question...The Code's 'reasonable-beneficial use' standard allows use only 'in such a quantity as is necessary for economic and efficient utilization...[W]here the record demonstrates considerable conflict in the evidence, the agency must articulate its factual analysis with reasonable clarity, giving some reason for discounting the evidence rejected...Such articulation is especially crucial under

29.7-9

circumstances such as those before us, in which small variations in the interpretation of evidence lead to vast differences in result.

Waiahole I, 94 Haw. at 161-164.

Page 86 (Honopou), Page 75 (Hanehoi), Page 90 (Pi'ina'au), Page 84 (Waiokamilo), Page 87 (Waiuanui)

"The second class of water is what MLP is contractually allowed to withdraw, for a fee, from the system when flow exceeds 100 million gallons per day."

See also, Transcript (partial) of EMI official Garrett Hew dated 11/14/2005 from *In Re Contested Case Regarding Water Licenses at Honomani, Keanae, Nahiku, and Huelo*, DLNR Dkt. 01-05-MA at 164-174, attached hereto as Appendix "E", at page 136, line 3 to page 137, line 19 ("I believe the Waioa-New Hamakua Ditch has to be at 100 million gallons at the Honopou boundary at 7:00 a.m. in the morning. If it's at 100 million gallons or above, they can access the water from our system; if its below 100, they cannot access any water from the system. They can take what they put into the system.") Page 137, lines 12 to 19.

The Commission must find out why it is that, on any given day, MLP can purchase water flowing in the ditch in excess of 100 million gallons per day. Is A&B capable of using no more than 100 million gallons of diverted East Maui stream water? Does A&B have an alternative source it can tap, i.e., pumped ground water?

29.7-10

1932h

APPENDIX "A"

AMENDED AND RESTATED POWER
PURCHASE AGREEMENT

BETWEEN

A & B-HAWAII, INC.,
through its division,
HAWAIIAN COMMERCIAL & SUGAR COMPANY

AND

MAUI ELECTRIC COMPANY, LIMITED

29.7-11

29.7-12 APPENDIX "A"

AB00181

AMENDED AND RESTATED POWER PURCHASE AGREEMENT

between

A & B-HAWAII, INC., through its division, HAWAIIAN COMMERCIAL & SUGAR COMPANY

and

MAUI ELECTRIC COMPANY, LIMITED

THIS AMENDED AND RESTATED POWER PURCHASE AGREEMENT ("Agreement"), is made as of this 30th day of November, 1989, but effective on the Effective Date defined below, by and between A & B-HAWAII, INC., a Hawaii corporation, through its division, HAWAIIAN COMMERCIAL & SUGAR COMPANY (hereinafter called "Seller"), and MAUI ELECTRIC COMPANY, LIMITED, a Hawaii corporation (hereinafter called "MECO").

W I T N E S S E T H I H A I:

WHEREAS, Alexander & Baldwin, Inc., through its division, HAWAIIAN COMMERCIAL & SUGAR COMPANY and MECO entered into that certain Power Purchase Agreement dated July 31, 1980 (the "Power Purchase Agreement"); and

WHEREAS, the HAWAIIAN COMMERCIAL & SUGAR COMPANY division has been transferred by Alexander & Baldwin, Inc. to A & B-HAWAII, INC.; and

WHEREAS, Seller and MECO desire to extend the term of the Power Purchase Agreement until December 31, 1999, to

modify the obligation to sell and purchase electric power thereunder, and to revise the price paid for electric power provided by Seller to MECO; and

WHEREAS, Seller and MECO desire to amend and restate the Power Purchase Agreement in its entirety.

NOW, THEREFORE, the Power Purchase Agreement shall be, and hereby is, amended and restated as set forth below in its entirety.

I. DEFINITIONS

A. Automatic Load Shedding Event. An event which commences when Seller first sheds internal load under the conditions described in Section II.C and ends upon the expiration of twenty-four (24) hours after the rate of energy taken by MECO drops to a rate at or below which Seller can reinstate its internal load. See Exhibit A for a graphic representation of an Automatic Load Shedding Event.

B. Calendar Month. The period commencing on the first day of any month and terminating on the last day of the same month.

C. Calendar Year. The period commencing on January 1 of any year and terminating on December 31 of the same year.

I. Equivalent Availability. The ratio of actual available capacity to potential available capacity as determined in accordance with Section IV.B.2.

J. Firm Capacity. The Firm Capacity made available by Seller to MECO from its Generating Facilities subject to MECO Dispatch during various periods of the Contract Year in accordance with Sections II.B. and II.E.

K. Force Majeure. One of the events or conditions described in Section IX.

L. Generating Facilities. Seller's existing power plant and related buildings, equipment and storage facilities used for the production of electric power for Seller's internal use and for the production and distribution of electrical energy by Seller to MECO under the Power Purchase Agreement and this Agreement, and any replacements or enhancements thereof, but this Agreement shall not cover any new electric power generating facilities which may be constructed by Seller.

M. Interconnection Trip. The sudden and immediate removal of Seller's Generating Facilities from service as a result of an immediate mechanical/electrical/hydraulic control system trip or operator initiated trip/shutdown which requires MECO to take immediate steps to place an unscheduled generator on line to

D. Contract Year. The period of 364 days (8,736 hours) beginning with the first Sunday in a Calendar Year; provided, however, if December 31 of any Calendar Year is a Sunday, the Contract Year shall begin with such Sunday.

E. Drought Condition. Any day on which average daily soil moisture storage for all of Seller's Maui sugar crops (except those irrigated by the Waihee Ditch System) computed by Seller for crop purposes is below seventy percent (70%) during the period of May through October and below fifty percent (50%) during the period of November through April, of any Calendar Year.

F. Effective Date. The date as of which the PUC approves this Agreement.

G. Emergency Power. The capacity and related energy made available by Seller and delivered to MECO in excess of the applicable Firm Capacity and related Regular Energy on an emergency basis for system protection as provided in Section II.C.

H. Equipment Failure. A sudden unexpected failure of equipment which (1) substantially reduces or eliminates the capability of Seller's Generating Facilities to produce electric energy, and (2) is beyond the reasonable control of Seller and could not have been prevented by the exercise of reasonable care by Seller.

make up for the loss of output from Seller's Generating Facilities; provided, however, that an Interconnection Trip shall not include: (i) any such removal which occurs within forty-eight (48) hours of the time at which Seller's Generating Facilities are restarted following an outage; (ii) trips caused or initiated by MECO; or (iii) trips occurring during periods when Seller has continued to furnish capacity to MECO at the request of MECO after Seller has notified MECO that Seller's Generating Facilities are likely to trip due to a MECO system problem.

N. MECO Dispatch. MECO's absolute and sole right, through supervisory equipment or otherwise, to control within the limits of sound engineering practices, Firm Capacity, Supplemental Scheduled Power, and Regular Energy offered by Seller and accepted by MECO pursuant to this Agreement.

O. Off-Peak. The period beginning 2100 hours and ending 0700 hours on the following day, seven (7) days a week.

P. On-Peak. The period beginning 0700 hours and ending 2100 hours daily, seven (7) days a week.

Q. PUC. The Public Utilities Commission of the State of Hawaii.

R. Optional Additional Capacity. The capacity in excess of standard Firm Capacity pursuant to Section II.B.3. which is committed by agreement between Seller and MECO pursuant to Section II.E.

S. Reduced Capacity Period. The period or periods during each Calendar or Contract Year as designated by Seller pursuant to Section II.B.1.

T. Regular Energy. All energy produced by Seller from its Generating Facilities and delivered to MECO pursuant to this Agreement under MECO Dispatch, except Emergency Power.

U. Seller's Energy. All energy delivered by Seller to MECO pursuant to this Agreement, including Regular Energy and the energy provided in Emergency Power.

V. Shutdown Period. The annual period during which Seller's Generating Facilities are shut down for scheduled maintenance as provided in Section II.B.2.

W. Supplemental Scheduled Power. The capacity and related energy made available by Seller and delivered to MECO in excess of the applicable Firm Capacity then in effect, upon the advance request of MECO as provided in Section II.D.

X. Sustained Drought. Any period during which Drought Conditions exist for at least fifty (50) days out of any consecutive sixty (60) days.

Y. System Protection Capacity. Emergency capacity made available by Seller to MECO by shedding of Seller's internal load as provided in Section II.C and as further defined in Exhibit B.

Z. Verifiable Drought. Any period during which Drought Conditions exist for at least ten (10) days out of any consecutive fourteen (14) days.

II. SELLER'S OBLIGATIONS

A. General. Seller will produce, deliver and sell to MECO electric power output (capacity and energy) under MECO Dispatch from the Generating Facilities under the terms and conditions of this Agreement.

B. Firm Capacity. Seller shall provide Firm Capacity dispatchable by MECO in the following amounts during each Contract Year and portion of Contract Year during the term of this Agreement:

1. Reduction of Firm Capacity. Seller may designate a period or periods totaling a maximum of 437 hours per Contract Year during which Firm Capacity shall be eight (8) megawatts (MW). The hours during which the Firm Capacity shall be eight (8) MW shall be designated not less than six (6) months in advance by Seller by notice to MECO.

2. Shutdown Period. Each Contract Year, Seller shall designate in writing to MECO not less than six (6) months in advance a period, not in excess of 262 hours, during the forty-seventh (47th) through fiftieth (50th) week, or the second (2nd) through fifth (5th) week, of a Calendar Year, in which the Generating Facilities shall be shut down for maintenance. Notwithstanding the foregoing, during any two (2) Contract Years during the term of this Agreement, Seller shall have the right, upon six (6) months' advance notice, to shut down its power plant for up to 336 additional hours during the Shutdown Period for such Contract Years. During such Shutdown Periods, the Firm Capacity requirement shall be zero (0).

3. Standard Capacity. For the remaining 8,037 hours (or other shorter period, if applicable) of each Contract Year, the Firm Capacity shall be twelve (12) MW plus any Optional Additional Capacity as provided in Section II.E.

C. System Protection Capacity. In addition to Firm Capacity, Seller shall configure the Generating Facilities to provide for automatic shedding of Seller's internal load to provide additional immediate capacity to provide power to meet sudden and severe failures in MECO's system for up to a total of 262 hours or twelve (12)

Automatic Load Shedding Events per Contract Year. The maximum amount of System Protection Capacity required from Seller at any time shall not exceed the sum of the Firm Capacity which would otherwise be required under this Agreement (but not including any Optional Additional Capacity included in such Firm Capacity level pursuant to Section II.E.) plus four (4) MW; provided, however, that in no event shall the maximum amount of any capacity required under this Agreement exceed sixteen (16) MW. Seller shall have no obligation to provide System Protection Capacity during Shutdown Periods.

D. Supplemental Scheduled Power. If at any time MECO requires electric power in excess of the Firm Capacity then in effect in order to meet anticipated emergency power shortages in MECO's system, MECO may request that Seller deliver additional power in excess of Firm Capacity. Such request shall be made in writing in substantially the form shown in Exhibit C. If Seller is reasonably able to meet MECO's request without impairing its operations or deviating from good engineering and operating practices, it shall do so and shall continue to do so as long as said emergency exists, Seller's operations are not thereby impaired, and such provision of Supplemental Scheduled Power does not require deviation from good engineering and operating

practices. Once Supplemental Scheduled Power is requested by MECO and provided by Seller, MECO shall be obligated to take and pay for the additional energy in excess of Firm Capacity for a minimum of three (3) hours, and shall pay for such Supplemental Scheduled Power whether or not actually taken and dispatched by MECO for said three (3) hour period.

E. Optional Additional Capacity. If at any time Seller shall be in a position to offer additional capacity for a defined future period of time, Seller and MECO may mutually agree to increase Firm Capacity for such period of time by such additional committed capacity; provided, however, that MECO shall have no obligation to consider taking such Optional Additional Capacity unless it is given at least seven (7) calendar days' prior notice of such availability by Seller. Such agreement shall be reflected by a supplement to this Agreement as shown in Exhibit D, duly authorized and executed by each of Seller and MECO. During such period, Firm Capacity shall be deemed increased for the period and for the number of hours set forth in such supplement. Capacity charges set forth in Section III.C. shall be increased to the Firm Capacity level set forth in such supplement if the higher Firm Capacity level is to be available for at least seven (7) consecutive days, and the additional energy produced by such additional capacity shall

be charged at the rates set forth in Section III.B.2. If, at the time Optional Additional Capacity is made available, the then current Avoided Energy Cost for On-Peak or Off-Peak energy is less than the energy price floor otherwise applicable under Section III.B.2., then the rates to be charged for such Optional Additional Energy shall be determined by reference to such lesser Avoided Energy Cost, notwithstanding such energy price floor. MECO shall remain liable to pay capacity charges to Seller for such Optional Additional Capacity.

F. Reduction of Firm Capacity.

1. Conditions.

Seller shall have the right to decrease the Firm Capacity provided under this Agreement under the following conditions:

(a) Such right to reduce may be exercised only once during the term of this Agreement, and shall be exercised by giving written notice of such decrease to MECO not less than twenty-four (24) months prior to the effective date of such decrease.

(b) The Firm Capacity which Seller shall be obligated to commit to MECO after such reduction may not be reduced below eight (8) MW for 8,474 hours per Contract Year (8,138 hours in those two (2) Contract Years in which an extended Shutdown Period is allowed).

(c) Seller shall continue to supply the originally agreed-upon Firm Capacity during the twenty-four (24) month notification period, and MECO shall continue to make the capacity charge payments therefor as set forth in Section III.C.

2. Reduced Obligations.

Upon and following the effective date of any decrease of the Firm Capacity, the maximum amount of System Protection Capacity and Supplemental Scheduled Power which Seller is obligated to provide under this Agreement and the minimum amount of Seller's Energy which MECO is obligated to take shall be proportionately reduced.

G. Power Factor and Rate of Energy Delivery.

1. Power Factor. MECO shall specify the reactive kilovar requirements (power factor) with respect to the real power delivered to MECO by Seller. Reactive kilovar requirements normally will be from 0 to 62 percent of the kilowatts (1.0 to 0.85 lagging power factor) delivered by Seller to MECO. Seller normally will deliver kilovars within this range or as specified by MECO. MECO will not be obligated to purchase kilovar hours from Seller. Seller will deliver or curtail delivery of reactive kilovar hours, within the range of 1.0 to 0.85 lagging power factor, as directed by MECO.

2. Rate of Delivery. Unless otherwise requested by MECO, the rate of delivery of electric energy shall vary no more than plus or minus 1.0 MW from the rate established by MECO Dispatch; provided, however, that the average rate of delivery for any consecutive seven-day period shall not fall more than 1 MW below the Firm Capacity level due to Seller's inability to meet the MECO dispatch rate, nor shall such average rate of delivery exceed more than 1 MW above the Firm Capacity level due to MECO's demand for and dispatch thereof. Rate of change of energy delivery shall not exceed 100 KW per minute unless a higher rate of change is requested by MECO or caused by a MECO system disturbance.

H. Fuel and Other Materials. Seller shall be responsible for acquiring and storing an adequate supply of fuel and other materials used in the operation of Seller's Generating Facilities. A thirty (30) day reserve shall be deemed an adequate supply of fuel.

III. MECO'S OBLIGATIONS

A. Purchase Obligation. MECO shall purchase a minimum of 50,000 megawatt hours (MWH) of Seller's Energy per Contract Year; provided, however, that if the Equivalent Availability computed in accordance with Section IV.B.2.

should drop below 95.3% in normal years or 91.5% in extended shutdown years, then the minimum energy purchase required under this Section III.A for any such year shall be reduced in accordance with the following formula:

$$\text{New minimum energy purchase} = \frac{A}{B} \times 50,000 \text{ MWH}$$

Where: A = Actual Equivalent Availability for the year in question; and
 B = 95.3% in normal years and 91.5% in extended shutdown years.

MECO shall pay for at least such minimum of Seller's Energy whether or not such energy is actually taken and dispatched by MECO. MECO shall pay the energy purchase rate (for On-Peak Energy) specified in Section III.B.2(ii) for any such energy required to be purchased pursuant to this Section III.A. MECO shall use its reasonable best efforts to take at least eight (8) MWH of energy each hour during which the standard Firm Capacity requirement is in effect and at least four (4) MWH each hour during the Reduced Capacity Period.

B. Energy Charge.

1. Determination of Rates. The rates for purchases of energy hereunder by MECO in any Calendar Month during the term of this Agreement shall be determined for

such Calendar Month by reference to MECO's Avoided Energy Costs per net kilowatt hour for On-Peak and Off-Peak hours for such Calendar Month. \emptyset

As used herein "Avoided Energy Costs" shall be as calculated by MECO for On-Peak and Off-Peak hours and as filed with the PUC quarterly by MECO; provided, however, that, for purposes of this Agreement, Avoided Energy Costs shall, in any event, include all of the cost factors allowed as of the Effective Date by the PUC or included in MECO's calculation of Avoided Energy Costs (including avoided fuel costs and avoided operating and maintenance costs) in addition to any such additional factors which thereafter may be allowed; and provided, further, that if any of such factors allowed by the PUC or included in MECO's calculations of Avoided Energy Costs as of the Effective Date are thereafter omitted from MECO's calculations or quarterly PUC filings, then such factors shall be added to MECO's calculation of Avoided Energy Costs for purposes of computing Avoided Energy Costs under this Agreement or shall be added to the applicable capacity charge payable under this Agreement, notwithstanding that recovery of such factors may not then be allowed by the PUC.

2. Energy Purchase Rates. Subject to the provisions of this Agreement, MECO will pay Seller for

energy delivered to MECO each Calendar Month during the term of this Agreement at rates per KWH as follows:

- \emptyset (i) Regular Energy during Off-Peak hours:
1.0 x MECO's Off-Peak Avoided Energy Costs;
- (ii) Regular Energy during On-Peak hours:
1.0 x MECO's On-Peak Avoided Energy Costs;
- (iii) Emergency Power during Off-Peak hours:
3.0 x MECO's Off-Peak Avoided Energy Costs;
- (iv) Emergency Power during On-Peak hours:
3.0 x MECO's On-Peak Avoided Energy Costs;

\emptyset Provided, however, that the energy purchase rates hereunder for Off-Peak and On-Peak energy, respectively, shall never be less than the energy purchase rates calculated and in effect for the first full Calendar Month under this Agreement. \emptyset

C. Capacity Charge. \emptyset As compensation for Seller's commitment to provide Firm Capacity and System Protection Capacity, as described herein, MECO shall pay Seller during the term of this Agreement a capacity charge of $\$1,790,360.00$ $\$1,959,360.00$ per Contract Year (based upon $\$0.01869$ per kilowatt hour, and calculated as follows: $\$3.14$ per KW per week x 12,000 KW x 52 weeks = $\$1,959,360.00$). Such capacity charge shall be payable in advance monthly installments of $\$163,280.00$. \emptyset If the Effective Date is not the first day of

$\$149,242.00$ / 3.14

a Calendar Month, capacity payments for any partial Calendar Month at the commencement or termination of this Agreement shall be prorated. ⁰ Except as otherwise provided in Section IX.C, the capacity charge payment shall be made each month for twelve months of each year, including the Shutdown Period. Such capacity charge shall not be subject to adjustment by reason of utilization by MECO of a capacity that varies from the Firm Capacity for any period. If the Seller provides Supplemental Scheduled Power and/or Optional Additional Capacity by advance agreement with MECO pursuant to Sections II.D. and II.E., respectively, MECO shall pay the same rate (\$0.01869) per kilowatt hour for such capacity. The capacity charge shall not be increased with respect to any Emergency Power made available to MECO under this Agreement. ⁰

For any Contract Year, the final monthly ^{add} ~~capacity~~ payments for that Contract Year shall be reduced by the amount equal to \$.01869 for each kilowatt hour committed under this Agreement ~~((99,940,000 KWH in normal years and 95,908,000 KWH in the two (2) years in which an extended shutdown is scheduled, adjusted upward for any Optional Additional Capacity provided in accordance with Section II.E. and adjusted downward, as appropriate, for any reductions of Firm Capacity made in accordance with Section II.F.))~~ but not available to MECO for dispatch during the

Contract Year. If the total amount of such reduction exceeds the monthly ~~payments~~ ^{payments} otherwise due to Seller, succeeding monthly ~~capacity~~ ^{payments} shall be offset by the remainder of the reduction amount until such time as the reduction is fully recovered by MECO.

D. Hawaii General Excise Tax. MECO shall not be liable for payment of the applicable Hawaii General Excise Tax levied and assessed against Seller as a result of this Agreement. The rates and charges in this Section III shall not be adjusted by reason of any subsequent increase or reduction of the applicable Hawaii General Excise Tax.

IV. PERFORMANCE STANDARDS AND LIQUIDATED DAMAGES

A. General. Recognizing that MECO must provide the ultimate service to its customers and that capacity and energy produced by Seller from the Generating Facilities are needed to meet the requirements of MECO's customers, the following liquidated damages for failure of Seller to meet performance standards shall be calculated on an annual basis and shall be paid by Seller to MECO within thirty (30) days after demand therefor.

B. Performance Standards.

1. Interconnection Trips. Total Inter-connection Trips during each Contract Year shall not exceed six (6).

2. Firm Capacity Availability. As provided in Section II.B., Seller is required to provide no Firm Capacity during a Shutdown Period of 262 hours per Contract Year (Or for the extended Shutdown Period during two of the Contract Years), Firm Capacity of 8 MW during the Reduced Capacity Period and Firm Capacity of twelve (12) MW for the remaining 8,037 hours (or shorter period, if applicable) of the Contract Year. For purposes of determining performance standards, Computations will be based on fifty (52) weeks or 8,736 hours per Contract Year.

The standard for Firm Capacity availability in accordance with this schedule is an Equivalent Availability of 95.3% in normal years and 91.5% in the two (2) years in which an extended shutdown is scheduled. Equivalent availability is to be calculated in accordance with the following example:

0 MW x 262 hours =	0 MWH	SP
8 MW x 437 hours =	3,496 MWH	RC
12 MW x 8037 hours =	96,444 MWH	FC
Total =	99,940 MWH Committed availability	
12 MW x 8736 hours =	104,832 MWH potential availability	
Equivalent Availability =	(99,940 MWH/104,832 MWH) x 100% = 95.3%	

The Equivalent Availability standards of 95.3% and 91.5% will change if (1) Optional Additional Capacity is provided in accordance with Section II.E., or (2) Firm Capacity is reduced in accordance with Section II.F. The following examples illustrate possible changes.

Example 1. If 4 MW of Optional Additional Capacity were provided for 504 hours during the year, the standard Equivalent Availability would be 97.3% in a normal year.

0 MW x 262 hours =	0 MWH
8 MW x 437 hours =	3,496 MWH
12 MW x 8037 hours =	96,444 MWH
4 MW x 504 hours =	2,016 MWH

Total = 101,956 MWH committed availability
 12 MW x 8736 hours = 104,832 MWH potential availability

Equivalent Availability = (101,956 MWH/104,832 MWH) x 100% = 97.3%

Example 2. If Firm Capacity were reduced to 8 MW for 8474 hours for the full year, the standard Equivalent Availability would be 64.7% in a normal year.

0 MW x 262 hours =	0 MWH
8 MW x 8474 hours =	67,792 MWH

Total = 67,792 MWH committed availability

12 MW x 8736 hours = 104,832 MWH potential availability

Equivalent Availability = $(67,792 \text{ MWH} / 104,832 \text{ MWH}) \times 100\% = 64.7\%$

C. Liquidated Damages. At the end of each Contract Year, MECO shall determine from its records the number of Interconnection Trips during the Contract Year. MECO also shall determine the number of hours during the Contract Year in which Seller failed to meet the capacity availability standards in Section IV.B.2. MECO then will calculate the actual Equivalent Availability for the year, in accordance with Section IV.B.2. and the examples presented therein. In making this calculation, those hours in which the available capacity is less than the committed Firm Capacity minus 1.0 MW for drift, in accordance with Section II.G.2., shall be considered as "unavailable time." The period of any Force Majeure event shall be considered hours during which Firm Capacity is available in the amount committed for that period.

1. Interconnection Trips. For each Interconnection Trip during the Contract Year in excess of six (6), Seller shall pay to MECO the amount of \$5,000, within thirty (30) days after demand therefor.

2. Capacity Unavailability. For each one-tenth percent (0.1%) below the standard Equivalent Availability that the actual Equivalent Availability of the Generating Facilities drops for any Contract Year, Seller

40% add'l penalty

shall pay MECO the amount of \$2,500 at the end of such Contract Year, within thirty (30) days after demand therefor.

The following example illustrates the calculation of liquidated damages to be paid for capacity unavailability in a normal year in which the actual Equivalent Availability falls below the standard for that year as shown in Section IV.B.2.

Example:

0 MW x	262 Hours =	0 MWH
8 MW x	365 Hours =	2,920 MWH
12 MW x	7,893 Hours =	94,716 MWH
Total		97,636 MWH Actual Availability
12 MW x	8,736 Hours =	104,832 MWH Potential Availability

Actual Equivalent Availability = $(97,636 \text{ MWH} / 104,832 \text{ MWH}) \times 100\% = 93.1\%$

Standard 95.3%
Actual 93.1%
Capacity Unavailable $2.2\% / 0.1\% = 22$
Damages = $22 \times \$2,500 = \$55,000$

D. Interconnection Trips Caused or Initiated by MECO.

For each sudden and immediate removal of Seller's Generating Facilities from the MECO system as a result of

MECO system failure, MECO dispatch decision, or otherwise, caused by MECO in excess of six (6) per Contract Year, MECO shall pay to Seller the amount of \$5,000, which Seller may offset against sanctions payable by Seller to MECO hereunder, or, if the total payments due from MECO under this Section IV.D. exceed the liquidated damages payable by Seller under this Section IV., MECO shall pay the net amount to Seller within thirty (30) days after demand therefor.

V. INTERCONNECTION FACILITIES AND CHARGE

A. Cost of Facilities. Pursuant to the Power Purchase Agreement which is being amended and restated by this Agreement, MECO has already constructed and owns, operates and maintains all facilities required to interconnect the MECO system with Seller's system as required for MECO and Seller to perform their respective obligations under this Agreement. Pursuant to said Power Purchase Agreement, MECO has recovered all of the cost of such facilities from Seller. Therefore, there shall be no charge to the Seller for the interconnection facilities.

B. Protection of Facilities. Each party shall be responsible for protecting its own facilities from possible damage by reason of electrical disturbances or faults caused by the operation, faulty operation, or

non-operation of the other party's facilities, and such other party shall not be liable for any such damage so caused.

C. Removal of Facilities. Upon termination or expiration of this Agreement, MECO shall have the obligation, at MECO's expense, to remove any and all of its facilities from the interconnection site and to restore the land to even grade, provided that if Seller properly terminates this Agreement prior to December 31, 1999 pursuant to Sections XIII.B. or XIV, or if MECO properly terminates this Agreement prior to December 31, 1999 pursuant to Section XIII.A., then Seller shall pay to MECO on demand any and all reasonable costs incurred by MECO in removing its facilities from the interconnection site and MECO shall not be obligated to restore the land to even grade.

D. Seller's Interconnection Facilities. The cables, circuit breakers, protective relays, equipment, and apparatus (including transformers) on the Seller's side of the point of interconnection shall be constructed, owned, operated, and maintained by Seller at Seller's expense. MECO shall have the right to recommend the type of protective relaying equipment (which equipment shall be mutually

agreeable to the parties) and the settings that affect the reliability and safety of operation of MECO and Seller's interconnected systems.

E. Easement and Lease. The Easement dated May 25, 1982, and recorded in the Bureau of Conveyances of the State of Hawaii at Book 16383, Page 392, and the Lease dated November 23, 1981 and recorded as aforesaid at Book 15997, Page 545, as required by said Power Purchase Agreement, shall remain in full force and effect on the present terms and conditions thereof, except that the terms thereof shall be extended to December 31, 1999. Seller and MECO shall execute and deliver all necessary documents and instruments to effect such extension upon PUC approval of this Agreement.

VI. PURCHASE OF POWER BY SELLER

All electric power supplied to Seller by MECO shall be billed at, and Seller shall pay to MECO, the lowest rate schedule in effect for similar industrial, agricultural or cogeneration operations.

VII. BILLINGS AND PAYMENTS

A. Monthly Invoice. By the fifth working day (i.e., excluding Saturdays, Sundays and legal holidays) of

each Calendar Month, MECO shall provide Seller with computed energy and capacity charges and the appropriate backup data for electric power available and delivered to MECO in the preceding Calendar Month as determined in accordance with this Agreement. Seller shall confirm such charges and submit by the tenth working day of the month a monthly invoice for the charges to be paid to Seller for the preceding Calendar Month. Unless and until MECO designates a different address, the monthly invoice shall be hand delivered to:

Maui Electric Company, Limited
210 West Kamehameha Avenue
Kahului, Hawaii 96732-2253

Attention: Purchase Power Administrator

B. Payment. By the last working day of each Calendar Month, MECO shall pay such monthly charges as computed in accordance with Sections III and VII.A., or provide to Seller an itemized statement of its objections to all or any portion of such monthly invoice and pay any undisputed amount.

If there is any other payment owed by Seller to MECO which is past due, MECO may offset such payment against the amounts thereafter due Seller pursuant to this Section VII.B.

C. Adjustments. In the event adjustments are required to correct inaccuracies in monthly invoices, the party requesting adjustment shall use the method described in Section VIII, if applicable, to determine the correct measurements, and shall recompute the amounts due during the period of the inaccuracy. The difference between the amount paid and that recomputed for each monthly invoice affected shall be paid, or repaid, with interest (at the average daily prime rate at First Hawaiian Bank for the period) from the date that such monthly invoice was payable until the date that such recomputed amount is paid, or objected to by the party responsible for such payment within thirty (30) days following its receipt of such request. All claims for adjustment shall be waived for any deliveries of electricity made more than thirty-six (36) months preceding the date of any such claim.

D. Other Payments. Any amounts due from either party other than monthly energy and capacity charges shall be paid or objected to within thirty (30) days following receipt from either party of an itemized invoice from the other party setting forth, in reasonable detail, the basis for such invoice.

VIII. METERING

All electric energy to be delivered hereunder shall be what is commonly called 3-phase, 60-cycle (Hertz) alternating current, and shall be delivered and metered at Seller's Substation at an electromotive force of 69-KV with a maximum variation of plus or minus 2.0%. All revenue-metering equipment shall be owned and operated by MECO in a metering compartment provided by MECO in MECO's Substation. Metering shall be accomplished by individual systems measuring energy from Seller to MECO, and from MECO to Seller. Such metering shall be capable of providing a hard copy output of the integrated hourly kilowatt output of the Generating Facilities. MECO shall, at least once each Calendar Year during the term hereof, test, adjust and calibrate, in the presence of Seller's representative, all revenue-metering equipment in conformity with General Order No. 7 of the PUC. Adjustment in the billing for meter inaccuracy also will be made in conformity with General Order No. 7.

By no later than January 15 of each Calendar Year, MECO shall deliver to Seller a breakdown of electrical energy purchased by Seller from MECO during the preceding Calendar Year as measured at each meter.

IX. FORCE MAJEUREA. Force Majeure Events Affecting Seller.

Commencing with the first day of the term hereof, if Seller shall be wholly or partially prevented from delivering the electric energy or capacity contracted for herein, or if the service thereof shall be interrupted, by reason of or through strike, riot, work stoppage, inability reasonably to obtain fuel, fire, flood, invasion, insurrection, lava flow or volcanic activity, Verifiable Drought, Sustained Drought, tidal wave, hurricane, civil commotion, accident, the order of any court, judge or civil authority, Equipment Failure, any act of God or the public enemy, or, without limiting or restricting the foregoing in any way, any other similar or dissimilar cause reasonably beyond its control and not attributable to its neglect, then, and in any such event: (i) Seller shall not be obligated to deliver said electric energy or capacity hereunder during such period and shall not be liable for any damage or loss resulting from such interruption or suspension; and (ii) MECO shall not be obligated to take or pay for electric energy or capacity hereunder during such period.

B. Force Majeure Events Affecting MECO. If MECO shall be prevented from receiving, using and applying the electrical energy contracted for herein, or if the service is interrupted, by reason of or through strike, riot, work

stoppage, fire, flood, invasion, insurrection, lava flow or volcanic activity, tidal wave, hurricane, civil commotion, accident, the order of any court, judge or civil authority, any act of God or the public enemy, or without limiting or restricting the foregoing in any way, any other similar or dissimilar cause reasonably beyond its control and not attributable to its neglect, then, and in any such event, MECO shall not be obligated to take or pay for any energy during such periods.

C. Excuse of Obligation. Any obligation of either party under this Agreement shall be excused only to the extent and for the period that the party's inability to perform is caused by a Force Majeure event as described in this Section IX. Any payments due as compensation for the obligation so excused shall also be excused for so long as the obligation is not performed due to Force Majeure. Provided, however, the period of any Force Majeure event shall be considered hours during which Firm Capacity is made available to MECO for purposes of determining actual Equivalent Availability under Section IV.C.2.

D. Notice. Each party shall be prompt and diligent in providing the other party with notice of a Force Majeure event, or with as much notice as practicable of any situation which might lead to a Force Majeure event.

X. INSURANCE.

Seller shall acquire and maintain, during the term of this Agreement, property insurance and liability insurance, in each case with such deductibles, in such amounts, against such risks and with such insurance companies as MECO and Seller shall mutually agree upon as appropriate to cover Seller's Generating Facilities under this Agreement.

XI. PRIVITY

Any other term, covenant or provision herein contained to the contrary notwithstanding, this Agreement is not intended and shall not be construed in any manner so as to benefit any third party; nor is it intended nor shall it be construed in a manner such as to place Seller in privity with any parties who might have a contract to purchase electrical energy from MECO; nor is it intended nor shall it be construed in any manner so as to impose a duty upon Seller to supply electrical energy to the public or any portion of the public or to any private person or parties not a party to this Agreement, or to supply electrical energy to any particular locality or district in the County of Maui.

XII. APPROVALS

A. PUC Approval.

1. This Agreement shall become effective upon the Effective Date and the rates and charges to be paid by MECO to Seller hereunder shall commence on the Effective Date. MECO shall apply to the PUC for an appropriate decision and order satisfactory to MECO and Seller, granting the PUC's approval of this amendment to and restatement of the Power Purchase Agreement and authorizing the terms of rates and charges paid by MECO to Seller hereunder for the term of this Agreement, and determining that such charges are reasonable for rate making purposes. All of Seller and MECO's obligations under this Agreement, other than their obligation to use their reasonable best efforts to obtain regulatory approval of this Agreement are contingent upon first obtaining such PUC order. If the PUC shall disapprove or fail to approve this amendment and restatement, or fail to allow MECO's costs hereunder to be included in its rates or charges the present Power Purchase Agreement dated July 31, 1980 between Seller and MECO shall remain effective for the remainder of its term in accordance with its terms.

2. The parties agree that this Agreement may be changed or modified only in such manner as is mutually acceptable to the parties, and as the PUC may from time to time direct in the exercise of its jurisdiction.

3. Seller agrees to cooperate at its own expense as may reasonably be requested by MECO in connection with MECO's application to the PUC for the aforesaid approval. MECO agrees to use its reasonable best efforts to obtain the aforesaid approval as soon as reasonably possible.

B. All Other Governmental Approvals. Seller shall be solely responsible for obtaining all other governmental approvals which may be necessary in order to carry out its responsibilities under this Agreement and MECO will cooperate at its own expense with Seller in obtaining such approvals.

XIII. SPECIAL TERMINATION RIGHT

A. Termination. In the event that the failure to observe the obligations imposed herein is substantial or continuous or frequent so as to create an unreasonable burden upon the other party, then such other party, at its option, may terminate this Agreement by giving written notice of its intention to terminate to the other party. The party giving notice to terminate may set the termination date at any date not less than twenty-four (24) months from the date of said notice. During such period between the notice and the date of termination, the obligations of this

Agreement shall continue in full force and effect for all purposes, including the right to collect damages resulting from one party's failure to perform.

B. Unacceptable Regulatory Conditions. If, upon initial approval of this Agreement by the PUC, the PUC requires any changes or modifications of this Agreement not acceptable to either Seller or MECO, Seller or MECO shall have the right to terminate this Agreement upon written notification to the other within two (2) weeks of the date as of which the PUC approves this Agreement, and upon such notice this Agreement shall terminate and aforesaid Power Purchase Agreement dated July 31, 1980 shall remain in full force and effect for the remainder of its term in accordance with its terms.

C. Unacceptable Regulatory Changes. If, at any time following initial approval of this Agreement, the PUC or any other regulatory body requires any changes or modifications of this Agreement or in the recovery of costs under this Agreement not acceptable to Seller or MECO, an affected party shall have the right to terminate this Agreement by giving the other party not less than twenty-four (24) months' prior written notice.

XIV. SELLER'S TERMINATION RIGHT

If at any time during the term hereof Seller decides to discontinue the growing or harvesting of sugar cane, Seller may terminate this Agreement by giving written notice of such termination to MECO not less than thirty-six (36) months prior to the effective date of such termination. Notwithstanding the foregoing, Seller shall continue to supply the agreed-upon energy and Firm Capacity as required under this Agreement, and MECO shall continue to make energy charge and capacity charge payments as required by this Agreement, during the thirty-six (36) month or greater notification period.

XV. ASSIGNMENT

This Agreement shall not be assigned by either party without the prior written consent of the other party, which consent shall not be unreasonably withheld; provided that Seller shall have the right to assign this Agreement without the consent of MECO to a corporation which shall succeed to substantially all of the business being conducted by Hawaiian Commercial & Sugar Company as of the effective date of this Agreement; provided, further, that MECO shall have the right to assign this Agreement, without the consent

of Seller, to Bishop Trust Company, Limited, as Trustee under Indenture of Mortgage and Deed of Trust dated March 1, 1948, as amended.

XVI. ARBITRATION

If, at any time during the term of this Agreement or after termination thereof, any dispute, difference or question shall arise between the parties hereto with respect to the provisions, construction, meaning or effect of this Agreement or anything herein contained or the rights or limitations of the parties under this Agreement, every such dispute, difference or question shall, at the desire of any party, be submitted to and determined by a board of three arbitrators, as follows: The party desiring to have the matter in dispute submitted to arbitration shall give the other party written notice of such desire and shall name one of the arbitrators in such notice. Within ten (10) days after the receipt of such notice, the other party shall name a second arbitrator, and in case of failure so to do the party who has already named an arbitrator may have the second arbitrator selected or appointed by a judge of the Circuit Court, Second Circuit, State of Hawaii, and the two arbitrators so appointed by either manner shall select and appoint a third arbitrator, and in the event the two

arbitrators so appointed shall fail to appoint the third arbitrator within ten (10) days after the naming of the second arbitrator, either party may have the third arbitrator selected or appointed by one of said judges, and the three arbitrators so appointed shall thereupon proceed to determine the matter in question, disagreement or difference, and the decision of any two of them shall be final, conclusive and binding upon all parties, all as provided in Chapter 658, Hawaii Revised Statutes, as the same may be amended, and judgment may be entered upon any such decision by the Circuit Court as provided in said statute. In all cases of arbitration, each of the parties hereto shall pay the expense of its own attorneys' and witnesses' fees, and all other expenses of such arbitration shall be divided equally between the parties.

XVII. TERM OF AGREEMENT

This Agreement, unless terminated under the provisions of Sections XIII or XIV hereof, shall commence on the date as of which the PUC approves this Agreement, which is the "Effective Date," and shall continue in effect through December 31, 1999, and from year to year thereafter; subject to termination on or after January 1, 2000, on not less than two (2) years' prior written notice by either party.

IN WITNESS WHEREOF, the undersigned have caused these presents to be executed as of the day and year first above written.

A & B-HAWAII, INC.,
through its division,
HAWAIIAN COMMERCIAL & SUGAR COMPANY

By _____
Its _____

By _____
Its _____

MAUI ELECTRIC COMPANY, LIMITED

By _____
Its _____

By _____
Its _____

1932h

EXHIBIT "A"

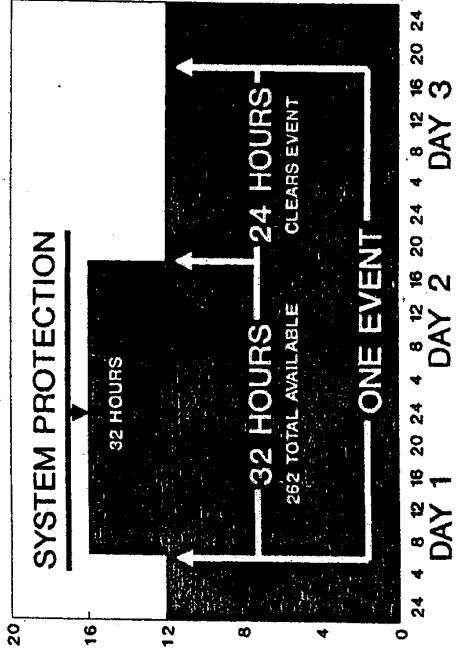
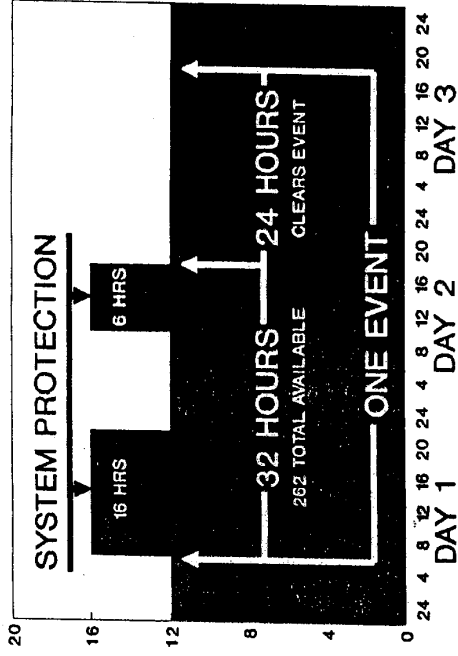
IN WITNESS WHEREOF, the undersigned have caused these presents to be executed as of the day and year first above written.

A & B-HAWAII, INC.,
through its division,
HAWAIIAN COMMERCIAL & SUGAR COMPANY

By *John A. ...*
ITS PRESIDENT
By *Richard ...*
ITS VICE PRESIDENT

MAUI ELECTRIC COMPANY, LIMITED

By *Robert S. ...*
ITS PRESIDENT
By *Robert S. ...*
ITS ASS'Y. TREAS.



29.7851

AB00220

29.7-52

AB00221

EXHIBIT "B"

System Protection

Seller will configure its internal load to provide for automatic load shedding by installing under-frequency relays at the following pumping stations:

Pump	Kilowatts
3C	150
5A	450
7A	400
7B	400
7C	150
9CX	250
12A	450
16A	550
17CX	170
18C1	1,150
Total	4,120 KW

The pumps may change from time to time because of operating conditions, but (subject to the provisions of Section II.C.) a minimum of 4,000 KW of under-frequency load shedding will be available at all times, excluding the Shutdown Periods.

EXHIBIT "C"

Supplemental Scheduled Power Request

Request Made _____ Date _____

Amount Requested _____ MW's _____

Delivered From _____ Date _____ to _____ Date _____

Received by HC&S _____ Date _____

Approved for HC&S _____

Approved for MECO _____

EXHIBIT "D"

Optional Additional Capacity Commitment

Notice Given _____ Date _____

Amount Committed _____ MW'S _____

Committed From _____ Date _____ to _____ Date _____

Received by MECO _____ Date _____

Approved for HCIS _____

Approved for MECO _____

APPENDIX "B"

RECEIVED
OFFICE OF CONSERVATION
AND COASTAL LANDS

2005 JUN -1 P 4:00

DEPT OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

NATIVE HAWAIIAN LEGAL CORPORATION
1164 Bishop Street, Suite 1205
Honolulu, Hawaii, 96813
Telephone: 521-2302

ALAN T. MURAKAMI 2285
MOSES K. N. HAJA III 6277

Attorneys for Petitioners
Na Moku 'Aupuni O Ko'olau Hui,
Beatrice Kekahuna and Marjorie Wallert

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of the Contested Case Hearing)
Regarding Water Licenses at Honomanu,)
Keanae, Nahiku, and Huelo, Maui)

DLNR FILE NO. 01-05-MA
PETITIONERS' DIRECT TESTIMONY OF
TERESA M. "TERI" GOMES; EXHIBITS
"B-11" AND "B-12"; CERTIFICATE OF
SERVICE

Hearing)
Date: October 10, 2005)
Time: 9:00 a.m.)
Officer: Hon. E. John McConnell, Esq.)

PETITIONERS' DIRECT
TESTIMONY OF TERESA M. "TERI" GOMES

- Q. Please state your name for the record.
- A. TERESA M. "TERI" GOMES.
- Q. What is your occupation?
- A. I am a paralegal with the Native Hawaiian Legal Corporation ("NHLC"). My resume is attached as Exhibit B-11.
- Q. What are your primary duties as a paralegal with NHLC?
- A. In my capacity as a paralegal, my primary duty involves the research and review

29.7-57

APPENDIX "B"

of historical documents related to land use.

- Q. What purpose(s) is/are served by this research and review?
- A. Primarily the identification and confirmation of any and all legal interests in or related to a specific parcel or parcels of land including the traditional historical uses of the specific parcel or parcels of land in Hawaii.
- Q. How long have you done this type of research?
- A. As my resume confirms, I have been engaged in this type of research for 26 years.
- Q. Would this research also provide accurate information on traditional and customary Native Hawaiian practices including taro cultivation at the time of the Mahele?
- A. Yes. Hawaiian Land Commission Award ("LCA") records, including but not limited to Royal Patents, LCA's and Native and Foreign Testimony, from the Mahele. Aina of 1848 provide documentation of this practice relative to a certain parcel or parcels of land.
- Q. In your capacity as a paralegal for the NHLC, were you tasked with the job of researching LCA records for certain parcels of land in East Maui to confirm whether taro cultivation occurred on these parcels at the time of the Mahele?
- A. Yes, at the request of NHLC client Na Moku and its members, I conducted detailed research of a number of parcels contained within the ahupua'a of Wailuanui to confirm whether and to what extent taro cultivation occurred on these designated parcels. That research resulted in the spreadsheet attached as Exhibit B-12.
- Q. Please describe the steps you took to arrive at the information provided in the attached spreadsheet?
- A. I was first provided with the Tax Map Keys ("TMK") identified in the spreadsheet. I confirmed the assignment of each TMK at the State Survey Division, Department of Land and Natural Resources, utilizing the old and new tax maps made available to the general public. I then examined each tax map to identify the original land title source document for each assessed parcel. True and correct copies of these tax maps will be submitted as exhibits at the appropriate time. I then researched each land title at the Hawaii State Archives using the records of the Land Commissioners to Quiet Land Titles as my primary reference source. I examined each kuleana land claim as documented in the Native Register, Foreign Testimony, Native Testimony, and LCA records. True and correct copies of these documents will be introduced as exhibits at the appropriate time. I then searched the City and County of Honolulu's Tax

29.7-58

Assessment Office records to determine assessed owners for each TMK. True and correct copies of these records will be submitted as exhibits at the appropriate time. The spreadsheet is the culmination of my research work and reflects the matters I found of record.

Q. Please describe the results of your research as reflected in the attached spreadsheet.

A. The spreadsheet contains specific information related to each TMK. It identifies the assessed owner(s), as noted by the County of Maui Tax Assessment Office records, and total acreage of each TMK. Unless the parcel is subject to a State of Hawaii general lease or revocable permit, in which case the lease or permit number is noted, the Royal Patent and/or Land Commission Award Number(s) and corresponding Native Register, Foreign and Native Testimony are noted. Finally, information from the applicable LCA records regarding the use to which the land was put at the time of the Mahele is provided.

For example, TMK 1-1-04-09 consisting of .62 acres in the ahupua'a of Wailuanui was converted into private property by Land Commission Award Number 4779 and Royal Patent 3279. According to Native and Foreign testimony, at the time of the Mahele this parcel was a mo'o with 8 taro lo'i at the 'ili of Keononahu and a kihapai with 10 lo'i at Pa'akamaka.

This same type of analysis applied to the information for TMK 1-1-04 parcels 10, 11, 20, 22, 23, 25, 26, 27; TMK 1-1-05 parcels 18, 28, 29, 30, 42, 32; TMK 1-1-06 parcels 36, 37, 39, 40, 42; and TMK 1-1-08-04 is instructive on land use for each of these parcels at the time of the Mahele.

Q. What, if anything, can be said for the parcels not identified above?

A. There are no LCA records for TMK 1-1-04 parcels 13, 18, 28, 30; TMK 1-1-05 parcels 16, 18, 21, 23, 24, 26, 33, 34, 41, 45, 46, 52; and TMK 1-1-06 parcels 34, 38, 41, 43, 45, 47, 72. These parcels are owned by the State of Hawaii and subject to a lease or revocable permit or by private individuals via State of Hawaii land grants. Based upon the historical, cultural landscape of the Wailuanui ahupua'a as fully detailed in Kalo Kanu O Ka 'Aina: A Cultural Landscape Study of Ke'anae and Wailuanui, Island of Maui ("Kalo Kanu") and Wai O Ke Ola: He Wahi Mo'olelo No Maui Hikina, it is reasonable to conclude that most if not all of the land contained within these parcels was used for taro cultivation at the time of the Mahele. These parcels are located in a floodplain, the ideal location for taro cultivation. As noted in Kalo Kanu at pgs. 52-56:

29.7-59

The complexity of the Wailuanui system is testimony to the engineering ingenuity that shaped it. The system is by far the largest within the area, with 339 lo'i plotted off the 1982 aerial photograph....

According to an 1896 map of the makai portion of Wailuanui (see Figure 9), much of the central portion of the [Wailuanui lo'i] system was given to rice cultivation, although the southeastern portion fronting Wailuanui Stream remained in taro. ...

A small but well-preserved system of abandoned terraces was found on the state property just south of Wailuanui Bay. A well-preserved 'auwai was tapped from a tributary of Wailuanui Stream and runs northward along the eastern edge of the ridge separating this valley from the main valley of Wailuanui. This 'auwai was cut directly from the soil and soft bedrock of the ridge. This lo'i system conforms to the location of six LCAs (4561.2; 5067, 5066, 5049.2; 4562.2; and 4772) indicated on the 1896 map. Farther upstream, running along the way along the flat land on the south side of Wailuanui Stream, are well-developed abandoned terraces in thick forest. As many as six terrace levels were counted. The terrace walls are well constructed, some partly free standing and core-filled. An intact stone-lined 'auwai was traced more than 1,000 ft. Upslope of this 'auwai, terraces were observed along the sides of two tributary streams, the flow which originally fed into the main 'auwai. The 'auwai was traced to within 300 ft. of the pool below Waikani Falls. Clearly, this 'auwai tapped the pool although portions of the 'auwai were removed for flooding.

Considering these abandoned lo'i systems on the southeast side of Wailuanui Stream, as well as abandoned lo'i on the northeast side of the stream upslope of those presently in cultivation, it is safe to estimate that at one time the Wailuanui system was nearly twice its present size.

By the late 1900's former taro land in the ahupua'a of Wailuanui were converted into rice fields. This conversion is clearly evidenced in Figure 9 from Kalo Kanu. As Figure 9 reveals, most if not all of the parcels noted directly above for which no LCA records exist were converted from taro lo'i to rice fields. A reasonable inference can be drawn from this that these parcels were in taro production at the time of the Mahele. Kalo Kanu notes that "[t]ax records for 1890 indicate that rice land in Ke'anae and Wailuanui comprised 67.84 acres compared to 95.482 acres still in taro (Linnekin 1985:30). Given this reasonable inference, 163 acres of land in Ke'anae and Wailuanui were in taro cultivation prior to 1890.

Q. Based upon the results of your research, are you able to draw a reasonable conclusion as to the total acreage in active ~~29.7-59~~ cultivation at the time of the Mahele?

A. Yes. First of all, the sum acreage of the parcels identified in the attached spreadsheet is 56,355 acres. Based upon my research, there is reasonable evidence to conclude that, assuming 10% of this total acreage lay fallow at the time of the Mahele (5,635 acres), approximately 51 acres were in active taro cultivation at the time of the Mahele.

Q. Were you also tasked with this same research for two parcels of land situate in Honopou, Maui identified as TMK 2-9-01 parcels 14 and 16?

A. Yes.

Q. Please provide your findings and conclusions.

A. What now comprises TMK 2-9-01-14 was originally awarded as Royal Patent 3242 on Land Commission Award No. 5595-E Apana 1 to Kepaa. Honopou Stream runs along the northern border of this award that includes a poalima with taro lo'i. Among the assessed owners of this parcel is Beatrice K. Kekahuna. LCA 5595-E:1, which surrounds Grant 1981:1, abuts Grant 3101:2, collectively consists of 22.81 acres.

TMK 2-9-001-016 was originally awarded as Royal Patent No. 3241 on Land Commission Award No. 5459-X Apana 2 to Imihia. The assessed owner is identified as Lokana Kepani, Jr. At the time of the Mahele this 0.34 acre parcel was a poalima comprised of taro and potato sections. It is also riparian to Honopou Stream.

EXHIBIT "B-11"

TERESA M. "TERI" GOMES

TITLE RELATED EMPLOYMENT ONLY

NATIVE HAWAIIAN LEGAL CORPORATION

*Title Searcher/Genealogist Paralegal
July 2001 - present*

Research property and court records pre-1845 to present date. Prepare, review, examine, and issue title and genealogy reports and charts, legal documents like affidavits, declarations and deeds. Duties included all those associated with a Title Searcher, Title Examiner, Genealogist, Paralegal, and included providing "expert" testimony and travelling to the outer islands.

FIRST HAWAII TITLE CORPORATION

*Title Officer/Customer Service
April 1999 - July 2001*

Search, review, and examine title requests and reports, corporate documents, powers of attorney, trust instruments, high liability requests, potential quiet title actions, and all other duties associated with a Title Searcher and Title Officer. Also assisted clerical and administrative staff with general office duties.

KA'IMI'AINA

*Independent Title Searcher/Paralegal
August 1, 1996 - Present Date*

Research property and court records pre-1845 to present date. Search, review, and examine complex and problematic searches. Assist people with court related matters and cases.

T.I. OF HAWAII, INC.

Independent Title Searcher
March 13, 1996 - July 31, 1996*

Research property and court records pre-1845 to present date. Search, review, and examine complex and problematic searches to prepare for the issuance of a title report of policy. Provided technical help and consultation.

ISLAND TITLE CORPORATION

*Independent Title Searcher
December 16, 1995 - January 25, 1996*

*Same duties and specialty as T.I. of Hawaii, Inc., shown above.

Title Searcher/Long Searcher

November 28, 1995 - December 15, 1995

Research property and court land records pre-1845 to present date. Search, review, and examine complex and problematic searches to prepare for the issuance of a title report or policy. Provided technical help and support.

ALSTON HUNT FLOYD & ING

Independent Title Searcher/Paralegal
November 28, 1995 - December 15, 1995*

Research property records in re: court case. (Confidentiality agreement prohibits further disclosure of contractual duties.)

FIRST AMERICAN TITLE COMPANY OF HAWAII, INC.

*Title Searcher/Long Searcher
March 18, 1985 - September 1, 1995*

*Same duties and specialty as performed for Alston Hunt Floyd & Ing. Production work also done.

SECURITY TITLE CORPORATION

*Title Searcher/Long Searcher
April 23, 1979 - March 4, 1985*

Research property and court records pre-1845 to present date. Prepare, review, examine, and issue litigation/citation reports and drafts, title reports and policies, and assist with claims. Technical help and support.

Escrow Clerk, Part-Time

July 1978 - October 1978

General clerical duties relating to escrow accounts, deposits, files, documents and recordings.

Additional work history will be provided upon request.

29.7-63

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EXHIBIT "B-12"

Na Moku Spreadsheet

Parcel Number	Tax Map Key	Mau	Area	Patent	Royal Land Comm Award	"Ill or Location	Keonohu Paakamaka	Loi Claimed	Loi or Mo. Tested	Area	Current Assessed Owners(s)	Comments / Notations Additional Remarks
1 /	1-1-04-09	0.62 ac	3279	4779	Keonohu Paakamaka	8	Not noted	10	Not noted	0.62 ac	TO BE PROVIDED UNDER SEAL	NR 6/542, FT 8/233, NT 5/367 Mo' with 8 lot at Keonohu Khepat with 10 lot at Paakamaka
2 /	1-1-04-10	0.544 ac	3278	5054 Ap. 1	Waiehi	Not noted	Mo'o	Not noted	0.544 ac	TO BE PROVIDED UNDER SEAL	NR 6/234, FT 8/232, NT 5/366	
3 /	1-1-04-11	0.36 ac	2786	11043-6 Ap. 2	Keonohu	Not noted	2	Not noted	0.36 ac	TO BE PROVIDED UNDER SEAL	NR 6/541, FT 8/289, NT 5/429 Khepat at Kalimahuni	
4	1-1-04-13	1.27 ac		G. L. S-3922	Waialua				1.27 ac	TO BE PROVIDED UNDER SEAL	Formerly TMK 1-1-04-17	
5	1-1-04-18	0.65 ac		Rev Pmt 6930	Waialua				0.65 ac	TO BE PROVIDED UNDER SEAL		
6	1-1-04-28	1.25 ac			Waialua				1.25 ac	TO BE PROVIDED UNDER SEAL	Formerly TMK 1-1-04-19	
7 /	1-1-04-20	1.008 ac	2804	5056	Keonohu	21	Mo'o		1.008 ac	TO BE PROVIDED UNDER SEAL	NR 6/234, FT 8/235, NT 5/368 Mo' with 21 lot & 1 kula	
8 /	1-1-04-22	2.75 ac	2788	5051 Ap. 1	Keonohu	26	Mo'o		2.75 ac	TO BE PROVIDED UNDER SEAL	NR 6/234, FT 8/236, NT 5/370 Mo' with 26 lot & 1 kula	

Parcel Number	MauI Tax Map Key	Royal Land Comm Award	Patent Area	Area	Location	"H or "I or "J or "K Location	Lot or Mo'o	Claimed Area	Testified Area	Lo'i or Mo'o	Current Assessed Owner(s)	Comments / Notations
27	1-1-05-30	4561 Ap. 3	3281	1.545 ac	Waialua	Waialua	Mo'o	1.545 ac	Not noted	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/181, FT 8/227, NT 5/361
26	1-1-05-30	5060	3259	2.67 ac	Waialua	Waialua	Mo'o	2.67 ac	10	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/542, FT 8/233, NT 5/369 Mo'o with 10'01' & 1' kula
25	1-1-05-29	5058 Ap. 1	3256	0.29 ac	Waialua	Waialua	Mo'o	0.88 ac	See Ap. 1	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/238, FT 8/235, NT 5/369 22-101 with 1' kula
24	1-1-05-28	4561 Ap. 4	3281	0.162 ac	Waialua	Waialua	Mo'o	0.162 ac	2	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/181, FT 8/227, NT 5/361
22	1-1-05-24	S-15078	Grant	0.80 ac	Waialua	Waialua	Mo'o	0.80 ac		Mo'o	TO BE PROVIDED UNDER SEAL	
21	1-1-05-23	13127	Grant	0.67 ac	Waialua	Waialua	Mo'o	0.67 ac		Mo'o	TO BE PROVIDED UNDER SEAL	
20	1-1-05-21	13329	Grant	0.79 ac	Waialua	Waialua	Mo'o	0.79 ac		Mo'o	TO BE PROVIDED UNDER SEAL	

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Na Moku Spreadsheet

Additional Remarks

Parcel Number	MauI Tax Map Key	Royal Land Comm Award	Patent Area	Area	Location	"H or "I or "J or "K Location	Lot or Mo'o	Claimed Area	Testified Area	Lo'i or Mo'o	Current Assessed Owner(s)	Comments / Notations
19	1-1-05-18	5058	3258	4.82 ac	Pukalani	Pukalani	Mo'o	4.82 ac	Not noted	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/235, FT 8/229, NT 5/362 Hilo, Puhiwa at Waialua
18	1-1-05-16	S-14662	Grant	2.33 ac	Waialua	Waialua	Mo'o	2.33 ac		Mo'o	TO BE PROVIDED UNDER SEAL	
17	1-1-04-30	G. L. S-3922	0.56 ac	0.56 ac	Waialua	Waialua	Mo'o	0.56 ac		Mo'o	TO BE PROVIDED UNDER SEAL	
16	1-1-04-30	G. L. S-3922	0.56 ac	0.56 ac	Waialua	Waialua	Mo'o	0.56 ac		Mo'o	TO BE PROVIDED UNDER SEAL	
15	1-1-04-30	G. L. S-3922	0.56 ac	0.56 ac	Waialua	Waialua	Mo'o	0.56 ac		Mo'o	TO BE PROVIDED UNDER SEAL	
14	1-1-04-30	G. L. S-3922	0.56 ac	0.56 ac	Waialua	Waialua	Mo'o	0.56 ac		Mo'o	TO BE PROVIDED UNDER SEAL	Includes portion formerly under TMK 1-1-04-31 and 1-1-04-44
13	1-1-04-28	See TMK 1-1-04-06										
11	1-1-04-27	5062	3263	1.60 ac	Keonani	Keonani	Mo'o	1.60 ac	20	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/544, FT 8/238, NT 5/378 includes 1' olona kula and 1' patch
11	1-1-04-26	4587	2806	0.31 ac	Paekamaka	Paekamaka	Mo'o	0.31 ac	Not noted	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/186, FT 8/274, 289, NT 5/411
10	1-1-04-25	5068-B Ap. 1	3254	0.42 ac	Keonani	Keonani	Mo'o	0.42 ac	Not noted	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/545, FT 8/233, NT 5/367
9	1-1-04-23	4667	2787	1.41 ac	Keonani	Keonani	Mo'o	1.41 ac	Not noted	Mo'o	TO BE PROVIDED UNDER SEAL	NR 6/211, FT 8/230, NT 5/363

297.7-68

Na Moku Spreadsheet

Additional Remarks

CERTIFICATE OF SERVICE

I hereby certify that two (2) copies of the foregoing document were duly served on Linda L. Chow, Deputy Attorney General, for Hearings Officer, The Honorable E. John McConnell on August 1, 2005, by hand delivery. I further certify that one (1) copy was served on the remaining parties as indicated, on August 1, 2005.

Linda L. Chow, Esq.
Deputy Attorney General
For Hearings Officer
 U. S. MAIL
 HAND DELIVERY

The Honorable E. John McConnell (Ret.)
465 S. King Street, Room 300
Honolulu, Hawaii 96813

Randall K. Ishikawa, Esq.
Ishikawa Morihara Lau & Fong, LLP
841 Bishop Street, Suite 400
Honolulu, Hawaii 96813
 U. S. MAIL
 HAND DELIVERY

Elijah Yip, Esq.
David Schulmeister, Esq.
Cades Schutte
1000 Bishop Street, 10th Floor
Honolulu, Hawaii 96813
 U. S. MAIL
 HAND DELIVERY

Isaac Hail, Esq.
2087 Wells Street
Wailuku, Maui, Hawaii 96793
 U. S. MAIL
 HAND DELIVERY

Robert H. Thomas, Esq.
1001 Bishop Street
Paahii Tower, Suite 1600
Honolulu, Hawaii 96813
 U. S. MAIL
 HAND DELIVERY

Brian T. Moto, Esq.
Jane Lovell, Esq.
Deputy Corporation Counsel
County of Maui
200 S. High Street
Wailuku, Hawaii 96793
 U. S. MAIL
 HAND DELIVERY

Richard Kiefer, Esq.
David Merchant, Esq.
444 Hana Hwy, Suite 204
Kahului, Hawaii 96732
 U. S. MAIL
 HAND DELIVERY

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Parcel Number	Mauka Tax Map Key	Area	Royal Patent	Land Award	Location	Lot or Mo'o	Claimed	Tasified	Area	Current Assessed Owners(s)	Comments / Notations
48	1-1-08-04	7.27 ac	Grant 2803	3177	Waihana Pauwahu	1610	Mo'o 16101	5.20 ac	TO BE PROVIDED UNDER SEAL	NR 8/88, FT 8/297, NT 5/437	"Lakini" Mo'o with 16101
47	1-1-06-72	0.61 ac	Grant 13304	Waihana				0.61 ac	TO BE PROVIDED UNDER SEAL		
46	1-1-06-47	0.54 ac	Grant 13239					0.54 ac	TO BE PROVIDED UNDER SEAL		

29.7-71

DATED: Honolulu, Hawai'i, August 1, 2005.



ALAN T. MURAKAMI

MOSES K. N. HALA III

Attorneys for Petitioners

Na Moku Aupuni o Ko'olau Hui, et al.

APPENDIX "C"

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NATIVE HAWAIIAN LEGAL CORPORATION
1164 Bishop Street, Suite 1205
Honolulu, Hawaii 96813
Telephone: 521-2302

ALAN T. MURAKAMI 2285
MOSES K. N. HAJA III 6277

Attorneys for Petitioners
Na Moku Aupuni O Ko'olau Hui,
Beatrice Kekahuna and Marjorie Walllett

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OFFICE OF THE ATTORNEY GENERAL
AND DEPARTMENT OF LANDS
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DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of the Contested Case Hearing) DLNR FILE NO. 01-05-MA
Regarding Water Licenses at Honomanu,)
Keanae, Nahiku, and Huele, Maui)
) PETITIONERS' DIRECT EXPERT
) TESTIMONY OF DAVIANNA POMAIAKAI
) MCGREGOR, Ph.D.; CERTIFICATE OF
) SERVICE
)
) Hearing
) Date: October 10, 2005
) Time: 9:00 a.m.
) Officer: Hon. E. John McConnell, Esq.

PETITIONERS' DIRECT EXPERT TESTIMONY OF
DAVIANNA POMAIAKAI MCGREGOR, Ph.D.

- Q. Please state your name for the record.
A. DAVIANNA POMAIAKAI MCGREGOR.
Q. Where do you live?
A. I live in Kaiwiula, Kapalama, O'ahu and Ho'olehua, Molokai.
Q. Where do you work and what is your title?
A. I am a Professor of Ethnic Studies at the University of Hawaii, Manoa.
Q. What is your educational background and training?

A. I graduated from the University of Hawaii with a Bachelor of Education degree in Secondary Education in 1972 and a Bachelor of Arts degree in Asian/Pacific History in 1973. I did my graduate work at the UH, where I obtained a Master of Arts degree in Pacific Islands Studies in 1979. I also earned a PhD in Hawaiian and Pacific History from the University of Hawaii in 1989.

Q. What was your doctoral dissertation topic?

A. The title of my doctoral dissertation is "Kupa`a I Ka `Aina: Persistence On The Land." It examines the conditions of Hawaiians from 1898 to 1930, the first 32 years of direct U.S. rule over Hawaii. It compared the conditions of Hawaiians in urban O'ahu with that of Hawaiians in rural Hawaiian communities on the island of Molokai, the moku of Hana, Maui and the ahupua`a of Waipi`o, Hawaii.

Q. Did you prepare a curriculum vitae to reflect your education and training?

A. As part of my testimony, I have submitted my curriculum vitae which contains information on my academic training, my teaching, my research, and my publications.

Q. Have you previously been qualified to testify as an expert witness?

A. I have served as an expert witness regarding traditional Hawaiian subsistence, cultural, and religious customs and practices in the following Civil Cases: *Kelly v. 1250 Oceanside Partners*, Civ. No. 00-1-0192K (Haw. 3rd Cir.); *Office of Hawaiian Affairs, et al vs. Housing and Community Development Corporation of Hawaii, et al*, Civil No. 94-4207-11 SSM, 1994 - 2001; *Kamaka v. Department of Defense; Pele Defense Fund v. Papy*, Civ. No. 89-089 (Haw. 3rd Cir.); *Pele Defense Fund v. Campbell Estate*, Civ. No. 89-089 (Haw. 3rd Cir.); and *Hanakeawe v. Nansay Hawaii, Inc.*, Civ. No. 90-316 (Haw. 3rd Cir.). I have also testified as a cultural expert in the following criminal trespass cases. *State of Hawaii v. Spalding* (Haw. 3rd Cir.); *State of Hawaii v. Naeole* (Haw. 3rd Cir.); *State of Hawaii v. Kaleo Patterson* (Haw. 3rd Cir.); *State of Hawaii v. Keii`ikoa* (Haw. 3rd Cir.).

Q. Have you ever been qualified before administrative bodies to testify as an expert?

A. I appeared as an expert before the State of Hawaii Water Commission in the Waiahole Water Case, Docket No. CCH-0A95-1, and *In re Waiala O Molokai*, Docket No. CCH-MO96-1; before the Public Utilities Commission in Docket # 7259 Relating to Hawaiian Electric Light Company, Regarding Integrated Resource Planning, 1993; and before the Public

Utilities Commission in Docket # 6617 To Require Energy Utilities in Hawaii to Implement Integrated Resource Planning, 1990.

Q. Have you had the opportunity to study the nature and extent of cultural, religious, and subsistence activity in which the Native Hawaiians have engaged to support themselves?

A. Yes. I first studied rural Hawaiian communities where Native Hawaiians comprised the majority of the population and continued to support their extended 'ohana through traditional Hawaiian subsistence farming, fishing, hunting, and gathering customs and practices when I wrote my PhD dissertation. Subsequently, I conducted a number of studies of the traditional and customary practices of Native Hawaiians, which mirror long-held cultural practices of ancient Hawaiians in several rural communities throughout the state. While all have unique features associated with those communities, these traditions and customs I've recorded are resilient and persistent. In many instances, the continuation of these cultural practices is financially necessary for many families. These studies have taken me to East Maui, where I conducted extensive and expanded research, as well as Molokai and the Island of Hawaii.

Q. What prompted your expanded research for East Maui?

A. In June 1993, the Hawaii State Legislature approved what later became Act 156 to implement a preexisting statutory mandate requiring planning for the state's physical environment and for socio-cultural enhancement, which recognizes the significance of the state's "cultural landscapes." Accordingly, it established a task force to examine Hawaiian cultural landscapes. This task force was responsible for developing designation criteria, specifying activities and uses consistent with cultural landscape districts, developing procedures for definition of cultural landscape districts and their boundaries, and reporting their findings to the legislature.

Q. What happened as a result of this effort?

A. In January 1994, the DLNR Cultural Landscape Task Force reported back to the Legislature on the importance of landscape preservation within a vital daily living context. The Task Force defined cultural landscapes as geographic areas, which exhibit monolithic characteristics of an ethnic, economic or cultural nature. They reflect the interaction of cultural, economic, and natural forces on the environment. They are a definable area, which clearly defines the settlement or use of the land, water, and/or living systems (plants and animals) over a long period of time, as well as cultural values, norms, and attitudes toward the land, water and/or

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living systems. These geographic areas possess a significant concentration, linkage or continuity of landscape components (i.e., vegetation, buildings and structures, archaeological sites, roads and trails, waterways, religious and natural features and resources), which are united by human use and past events and/or aesthetically by plans or physical development. Typically, these landscapes could involve abandoned villages or agricultural systems, taro-producing areas, sugar lands, ranches, fishing areas, traditional gathering areas, and entire islands.

Q. What were the recommendations of the Task Force?

A. The Task Force supported a model project focusing on the Ke'anae-Wailuanui area on Maui, because it recognized that this community is a taro-growing area with long continuity of use and with local support for preservation.

Q. What was the purpose of this model project?

A. The project involved a cultural landscape study to inventory and assess the resources of the Ke'anae-Wailuanui communities. The Maui County General Plan of 1990, on which the Hana Community Plan is based, has themes, one of which under "land use" is:

To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.

Maui County adopted the Hana Community Plan as part of its adoption of County General Plan in July 1994, under Section 2.80.050 of the Maui County Code. To implement the Hana Community Plan, the Maui County Planning Department initiated the resulting Ke'anae-Wailuanui Cultural Landscape study. The Hana Community Plan calls for county government to "compile special plans and studies necessary to implement the recommendations of the Community Plan." It also establishes the following goals, policies and implementing actions:

Land Use: Preservation and enhancement of the current land use patterns which establish and enrich the Hana Community Plan region's unique and diverse qualities.

- Identify and inventory exceptional open space resources and viewsheds. Explore protective management measures such as covenants, easements, and other planning tools.
- Explore alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each community within the Hana region.
- Encourage the availability of agriculturally suitable lands to provide opportunities for small diversified agricultural activities with residential tenancy for farmers.

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Q. What was the specific goal of the Ke`anae-Wailuani Cultural Landscape study of July 1995?

A. The goal was to describe and quantify conditions and traditions which have shaped the land and which still affect the patterns of land use. Land use management policies based on a broad foundation of knowledge of resources will better enable the community and its representatives in county and state government to make effective decisions appropriate to this and other rural and agricultural areas.

Q. What were the specific tasks of the study?

A. There were three major tasks: (1) identify the historic context of the landscape, through archaeological research to determine the depth of wetland taro cultivation and a literature search, including a summary of Land Commission Awards for the Ke`anae and Wailuani ahupua`a, focused on agricultural or other uses of the claims; (2) identification of cultural landscape components, including farm land, crops, vegetation types, water control, gathering, hunting, home sites, ocean-related activities, and lands associated with Hawaiian legends; and (3) preliminary mapping using historical maps, aerial photographs, and detailed land classification maps to identify existing land use areas and the boundaries of the cultural landscape.

Q. What was the methodology for conducting this study and who was the team responsible for conducting the work?

A. The methodology is described on pp. 13-17 of the report. Basically, (1) Cultural Surveys Hawaii, Inc. conducted a literature search, including a review of aerial photographs, (2) Cultural Surveys Hawaii, Inc. and Group 70 conducted field surveys, including mapping of taro lo`i; and (3) I conducted personal interviews, relying heavily on kupuna (9 of 13 interviewees) from Ke`anae and Wailuani.

Q. How reliable are the sources of oral history, as related by those Hawaiians you interviewed?

A. The oral history interviews were consistent with each other and were cross validated with the information gathered through the literature search and the field surveys.

Q. What are the cultural landscape area boundaries?

A. The team identified the Keanae-Wailuani core Cultural Landscape area boundaries in Figure 3 of the report. The area encompasses the Ke`anae peninsula and runs southeast along the coast to the southeast ridge of Wailuani Valley. On the west, it is bounded by the Ke`anae YMCA, Ke`anae Arboretum and the Palauulu stream. Inland it extends 600 feet mauka of the Hana Highway, stretching from the YMCA camp to the ridge on the east side of Waikani Falls. The informants also identified a wider traditional cultural practices region shown in Figure 4 of the report, for fishing, hunting and gathering. This extends from Makapipi Stream and forest access road in the east, to Honomau and the Kaumahina ridge on the west and mauka to Pohaku Palaha on the northern rim of the Haleakala Crater.

Q. In summary, what did these sources of information show?

A. The literature search documented the cultural and natural setting of the cultural landscape area, which has a rich and long history of supporting Hawaiians who tilled the land, grew taro and other food crops, and fished the nearshore ocean seas as far as 11 miles offshore. In the various land commission testimonies, makaainana from the Ke`anae-Wailuani community described their agricultural pursuits in the 1840's. The field surveys, combined with the literature search, yielded information that enabled the team to map the cultural landscape - historic locations of buildings, taro lo`i, auwai, and other cultural features of the communities that settled the area. The interviews helped me link current uses of land and streams by residents to their historic uses and verified those practices that continued to be followed along the traditions of their ancestors. The relative isolation of this cultural landscape enabled it and its residents to avoid or resist intensive modern land developments and retain many of the ancient traditions passed down through the generations of Hawaiians who resided in this area.

Q. Why was the Ke`anae-Wailuani area selected for this cultural landscape study?

A. Aside from the land use planning angle I've previously mentioned, it was particularly appropriate because it is associated with a deep and long tradition of growing taro, the staple crop of Native Hawaiians for generations. The earliest Polynesian voyagers to Hawai'i brought taro with them. It has been linked mythologically to the origins of Hawaiians as a people. The plant itself has attributes which are embedded in the notion of the family and kinship relations. All parts of the taro plant are used for food. Much of the traditions surrounding the cultivation and use of taro have persisted in Ke`anae-Wailuani to a much

greater extent than most other parts of Hawai'i. With such an intimate association with the people and culture of Hawai'i, Ke'anae-Waiuanui was a prime candidate for designation as a cultural landscape. Today, large-scale taro cultivation is confined to isolated areas in Hawai'i - Hanalei/Waioli, Hanapepe and Waimea on Kaua'i, Waikane/Waihole on O'ahu, Onokohau, Waie'e, Ke'anae-Waiuanui on Maui, and Waipi'o Valley on the island of Hawai'i. The taro landscape of Ke'anae-Waiuanui is a viable traditional economy which has maintained historic and cultural integrity, traditional lifestyles, and social continuity to an equal or greater extent than any of the other taro growing landscapes in Hawai'i.

Q. What physical attributes of Ke'anae-Waiuanui did your study examine?

A. The 1995 study identified 12 components for examination. They are listed on page 44 of the report. Among them are taro cultivation, the Ko'olau Ditch built and maintained by EMI, and cultural resources and use areas.

Q. What did you learn about the taro cultivation in Ke'anae-Waiuanui?

A. Wetland taro cultivation is the most important single component of the cultural landscape of Ke'anae-Waiuanui. Wetland taro cultivation requires a precisely defined, stable field system with a continuous and reliable source of water. The system must be designed so that cool, fresh water can be delivered constantly to every field. In this sense, a taro landscape is designed as a single system with interrelated elements (fields, streams and 'auwai). Alteration of any of these elements could affect the entire system. The ancient Hawaiians who designed this landscape were limited in the degree to which they could alter the natural topography. They dealt with this constraint by flexibility of design. Seen as a whole, the taro landscape appears as a simple network of inter-connected rectangles defined by banks, which hold in water. Upon closer inspection, it is apparent that field design, water flow, and water delivery are a response to subtle variations in the natural landscape. A taro landscape is extremely complex in its internal workings.

Q. What areas of taro cultivation exist in Ke'anae-Waiuanui?

A. There are five major locations of active taro cultivation - Ke'anae peninsula, Waiuanui, Ke'anae Arboretum, Waiuanu Valley, and Lakini. An additional small area of cultivation exists at Waioakamilo Stream just makai of its crossing of Waiuanui Road. There are small lo'i on both sides of the stream. In addition, throughout the district old taro terraces can be found and taro still grows in the wild in the valleys, along streams. Informants speak of going

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out and gathering lu'au leaves from the wild taro because it has a good flavor, distinct from the cultivated varieties. Some of the areas for the gathering of wild lu'au include Pi'ina'au, Nua'ailua, Kupua'u, Waipio, Awioiwio, Pohole and Pahoa.

Q. Please describe the Waiuanui taro area.

A. This is the largest taro system of the cultural landscape, with 339 lo'i, that Cultural Surveys plotted off a 1982 aerial photograph in Figure 15. They lie mainly west of Waiuanui Stream and to the north and east below Hana highway. It is an area of mixed cultivation and uncultivated areas. There is also a smaller set of lo'i above Hana Highway in the area known as Lakini. See, Figure 21.

The essence of Waiuanui is water (wai = water). Waiuanui is best viewed looking mauka. The taro lo'i as seen from makai, are framed by the steep green slopes of the valley with Waikani Falls to the east and Waioakamilo Stream waters entering from the center and west. The lo'i themselves, as they ascend the slopes, decrease in size to accommodate the requirements of water control. Nowhere else in Hawai'i are such miniature fields still cultivated in this kind of topography with such integrity. See, p. 126.

Q. Please describe the Waiuanui 'auwai system.

A. It is evident that at Waiuanui Valley, the 'auwai and lo'i systems were constructed first and subsequent residences and circulation networks accommodated the already established systems. The pattern of cultivated lo'i at Waiuanui is likely close to what existed at the time of the Mahele, but for the time when rice was cultivated just prior to and after the dawn of the 20th century.

Cultural Surveys was able to produce a schematic of the 'auwai as it takes water from Waioakamilo Stream and passes through Lakini. Figure 21. The water flows past these lo'i, partially returning back to Waioakamilo Stream, but mainly flowing under the existing Hana Highway to irrigate the valley lo'i below that point.

There is another major diversion of Waioakamilo Stream below Hana Highway that irrigates the extreme western end of the valley. See, Figure 22.

Cultural Surveys approximated the direction of flow in the 'auwai system servicing the valley, as the system was complex and our team did not have the time or resources to make a definitive map of all aspects of it.

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Q. Did you discover any major changes in the use of the valley for taro cultivation since the time of the Mahele?

A. Our team did not find any historic map of the valley. Taro cultivation is well documented for the entire area in the 1850's Land Commission Award documents. In Appendix A of the report, the various claims for Land Commission Awards in Ke'anae-Wailuanui are rendered in a table. The table illustrates the extent to which taro was grown on the claimed parcels. The table summarizes the testimonies submitted in support of the requests for Land Commission Awards and reflects the presence of taro cultivation at the time of the Mahele for these parcels. While it indicates what was happening on those parcels at that time, it does not indicate which of the pieces claimed were actually awarded by the Land Commission.

Nevertheless, the table gives an accurate indication of the extent to which active taro cultivation existed and on which parcels in the valley. This activity also indicates where irrigation water from the streams was being applied in pursuit of this activity at the time of the Mahele.

Q. Did you discover any other evidence of the extent of taro growing in the valley during different times in history following the Mahele?

A. Apparently, as an 1896 map (Figure 9) of the lower section of the valley reveals, by then there was a sizable area devoted to rice cultivation, although much of the southeastern portion along Wailuanui Stream remained in taro. This pattern apparently persisted through 1903, according to a similar map of the area (Figure 10). Some of the residents I interviewed indicated that rice was preferred at that period because water temperature was not the crucial consideration as it is for taro cultivation, reflecting a diminished water supply to the valley for irrigation. Chinese farmers grew rice in significant parts of the valley between 1880 and 1927, when the market collapsed because of the competition from California.

A 1936 photograph (Figure 16) shows that a majority of the valley was under taro cultivation, with considerably less tree and bush vegetation than was present in 1994 when I conducted my field research. By 1966, in contrast, while all cultivated areas appeared to be in taro, there is a dramatic increase in forest growth along the periphery of the valley, compared to 1936, as Figures 17 and 18 reveal. Contrasted with current conditions, as depicted in the photographs taken in 2004 and this year in June, it appears that there is now substantially different, as well as fewer, areas of taro lo'i than was being actively cultivated in 1966.

This evidence shows there was apparently a period of decline in taro cultivation in the valley between 1936 and 1966, as well as between 1966 and 1994. However, while to varying degrees, the Wailuanui valley residents, especially Hawaiians, continued a tradition of taro cultivation that continues through the present. This cultural landscape is distinctive in terms of this long tradition, and continues on to this day, reflecting how critical taro production is to this community.

Q. Do you have an opinion as to whether the current taro cultivation reasonably approximates the amount of water used to cultivate taro at the time of the Mahele?

A. Yes.

Q. And what is that opinion?

A. While the rice cultivation earlier last century may have altered some of the pattern of lo'i in the valley, the broad pattern remains since both crops are wetland agricultural products and the irrigation system plays a critical role in their cultivation. The mechanics of irrigation systems must follow gravity. Residences are found on slightly elevated areas at the edges of the fields, not in the center of the lo'i, which would be the low spot and subject to periodic flooding. The roadway network serving these residences skirt the cultivated areas and does not cut into the system of lo'i. This pattern involves frequent tending and fits the horticultural character of Hawaiian agriculture where the cultivated fields are relatively small and are within walking distance of residences. It is a pattern developed before automobiles and mechanized agriculture. The field was central, not the residence. This pattern is found even in areas where residences are not nearby. See, p. 126.

There was far more taro cultivation in the valley in the 1800's than presently. There is also far less water flowing naturally into the valley as a result of the major EMI diversion into the Ko'olanui Ditch mauka of Kupau and Akeke Spring. This reduction in taro production is significant compared to historic levels.

Q. On what basis do you make this conclusion?

A. During the fieldwork for this study, which included field trips as well as interviews, it became apparent that the Ke'anae-Wailuanui communities have a long history of small commercial ventures associated with processing and marketing of local taro. Besides the People's Store, which once stood at Ke'anae landing, there were six separate poi mills, each in operation over a different span of time. Each sold local taro processed into poi to the community

itself and also exported taro. Taro was exported in two separate directions: to Hana and to Ha'iku/Kahalu/Wailuku. The Alama Poi Shop operated from the 1920's to the 1950's. The Ching Poi Mill operated in the 1930's through the 1950's, exporting poi to Kahului and Hana. The Ng family operated a mill that exported poi to Hana. The Alu family ran the Kupa'u Mill from the late 1930's to the early 1950's. The Lum Hoy Poi Mill exported poi to Wailuku from the 1930's through the 1940's. The last mill, Ke'anae-Wailua Poi Mill was started in 1975 by Mr. Ed Wendt and operated through 1984. The current level of taro production contrasts sharply with what historic records show.

Q. Do you have an opinion, based on your training, research, and expertise, whether the land uses of Wailuanui residents are linked to Hawaiian cultural mores and practices?

A. Yes.

Q. What is your opinion?

A. The land use patterns of the Ke'anae-Wailuanui region have been shaped by Hawaiian cultural mores and practices. The 'ohana values and practices of the community stress the conservation of natural resources for the benefit of present and future generations. Rules of behavior are based on respect of the 'aina, the virtue of sharing, and a holistic perspective of organisms and ecosystems that emphasize balance and coexistence. The Hawaiian outlook which shapes these customs and practices is lokahi or maintaining spiritual, cultural, and physical balance with nature. In the course of their travels through the various 'ili of the traditional cultural practices region, practitioners of Ke'anae and Wailuanui are able to renew their knowledge and understanding of the landscape, the place names, names of the winds and the rains, traditional legends, wahi pana, historical cultural sites, and the location of various native plants and animals. The region is thus experienced as a part of their 'ohana, necessitating the same care as would a member of their family.

Q. Do you have an opinion, based on your training, expertise, and research, on how important traditional and customary gathering of 'o'opu, 'opae, and hihiwai is to the Hawaiians of Wailuanui?

A. Yes.

Q. What is that opinion?

A. Ke'anae-Wailuanui is one of the few remaining areas in the Hawaiian Islands where 'opae can be gathered. Virtually every stream has 'opae at some time during the year.

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However, it is easier to gather 'opae in the tunnels of the EMI ditch system. The irrigation ditch itself is an excellent breeding area for the 'opae because it has flowing water year round. Some streams below the ditch, however, don't have enough flowing water to sustain the 'opae year round when the water is diverted into the ditch system. Commercial sale of 'opae is prohibited under a state law that went into effect in 1993. 'Opae is still a popular delicacy among the families in the district. They also gather 'opae to share with family and friends outside and on different islands. 'Opae, the 'a aniu net used to gather it, and the methods of preparing it will continue to be a distinctive aspect of the cultural lifestyle for which Ke'anae-Wailuanui is known and distinguished.

'O'opu and hihiwai are becoming increasingly scarce in the Hawaiian Islands. Certain species of 'o'opu are endangered and others are rare. They require pristine and flowing stream waters to exist. Ke'anae-Wailuanui is one of the few areas where they still can be found in sufficient size to be occasionally caught for subsistence food.

The gathering of hihiwai is also carefully managed. The location of the hihiwai is knowledge that has been passed down from generation to the next for their protection and proper management. It is not information that is made available to the general public.

Q. What is the geographic range of this gathering activity?

A. Family members of all ages engage in some level of gathering activity in the Ke'anae-Wailuanui district. Kupuna like Helen Nakanelua still go out and gathers 'opae with her homemade 'a aniu net in the 'auwai that runs through her property at Lakini. Waiokamilo Stream still has 'opae which is accessible to the kupuna. The Ka'auamo family is best known for their traditional and customary gathering activities. Awapuhi Ka'auamo Carmichael still goes out gathering for 'opae, hihiwai, and 'opini from Kailua and over through Kuliwa. Awapuhi Carmichael identified some of the area which she regularly accessed for gathering of 'opae, hihiwai, and 'o'opu:

We have our own names. Kapa'ula, gather 'opae. We use Puaakaa, we call it Kaunoa. Above the road, the ditch above the road, we use that stream, and then it branches off. Even Makapipi, we use Makapipi stream. We use all the way to the tunnel. We use it. Kuliwa gulch is used by our family. Kuliwa gulch we use also. Makapipi is just mauka. Kuliwa is mauka.

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Gathering from a variety of places is important in order to maintain the resources. The choice of place to gather is determined by the weather and other natural signs. Awzupui Carmichael described the factors which affected her decision as to where to gather on a particular expedition:

It depends on what we're getting, and how we feel . . . We never go to the same place. You know how the Hawaiians used to do, they don't go back to the same place, so can restore. It depends on the weather, and then we go by the moon, the stars. If use one place, then go to another place, depends on the moon and the stars. We go up far . . . We all go to the same places, although each of us have our favorite hole, places, where we go for opae, you know. All mauka for 'opae. And then below have the 'o'opu and the prawns, they introduced the prawns, and hihiwai. Above the road is more the 'opae. Above the road is where all the opae are. Above the main highway. And then below the road has hihiwai, 'o'opu, you know.

Within the traditional cultural landscape area for Ke'anae-Wailuanui unoccupied areas with flowing pristine streams and the forested areas are integral to the livelihoods of the families in the district. For example, nobody lives in the area from Wailuaki to Kopili'ula and over to Hanawi but there are many gulches and streams flourishing with hihiwai and 'o'opu.

Q. What was the importance of subsistence gathering to the health of Hawaiian gatherers who engaged in this traditional activity – historically and in current times?

A. Through subsistence, families attain essential resources to compensate for low incomes. They can also obtain food items, especially seafood, that may be prohibitively costly under a strict cash economy. If families on fixed incomes were required to purchase these items, they would probably opt for cheaper, less healthy foods that would predispose them to health problems. In this respect, subsistence not only provides food, it also ensures a healthy diet.

Subsistence generally requires a great amount of physical exertion (e.g., fishing, diving, hunting) that is a valuable form of exercise and stress reduction and contributes to good physical and mental health. It is also a form of recreation that the whole family can share in. Family members of all ages contribute at different phases of subsistence, be it active hunting, fishing or gathering or cleaning and preparing the food for eating. Older family members teach the younger family members how to engage in subsistence and prepare the food, thus passing on ancestral knowledge, experience and skill.

Q. What was the pattern of these subsistence activities amongst those traditional and customary gatherers of Ke'anae-Wailuanui you interviewed?

A. Subsistence gathering, hunting and fishing is an integral part of the lives of the residents of Ke'anae-Wailuanui. There is general agreement among the informants that their traditional cultural practices region extends from Honomanu in the west to Makapipi in the east and mauka from Pohaku Palaha on the rim of the Haleakala crater mauka to the shoreline, and into the ocean as far as the buoy 11 miles offshore. Additional areas are used by residents of Ke'anae-Wailuanui depending on where their family ancestors originated and established subsistence practices. For example, some families fish and gather as far as Kaupo or as far west as Honopou and mauka to Waikamoi. The location and distribution of water is the primary determinant of the distribution of natural resources. Traditional land use boundaries were defined in relation to the amount and location of water. The change of season from wet to dry does affect the distribution and availability of subsistence resources. When there is a lot of rain, the resources are more abundant and spread out over a larger area. During the dry period, the amount of resources shrink and they are distributed near to water sources.

Most subsistence areas can only be accessed by land through a trail or a dirt road. The Pi'ilani Trail affords an important route of access between 'ili along the coastline. The Ke'anae-Wailuanui residents also use an extensive network of mauka to mauka trails to carry out their subsistence activities. Hunters say that one can readily catch a decent sized pig without venturing far up the mountain. However, the network of trails allows access to upper regions where the larger animals roam. Fishing resources vary by ocean depth. Along the rocky shoreline fishermen gather crab, opihii, ha'u ke uke, and other shellfish. In the reef, residents gather limu and catch squid, lobster, and reef fish such as 'uhu, kala, and manini. At greater depths bottom fish are caught such as weke, ehu, 'opakapaka and uku. In the bays, nets are used to surround 'akule. 'Aholehole, 'ama ama and uouoa are also caught with gill nets. In the deep ocean and out to the buoy the fishermen troll for ono, aku, 'ahi, marlin, and mahimahi. Ocean resources are accessed by land through mauka-to-mauka trails and along the Pi'ilani Highway. Boats are also used for ocean subsistence activities. The launching areas are Honomanu Bay, Ke'anae Landing, Wailuanui Bay and Hana Harbor.

Resource gathering patterns are also influenced by ho'ailona or spiritual signs in natural phenomena. Ke'anae-Wailuanui residents stay alert to the direction and patterns of clouds, winds, rain, the flight of birds, rainfall and all natural elements to inform them about where the ideal place is to gather on any given day. They also keep track of the moon phases and the effect

on the shifts in the tides. Ancestral knowledge of the interpretation of place names in the district also informs Hawaiians about the special features or qualities of that particular area for subsistence and cultural use.

Q. Is this a traditional pattern of subsistence activity?

A. Traditional factors shape the pattern, nature and purpose of the ongoing subsistence fishing, gathering, farming and hunting activities. These include family and ancestral connections to particular features of the landscape; the distribution of water, access; the type of resource to be obtained; the life cycle of that resource; the diet and feeding habits of fauna; the weather and seasonal changes; and ho'ailona. The subsistence activities are also guided by traditional values and customs which include but are not limited to the following:

1. Only take what is needed.
2. Don't waste natural resources.
3. Gather according to the life cycle of the resources. Allow the resources to reproduce. Don't fish during their spawning seasons.
4. Alternate areas to gather, fish and hunt. Don't keep going back to the same place. Allow the resource to replenish itself.
5. If an area has a declining resource, observe a kapu on harvesting until it comes back. Replant if appropriate.
6. Resources are always abundant and accessible to those who possess the knowledge about their location and have the skill to obtain them. There is no need to overuse a more accessible area.
7. Respect and protect the knowledge which has been passed down intergenerationally, from one generation to the next. Do not carelessly give it away to outsiders.
8. Respect each other's areas. Families in Ke'anae-Waiuanui usually fish, hunt, and gather in the areas traditionally used by their ancestors. If they go into an area outside their own for some specific purpose, they usually go with people from that area.
9. Throughout the expedition keep focused on the purpose and goal for which you set out to fish, hunt, or gather.
10. Be aware of the natural elements and stay alert to natural signs, e.g. falling boulders as a sign of flash flooding.
11. Share what is gathered with family and neighbors.

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12. Take care of the kupuna who passed on the knowledge and experience of what to do and are now too old to go out on their own.

13. Don't talk openly about plans for going out to subsistence hunt, gather, or fish

14. Respect the resources. Respect the spirits of the land, forest, ocean. Don't get loud and boisterous.

15. Respect family 'aumakua. Don't gather the resources sacred to them.

Q. To what extent, if any, does taro cultivation relate to the traditional and customary gathering of 'o'opu, 'opae, and hihiwai?

A. These native aquatic marine species and taro rely upon pristine, clear, cold, free running streams that flow year round. All of the great historical taro growing areas of Hawai'i rely on pristine streams where native aquatic species thrive - Ke'anae-Waiuanui, Kahaakuloa on Maui; Hanalei on Kaula'i; Waipi'o on Hawaii, the windward valleys of Moloka'i. 'O'opu, 'opae and hihiwai have been a part of the traditional diet of taro farmers in these areas.

Q. Were you able to determine the degree to which traditional and customary gathering of 'o'opu, 'opae, and hihiwai in Waiuanui has changed since the 1890's?

A. Aunty Helen Nakamelua who was 83 in 1994 was born in 1911 and described how she used to go out and gather 'opae with her grandmother who would have been born and learned how to gather 'opae before the 1890's:

And I used to go along with my grandma, with a five gallon can, you know those tall ones, and I pack some wood, and I pack salt, so that whenever my grandma goes with the upena net, do you have an idea what the upena net looks like and they have a little bag there? Some of the bags are small, but she used to have these long bags, and then she cleans that where I am, she takes that out, we clean it and we cook it in this can. Salt it and cook it there, the wood that I take we cook it. And after it's cooked, I begin spreading it on a table oil cloth and a mat I used to pack along and then she leaves me there I attend that 'opae while it's drying. By the time she comes back here, it's partly dried, I gather that 'opae again, and separate it in another bag, because that's partly dried, and we continue on, she gets another bag to do the same thing, cook, so that by the time she ends up her day, most of the 'opae, except the last one she has is partly half dried already. Do you know how the upena look like? I show you, cause I have made some for me, because I use it.

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Although Aunt Helen continues to gather 'opae, it is not as plentiful as it had been in her youth. An indicator of the decline of 'opae is the passage of a state law in 1993 which prohibits its commercial sale due to its scarcity.

Q. Do you have an opinion as to the importance of the Ke'anae-Waiuanui region to Hawaiian cultural history?

A. Yes.

Q. What is that opinion?

A. The most distinctive historic association of the Ke'anae-Waiuanui landscape is its unbroken relationship to the foundations of Hawaiian culture through the traditional cultivation of taro, the major component of the cultural landscape. The traditional cultural practices region is also significant as a surviving enclave of Hawaiian subsistence, cultural, and spiritual beliefs, customs, and practices. Rural Hawaiian communities like Ke'anae-Waiuanui are cultural kipuka - places where Hawaiians have maintained a close relationship to the land through their livelihoods and customs - that play a vital role in the survival of Hawaiian culture as a whole. There is a growing recognition that protection of the natural resources and the integrity of the lifestyle and livelihoods within rural districts is essential for the perpetuation of Hawaiian culture. However, the survival of these cultural kipuka and the traditions and customs related thereto are continually eroded by an ever increasing lack of water.

Q. Do you have an opinion on how significant the Ke'anae-Waiuanui region is as judged against federal criteria for cultural significance?

A. Yes.

Q. What is that opinion?

A. The Ke'anae and Waiuanui cultural landscape is significant under the four National Register criteria of significance and an additional Hawai'i state criterion. Under Criterion A, Ke'anae-Waiuanui is associated with significant events affecting broad patterns of history. The evolution of Hawaiian culture and society in the Hawaiian Islands over the past 1500 years was sustained by highly developed and well-managed systems of wetland taro cultivation. Ke'anae-Waiuanui is an extraordinary example of a highly developed historic Hawaiian wetland irrigation system which sustained the complex social organization and sophisticated customs and practices of the Native Hawaiian culture. The cultural landscape also includes the historic network of irrigation ditches and tunnels which were developed in the late

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17

nineteenth and early twentieth centuries. The last completed segment of the Hana Belt Road is also in this cultural landscape.

Under Criterion B, Ke'anae-Waiuanui is associated with events which involved famous people such as the landing of Umi-a-Liloa's war canoes during his 14th century battle over Hana against Ho'olae-Makua and the staging of the battles between Kalaniopu'u and Kahakili in the 18th century.

Under Criterion C, Ke'anae-Waiuanui epitomizes the quality and integrity of a historic landscape centered around the historic wetland cultivation of taro. In addition, the 2 churches, its public school facility and the Waikani Bridge are also excellent examples of each of these types of historic architecture.

Under Criterion D, Ke'anae-Waiuanui provides excellent potential to yield information important in the prehistory and history on the origins, chronology and development of Hawaiian taro cultivation, as well as the complex social structures which both sustained and perpetuated by this kind of agricultural technology.

Q. To what extent are those that now gather and attempt to farm taro in the valley genealogically linked to the Hawaiians that lived in the valley during the 1800's?

A. The informants that I interviewed said that they lived and farmed lands that their ancestors had lived on and farmed in the 1800's.

Q. Do you have any opinion based on your training and education of whether there is any correlation historically between the amount of traditional gathering from the streams and the amount of fish and limu that could be taken from the coastal areas of the valley and the sea for subsistence purposes?

A. Yes.

Q. What is that opinion?

A. The abundance of aquatic and marine resources are dependent upon the pristine, clean, free flowing year round streams flowing into the ocean. The bays where the fresh water mixes into the ocean water are important spawning grounds for the fish. Moki Day, a Hawaiian fisherman from the area, described how the bays are important breeding grounds which deserve protection:

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You can consider all the shoreline area between here and Kaupo as breeding grounds for all these shoreline species of fish. They come into our rivers here because we have the fresh water, and they come in here and breed here and lay their eggs here.

According to the late Uncle Harry Mitchell, who had been a long-time resident of the area, the streams and the ocean together provided the breeding ground for 'o'opu. He described the lifecycle of the 'o'opu as follows:

The first heavy rains usually arrived in August or September, carrying the 'o'opu to the ocean where they spawned. Once they laid their eggs, the mother 'o'opu died. The baby 'o'opu, called hinano, would hatch and develop in the salt water from August/September through November. The salt water made them strong enough to climb up the stream where they would mature. About November, the hinano began to make their way up stream to the large fresh water pools in the mountains. Their migration upstream coincided with the arrival of the migratory birds from the north which fed upon the hinano as they made their perilous journey to the uplands.

Q. Do you have an opinion on how significant the diversion of stream water from Wailuani Valley by EMI has been on the ability of its residents to continue their tradition of taro growing and gathering from the streams and coastal areas?

A. Yes.

Q. What is that opinion?

A. The diversion of streams in the Ko'olau watershed, via the East Maui Irrigation (EMI) Company system, has reduced the surface water flow in the region mauka of the cultural landscape. The system currently provides most of the irrigation water for central Maui's large-scale agriculture and is the main source for county water supplies to upcountry Maui residents and farmers.

While the degree of reduction has not been quantified, the volumes of water carried by the ditch are significant and impact on the stream ecology in Ke'anae-Wailuani is probable. Native endemic and indigenous species such as 'o'opu and 'opae and 'ohiwi are likely to have been affected within the last few generations, with consequent impact on the traditional gathering practices that are part of the local lifestyle. During interviews for the study, some residents expressed concern over the impact of the diversion of water by EMI Co. on the ecology of the region. They also questioned the effects that the EMI diversion may have on the temperature and consistent flow of stream water to taro lands.

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Q. Do you have an opinion on what positive steps should be taken to promote the perpetuation of the cultural landscape of Ke'anae-Wailuani?

A. Yes.

Q. What is that opinion?

A. Provide incentives for taro growing, such as tax relief for parcels used for taro farming. Provide support to the community to maintain the water sources and the 'auwai, such as state and county support to clean and maintain the agricultural irrigation systems. Maintain the Pi'ilani Trail along the shoreline as well as the trails and unimproved roads running makai from the highway to the beach, and the trails and unimproved roads running mauka into the forest reserve should be maintained and their significance in the cultural landscape assessed. The watershed's forest should be protected. Access for cultural, subsistence, and spiritual customs and practices should be afforded to those residents of the community who will maintain traditions of respect and stewardship of the land and water resources. Develop the Ke'anae Arboretum to offer interpretation and education, with emphasis on practical and hands-on experience. Improve lookout points with better paving, approach signage, interpretive signage, landscaping and benches. Preserve and maintain the 2 large heiau and other cultural sites.

Document and protect historic taro terraces. Perpetuate significant aspects of the cultural landscape without hampering changes beneficial to the community and its residents.

Q. Are you familiar with crucial definitions of traditional land divisions used by Hawaiians?

A. Yes.

Q. What are the land divisions that were common in delineating the various land uses made by Hawaiians?

A. The traditional Hawaiian land divisions according to Malo (1951:16-18) consist of the following district, subdistricts, land divisions and land parcels:

- island. *Moku-puni* (cut off surrounded).
- Large District. *Apana* (pieces) or *Moku-o-loko* (interior division), e.g. Hana.
- Sections: *Okana* or *Kalana*, e.g. Honua'ula. [*Okana* is also a district or sub-district and usually comprising several *ahupua'a*; *Kalana* is smaller than a district (Pukui & Elbert 1971: 113, 258).]
- Subsection within *Okana: Poko*. [Dividing a District, or *ahupua'a* into two or more sections, e.g.: Hamakua Poko; Hamakua Loa]

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- *Ahupua`a*. (running *mauka-makai*, from the mountains to the sea) [a sub-district land division, some contain a few hundred acres, others 10,000 acres, or more]
- *ʻIli-ʻaina* [*ʻIli-ʻaina*, a sub-division of an *ahupua`a*; *ʻili lele*, a discontinuous *ʻili-ʻaina*, consisting of two or more parcels of land in the same *ahupua`a* and having the same name]
- *Mo`o-ʻaina* [*mo`o-ʻaina* is a cultivated garden within an *ʻili-ʻaina* or *ʻili-lele*]
- *Pauka-ʻaina* [joints of lands] [*pauka-ʻaina* is a land section smaller than a *mo`o-ʻaina*]
- *Kihapai* [patches or farms] [dry land garden]
- *Ko`ele* [*ko`ele*, a cultivated garden, the produce of which went to the *ali`i* of the district or island]
- *Hakuone* (land cultivated by `ohana with crops going to *kono`iki*) [produce of which went to chief of the *ahupua`a*]
- *Kuakua* (broad *kuaihana* or *kuaihana*, an embankment) [embankments between wet taro gardens, usually cultivated] (Malo 1951: 16-18). Information in brackets [] added.

¹ Harry Mitchell, April 22, 1988.

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DEPARTMENT OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

NATIVE HAWAIIAN LEGAL CORPORATION
1164 Bishop Street, Suite 1205
Honolulu, Hawaii, 96813
Telephone: 521-2302

ALAN T. MURAKAMI 2285
MOSES K. N. HAJIA III 6277

Attorneys for Petitioners
Na Moku Aupuni O Ko`olau Hui,
Beatrice Kekahuna and Marjorie Wallert

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of the Contested Case Hearing) DLNR FILE NO. 01-05-MA
Regarding Water Licenses at Honomalu,)
Keanae, Nahiku, and Huelo, Maui) PETITIONERS' DIRECT TESTIMONY OF
) KEPÁ MALY; CERTIFICATE OF
) SERVICE)
))
) Hearing)
) Date: October 10, 2005)
) Time: 9:00 a.m.)
) Officer: Hon. E. John McConnell, Esq.)

PETITIONERS' DIRECT
TESTIMONY OF KEPÁ MALY

- Q. Please state your name for the record.
A. KEPÁ MALY.
Q. What is your occupation?
A. I am a cultural historian. I am attaching my resume as Exhibit "A". I am self-employed and do contract work for a variety of parties needing research done in the field of Hawaiian history, and traditional and customary practices.
Q. What is your educational background?

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A. I graduated from Lānaʻi High and Elementary School in 1972. Prior to which I began receiving home instruction in Hawaiian language and history from elder members of the Kaopuiki family. In 1975, I participated in a formal ʻimiki (graduation) as a Hoʻopaʻa Kumu Hula (Master of Chant and Dance) under the instruction of Maʻiki Aiu-Lake and elder Hawaiian masters. As a result of my upbringing and training, I speak Hawaiian fluently and have applied my knowledge in the pursuit of doing research on cultural landscapes across Hawaiʻi.

Q. How many of these studies have you conducted over the years?

A. I have done over 300 technical reports in association with archaeological studies and cultural impact assessment studies I've conducted on my own.

Q. Have you been qualified as an expert in cultural history before?

A. Yes, Judge Ibarra qualified me as an expert in cultural history during proceedings before the Third Circuit Court in April 2002. I subsequently testified and rendered expert opinion testimony before the court on matters involving the cultural value attached to the Alaloa, or the long trail that encircles Hawaiʻi island, and to ancient burials located on the "Hokulia" property in South Kona.

Q. What are cultural landscapes?

A. Cultural landscapes are the result of an interpretation of what is seen on ground in context of traditional and customary practices and stories handed down over generations. These oral histories demonstrate how moʻolelo have been handed down from generation to generation in the Hawaiian society. I collect these oral traditions in a way that I hope has been sensitive to Hawaiian cultural tradition, with the hope of creating a historic review process that can link the reader to antiquity and establishes the foundation for any value given to cultural properties considered for preservation.

Q. Have you conducted a study of this sort for Maui Hikina (East Maui)?

A. Yes, at the request of Garrett Hew, Manager of East Maui Irrigation Company, Ltd. (EMI), my company, Kumu Pono Associates conducted a two-phased study of cultural-historical resources in the lands of Hāmākua Poko, Hāmākua Loa and Koʻolau, in Maui Hikina (East Maui), an area consisting of 72 ahupuaʻa. I completed that study on January 17, 2001.

This study was commissioned in conjunction with the Water License Application of EMI to the state Board of Land and Natural Resources (BLNR). Attached as Exhibit "B" is a copy of the report I produced.

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Q. What was the scope of your study?

A. The study focused on the larger cultural and historical landscape of Maui Hikina seeking to understand the wide range of issues related to native Hawaiian and historic practices that are associated with water and its usage—including uses that have been handed down from ancient times and uses that were both protected and permitted in 1876 by King David Kalākaua and later by the Republic, Territory and State of Hawaiʻi. Thus, the study area included 72 ahupuaʻa (native land divisions that extend from ocean fisheries to the mountains) that form the moku o loko (districts) of Hāmākua Poko, Hāmākua Loa, and Koʻolau in Maui Hikina. These lands comprise a large portion of the rich water producing forest of the East Maui Watershed that collects rain from the koʻolau or windward weather systems prevailing on the state.

Q. Please describe how you conducted this study.

A. The study consisted of two phases. The first phase included detailed research of historical records in public and private collections of Maui Hikina, detailing the history, geography, land uses, cultural traditions, historic properties, trails, water use, and land tenure of the area. The second phase included the oral histories I collected through interviews I conducted with 16 individuals known to be familiar with the cultural and natural landscape, and the history of land use, in Maui Hikina. I listed the interviewees on page 17 of Volume II of my report I submitted to EMI.

Q. What were the themes in the responses to your interviews?

A. On page 8 of Volume II of the study, I summarize the central points. First, there seemed to be a general belief shared that water has a great traditional-cultural significance in Hawaiian beliefs and cultural practices. Wai (water) is integral to all aspects of Hawaiian culture and life; it connects the life and well being of Hawaiians to the land and the flow of water. The beliefs, traditions, customs and practices of the Hawaiian people reflect the flow of water.

Secondly, the health of the land—its forests, streams, and marine fisheries—is integral to the health of the people and to the continuation of traditional and customary practices. For the people of the windward side of Maui, the flow of water from mountain to sea is integral to the health of the land. A healthy land makes for healthy people, and healthy people have the ability to sustain themselves. In this mindset, water flowing from mountain to sea was not "wasted", but a sign of a healthy system.

Third, interviewees observed that the plant makeup of forests have changed (even in the

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last 15 years).

Fourth, the Alexander and Baldwin/East Maui Irrigation Company (A&B/EMI) ditch and tunnel systems have operated in some form since King David Kalākaua first issued a water license to it in 1876. However, apparently within the lifetimes of most of those interviewed, interviewees have perceived that the output of stream water from the watershed has diminished. At the same time, the demands of a growing population and agriculture, both commercial and traditional, have increased.

Fifth, the demand for water is of high concern to all. Interviewees observed that 40 years or more ago, there were primarily only native families living below the ditch intakes, with the right to access the remaining water in the kahawai (stream). However, that flow has been significantly diminished since the pre-ditch era. With new residents now residing at various elevations near kahawai, many have tapped into the still remaining water source, either legally or illegally. The result is that few Native Hawaiian families, most residing on Kuleana and Royal Patent Grants, with rights of residency often predating the 1850's, have less or no water with which to sustain their way of life, for domestic uses and irrigation of lo'i kalo. All elderly interviewees observed that water that used to flow mauka-makai in all of the streams in the Maui Hikina study area 50 and more years ago, hasn't do so in recent times.

Sixth, the relationship between A&B/EMI and the community has evolved. Fifty years ago, there seemed to be good relations generally. Before, families worked to keep the stream ways clean and the water flowed to the 'auwai and lo'i kalo, and ultimately to the shore. The relationship and the water flow has changed. Diminished water flow has led to the "warming" of stream water, which trickle over rocks heated by the sun. The resulting warmer water kills native stream fish, such as 'o'opu, 'ōpae, and pūpū, and causes kalo to rot in the field. An adequate level of water flow needs to be restored to the kahawai, to enable restoration of both cultural and natural systems.

Finally, some interviewees expressed concerns about how the ditch-tunnel system is used. New methods of transferring water are needed to ensure maximum retention of water that is diverted or drawn off and transported to other regions. Also, the present practice of "throwing" water out of the system is detrimental and has a negative impact. When there are periods of heavy rainfall "throwing" water out amplifies the erosion of the stream beds; during short periods, it causes damage to and can destroy features such as 'auwai (irrigation channels),

lo'i kalo and kuāma (taro pond fields and banks), and kūmano (in-stream water catchments or small dams). These features were made to manage and support the native subsistence agricultural system.

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

Executed at Hilo, Hawaii, on October 7, 2005.


Kepā Maly

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was duly served upon the following parties by hand-delivery on October 11, 2005:

The Honorable E. John McConnell (Ret.)
33 N. Market Street, Suite 200
Wailuku, Hawaii 96793

Elijah Yip, Esq.
David Schulmeister, Esq.
Cades Schutte
1000 Bishop Street, 10th Floor
Honolulu, Hawaii 96813

Isaac Hall, Esq.
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Robert H. Thomas, Esq.
1001 Bishop Street
Pauahi Tower, Suite 1600
Honolulu, Hawaii 96813

Brian T. Moto, Esq.
Jane Lovell, Esq.
Deputy Corporation Counsel
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Richard Kiefer, Esq.
444 Hana Hwy, Suite 204
Kahului, Hawaii 96732

Linda L. Chow, Esq.
Deputy Attorney General
465 S. King Street, Room 300
Honolulu, Hawaii 96813

APPENDIX “D”

DATED: Honolulu, Hawai'i, October 12, 2005.

Mary M. Kopyanski, Legal Coun.
for ALAN T. MURAKAMI
MOSES K. N. HAIA III
Attorneys for Petitioners
Na Moku Aupuni o Ko'olau Hui, et al.

BOARD OF LAND AND NATL. RESOURCES
STATE OF HAWAII
In the Matter of Contested JULIAN R. OLEI-06-MA
of the Hawaiian Islands (Mauka, Naniwa, and)
Hiale, Maui

CONTESTED CASE HEARING RECEIVED
Held on November 15, 2006, commencing at 9:00 a.m. at the
Hale Koa Community Center, Hiale, Hawaii

2005 NOV 29 A 11:11

BEFORE JEAN MARIE McMANUS
Hawaii CBR #766, CA CBR #3119

1 hearing will be held on the order. MR. SCHULMEISTER: The
2 I'm informed all present except for Mr. Freedman whom
3 MR. SCHULMEISTER: He advised us before he
4 left yesterday he would not be coming today.
5 MR. SCHULMEISTER: Actually what was
6 going to be the order? MR. SCHULMEISTER: Actually what was
7 going to be the order? MR. SCHULMEISTER: Actually what was
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23 going to be the order? MR. SCHULMEISTER: Actually what was
24 going to be the order? MR. SCHULMEISTER: Actually what was
25 going to be the order? MR. SCHULMEISTER: Actually what was

157
1 any given day?
2 A. There's a report in cultivated areas that
3 does detail the number of acres. And that was the
4 basis for the requirement for water for that ditch.
5 So that would take into account the acres that were
6 receiving water.
7 Q. But so you're saying you didn't commit to
8 whether or not you can say that percentage of
9 either irrigated lands was on lands not being irrigated
10 at any given time?
11 A. That total would vary from day-to-day.
12 Q. Do you have any idea of what the range of that
13 variation is in terms of the percentage of lands being
14 irrigated or not being irrigated?
15 A. I would have to go back and review the
16 records. I don't know the right at this moment.
17 Q. And you have no idea --
18 A. No.
19 Q. -- whether it was ten percent, 25 percent?
20 A. If you want a range, I can hazard a guess of
21 Q. Based on your best estimate and years of
22 experience?
23 A. I would say it's less than ten percent.
24 B. I would say it's more than ten percent.
25 A. I couldn't tell you exactly.

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1 Q. What I don't understand by that statement, I
2 guess, is if it's equal to evaporation and
3 transpiration, are you left with nothing for the
4 actual plant to absorb?
5 A. The transpiration by definition is what the
6 plant is -- water is going through the plant.
7 Q. It's going and leaving the plant.
8 A. Correct.
9 Q. If you have any water left over for the
10 plant, if you're just irrigating to the extent that
11 there's evaporation and transpiration?
12 A. You're irrigating to provide the soil
13 moisture reservoir for the plant to grow healthy
14 through whatever evaporation and transpiration is
15 going on. So it's a combination of soil evaporation
16 and transpiration through the plant.
17 Q. And that's the water that whatever
18 the moisture content of the soil is at the time, is
19 sufficient for the plant to absorb whatever needs it
20 has for water?
21 A. It has to be maintained at a certain soil
22 percentage level, soil moisture level. In order to
23 maintain good growth crop in the growth of the plant.
24 Q. And, Mr. Jakeway, do you have any -- are you
25 provided with any information as to what authority,

1 HEARINGS OFFICER: HONORABLE E. JOHN MCCONNELL
2 Honolulu, Hawaii 96813, 200
3 BLNR ARROYO, LINDA CHOW, ESQ.
4 448 King Street, Room 200
5 Honolulu, Hawaii 96813
6 For EMI and GLENN YIP, ESQ. SCHULMEISTER, ESQ.
7 1005 Bimbi, Suite 200, 1500
8 Honolulu, Hawaii 96813
9 For Maui Land & Development, Inc.
10 440 Kalia Road, Suite 204
11 Honolulu, Hawaii 96813
12 For County of Maui
13 JANE E. LOWELL, ESQ.
14 200 S. High Street, Suite 200
15 Honolulu, Hawaii 96813
16 For Maui Telephone, ISAAC HALL, ESQ.
17 2007 West Street, Suite 200
18 Honolulu, Hawaii 96813
19 For the Honorable Alan T. MURAKAMI, ESQ.
20 Office of Maui, 1540 Kalia Road, Suite 200
21 Honolulu, Hawaii 96813
22
23
24
25

1 thing we were going to do this morning.
2 I brought you the testimony that Mr. You said you
3 that you were going to take your other two witnesses
4 and you thought it would be the next day. You didn't
5 say you were going to take them out of order.
6 HEARINGS OFFICER JUDGE MCCONNELL: How
7 long is Mr. How going to be?
8 HEARINGS OFFICER JUDGE MCCONNELL: I'm
9 let you take him out of order. You don't have any
10 direct examination?
11 MR. SCHULMEISTER: No, just putting in the
12 declaration.
13 MR. HALL: How many of these witnesses are
14 coming out of order? I think the three that's more
15 than she.
16 HEARINGS OFFICER JUDGE MCCONNELL: That's
17 it, I hope.
18 MR. SCHULMEISTER: Well, I was planning to
19 take Mr. Jakeway as well, although I think he's
20 definitely out of order.
21 HEARINGS OFFICER JUDGE MCCONNELL: We will
22 just do one.
23
24
25

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1 Q. So if, in fact, it would be no more than ten
2 percent being irrigated: Is that right?
3 A. I would think that would be generally true,
4 yes.
5 Q. So based on your testimony, I would -- is it
6 true or not true then at any given time typically HC&S
7 was irrigating 27,000 acres of land per day -- I mean
8 every day?
9 A. Based on that math, yes, that would be close
10 to that.
11 Q. So if that's true, then if we use generally a
12 ten percent figure, then the figures I gave you
13 earlier as to the gallons per day per acre would have
14 to be increased by approximately ten percent to show
15 what amount of water was being applied to those lands
16 day per acre basis.
17 A. Yes, that would be driven by whatever acres
18 are requiring irrigation water.
19 Q. So that would be more in the neighborhood of
20 5,000 gallons approximately per day per acre to 9,000
21 --10,000 gallons per day per acre, thereabouts. Is
22 that correct? Right to that math, yes.
23 A. Yes.
24 Q. So is it also true then -- let me ask this.

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1 legal or otherwise. HC&S has with respect to being
2 able to take water from the East Maui Irrigation Ditch
3 system without regard for the water needs of taro
4 farmers in East Maui?
5 MR. SCHULMEISTER: Beyond the scope of
6 direct. Calls for legal conclusion.
7 HEARINGS OFFICER JUDGE MCCONNELL: I'll
8 sustain that.
9 MR. MURAKAMI: That's all I have.
10 HEARINGS OFFICER JUDGE MCCONNELL: I just
11 wanted to get a general idea. Irrigation of sugar.
12 obviously there's a great variation in seasons. But
13 let's take the dry seasons.
14 Is a particular field being irrigated
15 24-hours-a-day? In other words, the water is turned
16 on.
17 THE WITNESS: Normally the way the
18 irrigation is planned is by irrigation rounds. So a
19 field will get a round that lasts on average 48 hours.
20 And that may be good for one week. And then during
21 that time the soil moisture will be depleted, you have
22 to come back and irrigate that field again. And that
23 varies depending on the time of year.
24 HEARINGS OFFICER JUDGE MCCONNELL: Right
25 so in the winter you would have to do that less often.

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25 NE MOHA'S BUILDING No. 151

1 G. STEPHEN HOLIDAY
2 was called as a witness by and on behalf of A&S and
3 EMI, was sworn to tell the truth, was examined and
4 testified as follows:
5 HEARINGS OFFICER JUDGE MCCONNELL: State
6 your name, please, for the record.
7 THE WITNESS: G. Stephen Holiday.
8 HEARINGS OFFICER JUDGE MCCONNELL: P-47
9 BY MR. SCHULMEISTER:
10 Q. Mr. Holiday, can you state your employer?
11 A. My employer is Alexander A. Baldwin.
12 Q. And your position?
13 A. I am the general manager of Hawaiian Commercial &
14 Sugar Company.
15 Q. You have in front of you a copy of a written
16 declaration purports to be signed by you on July 28th,
17 2005, is that correct?
18 A. Correct.
19 Q. Is that a true and correct copy of your
20 written testimony in this case?
21 A. Yes.
22 Q. Is that testimony true and correct to the
23 best of your belief?
24 A. Yes.
25

159
1 As I understand your testimony, you need
2 to irrigate the lands of HC&S based on the rate of
3 evaporation and transpiration that you experience in
4 those fields?
5 A. That is correct. We try to keep up with
6 evaporation rate.
7 Q. At this point then, Mr. Jakeway, who has
8 understand your testimony, is the same rate by which
9 water is evaporating or transpiring -- transpiration
10 is occurring from the fields that are affected by your
11 irrigation?
12 A. That is correct.
13 Q. At this point then, Mr. Jakeway, who has
14 taken charge of the actual irrigation operations of
15 HC&S, is that correct?
16 A. You want a name?
17 Q. Yes.
18 A. Mr. Rodney Chin.
19 Q. So in essence was your position a new
20 position, or one which was split off from your old
21 position?
22 A. And Mr. Chin took your position as
23 the person in charge of irrigation operations?
24 A. That is correct.
25

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1 THE WITNESS: During the cooler winter
2 months when the evapotranspiration rate is lower,
3 HEARINGS OFFICER JUDGE MCCONNELL: Okay
4 Any other questions?
5 MR. MURAKAMI: Can I follow up with that
6 line of questioning?
7 BY MR. MURAKAMI: FURTHER CROSS-EXAMINATION
8 Q. As I understood your earlier testimony you
9 said that at all times 27,000 acres were being
10 irrigated, correct?
11 A. No, I did not say that. Not all 27,000 acres
12 were being irrigated.
13 Q. For the lands for which you're irrigating,
14 excluding the lands that are not being irrigated, are
15 other forms of operations where there is no pinning,
16 how many acres are being irrigated?
17 A. I stand corrected, yes, 27,000 of the 30,000,
18 if the ten percent figure is used for the fallow.
19 Q. You said that 27,000 acres are being
20 irrigated, correct?
21 A. Well, they're not all being irrigated.
22 Q. Different than the answer you gave me
23 earlier. My question was, how many acres were
24 being irrigated outside of the
25

163
1 cultivation and other operations where there are no
2 plants in it.
3 MR. SCHULMEISTER: When you say being
4 irrigated, you mean water is being applied?
5 MR. MURAKAMI: What else would it mean?
6 MS. LOVELL: I thought irrigation
7 schedules --
8 MR. MURAKAMI: I didn't say irrigation
9 schedule.
10 HEARINGS OFFICER JUDGE MCCONNELL: Well,
11 but it's obvious, Mr. Murakami. I mean, you know, you
12 don't have the water on all the time.
13 MR. MURAKAMI: That's not true for faro,
14 why should it not be true for sugarcane?
15 HEARINGS OFFICER JUDGE MCCONNELL: It is
16 true for faro.
17 MR. MURAKAMI: I'm sorry?
18 HEARINGS OFFICER JUDGE MCCONNELL: It is
19 true for faro, but anyway faro would have no
20 application. The question is how do you define
21 irrigation. What I understand the witness to be
22 saying is that irrigation means that they are
23 providing water as-needed when measured by the soil
24 moisture. MR. MURAKAMI: Can I ask him a different
25 question?

164
1 way?
2 HEARINGS OFFICER JUDGE MCCONNELL: Okay.
3 Q. MR. MURAKAMI: During the winter months, what
4 is water being applied?
5 MR. SCHULMEISTER: You mean to a
6 particular acre?
7 MR. MURAKAMI: All 20,000 acres.
8 MR. SCHULMEISTER: That assumes they're
9 all being irrigated at the same time.
10 MR. MURAKAMI: I'm asking. Half of the
11 acreage? Three-quarters of the acreage?
12 A. Can I use my calculator?
13 Q. Yes.
14 A. You make the assumption of two days per week
15 and each irrigation round last two days, it would be
16 six days a week.
17 Q. What?
18 A. Of that 20,000 acres that would be receiving
19 irrigation water, that would be irrigated during that
20 time.
21 Q. Basically -- wait, 2800, you said?
22 A. 28 percent of that 27,000.
23 Q. And 26 percent of 27,000 acres is how many
24 acres?
25 A. That's about 7,560 acres.

165
1 A. That's about 7,560 acres.
2 Q. If you took 134 million gallons per day
3 divided by that figure, what would you get?
4 A. That 134 million gallons a day represents an
5 average.
6 Q. Fine. That's during the wet periods, I'm
7 asking you during the wet period, is it for 7,560
8 acres being irrigated at any given moment?
9 MR. SCHULMEISTER: Let me object. You
10 take a day, now you're transporting it to a moment? I
11 think it's lack of foundation. That doesn't make any
12 sense.
13 MR. MURAKAMI: I think it makes perfect
14 sense and I think it's correct.
15 HEARINGS OFFICER JUDGE MCCONNELL: I won't
16 comment on whether it makes sense or not, but I'll
17 allow it.
18 MR. MURAKAMI: Thank you.
19 A. I come up with approximate number of about
20 18,000 gallons.
21 Q. Per day per acre?
22 A. Per day per acre.
23 Q. So is my understanding correct that that on the

166
1 average during wet winter months, you're applying
2 at any given moment when there is a cycle of
3 irrigation over the lands, over 18,000
4 gallons per day per acre?
5 A. According to that math, yes, for two days out
6 of seven days a week, so you have to average that over
7 the entire seven days.
8 Q. I understand that. But if you go past the
9 two days, you're applying irrigation water to another
10 set of lands or another 7,560 acres on the average?
11 A. On average, yes.
12 Q. And you rotate that after that two days?
13 A. Yeah.
14 Q. So every two-day cycle you're applying
15 approximately the same amount of water on average to
16 7,560 acres.
17 MR. SCHULMEISTER: To a different acre --
18 MR. MURAKAMI: I'm sorry, is it argument
19 or is there objection?
20 MR. SCHULMEISTER: The objection is lacks
21 foundation, assumes facts not in evidence.
22 MR. MURAKAMI: I'm using all of his facts.
23 I'm using all of his evidence.
24 HEARINGS OFFICER JUDGE MCCONNELL:
25 Clarify, rephrase.

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1 Q. MR. MURAKAMI: So your testimony is there is
2 a rotation schedule for irrigation, correct?
3 A. Correct.
4 Q. And that takes about two days at a time,
5 correct?
6 A. On average, yeah.
7 Q. I'm talking about the winter months now.
8 HEARINGS OFFICER JUDGE MCCONNELL: What
9 peak.
10 Q. And you're saying that in any given average
11 cycle approximately 7,560 acres are being actually
12 irrigated with water during that two-day cycle,
13 correct?
14 A. If there was rainfall, then there wouldn't be
15 any irrigation rounds, but this is on average.
16 Q. But you've already assumed some differences
17 in rainfall based on the peak and off-peak months,
18 correct? We're talking about the wet winter months,
19 correct?
20 A. Yeah, that's correct.
21 Q. So if you're applying water on the ground to
22 7,560 acres at a time approximately on the average,
23 and you're applying 134 million gallons a day on the
24 average to that acreage, then you are applying

168
1 18,000 -- over 18,000 gallons per day per acre,
2 correct? For that two day irrigation rounds, that is
3 correct.
4 A. Then the next two days you'll be doing the
5 same thing?
6 A. For another area, yes.
7 Q. The next two days after that, the same thing?
8 A. Yes, another area.
9 Q. Yes, another area.
10 throughout the whole off-peak period, correct?
11 A. It's being driven also by the soil moisture
12 program. So it requires irrigation --
13 depending on need?
14 A. Correct.
15 Q. But we're talking on the average now,
16 correct?
17 A. Yes.
18 Q. So throughout the wet winter periods, you're
19 applying over 18,000 gallons per day per acre?
20 A. No. I wouldn't characterize that. We don't
21 do that continuously throughout the winter period.
22 Q. I'm not asking you to do it continuously. I
23 said on the average you're applying 18,000 gallons per

169
1 day per acre during the wet winter months, is that
2 correct?
3 Q. And if you moved on to the dry months, you
4 would be applying over 36, maybe 37 gallons per day
5 per acre during the dry months, peak months, correct?
6 It's double, basically double on the average. Not on
7 every given day necessarily, but on the average
8 throughout the dry period of irrigation, correct?
9 A. Yes, on average.
10 Q. You mean on the average
11 day of the water being irrigated?
12 MR. MURAKAMI: An average peak period day
13 throughout the peak season, you would be applying
14 37,000-plus gallons per day per acre. That's an
15 incomplete hypothetical.
16 MR. SCHULMEISTER: I can't respond to that not
17 knowing all the facts.
18 MS. LOVELL: Reservoirs and tanks come to
19 mind.
20 MR. MURAKAMI: Your Honor, that has
21 nothing to do with it. I'm applying his figures to
22 what he says he applies to the ground. It has nothing
23 to do with tanks and reservoirs. It probably
24 incorporates the notion of tanks and reservoirs. It's

170
1 not my math.
2 HEARINGS OFFICER JUDGE MCCONNELL: Sound
3 like it to you.
4 MR. MURAKAMI: I'd like to know, I'm
5 asking you. If my math is wrong, this is an important
6 point. I want you to correct it.
7 A. If that's what the water requirements are
8 required based on evapotranspiration requirements and
9 if that's what the math works out to be, that's
10 correct. It's just a different way of presenting it,
11 right?
12 Q. Another way of looking at the same problem,
13 A. Yeah.
14 MR. MURAKAMI: Thank you. That's all I
15 have.
16 HEARINGS OFFICER JUDGE MCCONNELL: Any
17 questions?
18 MS. LOVELL: I have a couple of questions.
19 Q. I'm Jane Lovell, one of the county's lawyers.
20 BY MS. LOVELL: CROSS-EXAMINATION
21 Q. When you calculate water needs for the
22 30,000 acres that are available for cultivation, do
23 you also take into account water storage needs?
24 MR. MURAKAMI: Object, that's vague.

171
1 permit it. THE WITNESS: No, we do not. That's based
2 on what the crop needs, so there is no consideration
3 given to keeping a reservoir full.
4 Q. MS. LOVELL: That's what I was trying to get
5 at.
6 So the 18,000 gallon figure that we just
7 heard, that's based on fields and none of
8 that figure would go into tanks.
9 A. Some of that -- well, if we're dealing with
10 averages here that come from EMI, some of that could
11 go to reservoirs.
12 Q. Could you just explain generally how storage
13 of water in tanks and reservoirs fits into your
14 irrigation system?
15 A. We have several reservoirs that are located
16 throughout our ditch system, so during the high
17 flow when irrigation -- when we have peak irrigation
18 or flows in the ditches, we will store water in our
19 reservoir system and then that water will be used
20 later on for irrigation rounds.
21 So it fair to say that during the wet
22 winter months that we believe and then that
23 water will be drawn upon during the dry months?

172
1 A. It will be drawn upon during the dry periods
2 during the winter seasons, because it's going to be
3 wet and dry periods.
4 MS. LOVELL: Thank you.
5 HEARINGS OFFICER JUDGE MCCONNELL:
6 Anything else?
7 MR. MURAKAMI: Yes.
8 HEARINGS OFFICER JUDGE MCCONNELL: Are you
9 going to keep going with this?
10 MR. MURAKAMI: He's giving inconsistent
11 answers. He just said this figure includes water put
12 in reservoirs, and I asked him earlier if it's water
13 put on the ground. HEARINGS OFFICER JUDGE MCCONNELL: I'll
14 let you ask the question.
15 FURTHER CROSS-EXAMINATION
16 BY MR. MURAKAMI:
17 Q. Let me ask the question. Is Paragraph 9 a
18 figure that you produced for the application of water
19 on the ground as opposed to water on the ground and
20 stored in reservoirs?
21 A. This was a figure that was produced based on
22 the evapotranspiration requirements of a plant, or the
23 sugarcane plant.
24 Q. So doesn't that necessarily mean that the

173
1 water amounts that you stated here is reflective of
2 what you're applying to the ground on the 7500 acres
3 at a time?
4 A. That would be correct.
5 Q. It doesn't include any amounts that you would
6 slip on -- storage in a reservoir? That time that
7 you had stored in a reservoir? That time that
8 stored and then used to supplement or to average out
9 this figure that is presented here in Paragraph 9.
10 I'm not sure this is clear. Either amount,
11 the 134 million gallons per day or the 268 million
12 gallons per day, does any of that water -- is any of
13 that water being used for irrigation in the same
14 fashion that you just described in your earlier
15 testimony?
16 A. The numbers that are talked about in
17 Paragraph 9 refer to the evapotranspiration of the
18 water requirements of the crop typically during those
19 periods. So there could be water in the reservoirs
20 that could be used to provide this need or this
21 average need during those periods.
22 Q. Maybe I'm not making myself clear. But those
23 two figures, 134 million gallons per day and 268
24 million gallons per day, is that water being applied

174
1 to the plant or ground, whichever you want to choose,
2 as opposed to any amounts being diverted for storage
3 in reservoirs?
4 A. On average that would be applied to the
5 plant.
6 Q. Thank you.
7 HEARINGS OFFICER JUDGE MCCONNELL: That's
8 all, thank you very much. Any other witnesses, Mr.
9 Schulmeister?
10 MR. SCHULMEISTER: No.
11 HEARINGS OFFICER JUDGE MCCONNELL: Any
12 rebuttal?
13 MR. MURAKAMI: Yes, we do.
14 HEARINGS OFFICER JUDGE MCCONNELL: What do
15 you have.
16 MR. MURAKAMI: I have at least two -- we
17 have three.
18 HEARINGS OFFICER JUDGE MCCONNELL: We'll
19 take a couple minutes.
20 MR. MURAKAMI: (Sighs)
21 HEARINGS OFFICER JUDGE MCCONNELL: We're
22 back on the record.
23 STEVEN GREG KAI HO'OKANO
24 was called as a rebuttal witness by and on behalf of
25 NE Moku, et al, was sworn to tell the truth, was

175
1 not my math.
2 HEARINGS OFFICER JUDGE MCCONNELL: Sound
3 like it to you.
4 MR. MURAKAMI: I'd like to know, I'm
5 asking you. If my math is wrong, this is an important
6 point. I want you to correct it.
7 A. If that's what the water requirements are
8 required based on evapotranspiration requirements and
9 if that's what the math works out to be, that's
10 correct. It's just a different way of presenting it,
11 right?
12 Q. Another way of looking at the same problem,
13 A. Yeah.
14 MR. MURAKAMI: Thank you. That's all I
15 have.
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17 questions?
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176
1 permit it. THE WITNESS: No, we do not. That's based
2 on what the crop needs, so there is no consideration
3 given to keeping a reservoir full.
4 Q. MS. LOVELL: That's what I was trying to get
5 at.
6 So the 18,000 gallon figure that we just
7 heard, that's based on fields and none of
8 that figure would go into tanks.
9 A. Some of that -- well, if we're dealing with
10 averages here that come from EMI, some of that could
11 go to reservoirs.
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13 of water in tanks and reservoirs fits into your
14 irrigation system?
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16 throughout our ditch system, so during the high
17 flow when irrigation -- when we have peak irrigation
18 or flows in the ditches, we will store water in our
19 reservoir system and then that water will be used
20 later on for irrigation rounds.
21 So it fair to say that during the wet
22 winter months that we believe and then that
23 water will be drawn upon during the dry months?

177
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2 on what the crop needs, so there is no consideration
3 given to keeping a reservoir full.
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7 heard, that's based on fields and none of
8 that figure would go into tanks.
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13 of water in tanks and reservoirs fits into your
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17 flow when irrigation -- when we have peak irrigation
18 or flows in the ditches, we will store water in our
19 reservoir system and then that water will be used
20 later on for irrigation rounds.
21 So it fair to say that during the wet
22 winter months that we believe and then that
23 water will be drawn upon during the dry months?

APPENDIX

"E"

1 BOARD OF LAND AND NATURAL RESOURCES
 2 STATE OF HAWAII
 3 In the Matter of Contested JULIAN F. LINDA CHOW, ESQ.
 4 vs. WARREN WATANABE, DEPUTY COMMISSIONER OF LAND AND NATURAL RESOURCES
 5 at Honolulu, Hawaii, Territory of Hawaii
 6
 7 RECEIVED
 8 CONTESTED CASE EXAMINATION
 9 Held on November 14, 2005 commencing at 9:00 a.m., at
 10 Heiiku Community Center, Heiiku, Hawaii.
 11
 12 2005 NOV 29 A 11:48
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 23 BEFORE: JEAN MARIE MCMANUS
 24 Hawaii CSR #708, CA CSR #3119
 25
 26

1 HEARINGS OFFICER JUDGE MCCONNELL: The
 2 hearing will go in order. This is in the matter of
 3 JULIAN F. LINDA CHOW, ESQ. vs. WARREN WATANABE, DEPUTY
 4 COMMISSIONER OF LAND AND NATURAL RESOURCES. I think
 5 maybe we should have appearances.
 6 I'm John McConnell the hearing officer.
 7 MR. HALL: Isaac Hall for Intervenor Maui
 8 Tomorrow.
 9 MS. LOVELL: Jane Lovell, Deputy
 10 Corporation Counsel for County of Maui and our
 11 Department Counsel.
 12 MR. HALL: Good morning, Judge, good
 13 morning everyone. Keesa Hsia and Alan Murakami on
 14 behalf of Petitioner Na Moku Aupuni O Ko'olea Hui,
 15 Basilio Kekahuna and Margorie Wallert.
 16 MR. SCHULMEISTER: David Schulmeister and
 17 Elijah Yip for Alexander S. Baldwin and East Maui
 18 Irrigation Company and also Garret New for EMI, Inc.
 19 MR. FREEDMAN: Sat Freedman appearing for
 20 Intervenor Hawaii Corporation and Mr.
 21 Thomas who is on the mainland.
 22 MR. MERCHANT: David Merchant for Maui
 23 Land & Pineapple.
 24 HEARINGS OFFICER JUDGE MCCONNELL: And for
 25 the record we have Linda Chow who is the Deputy
 26

1 HEARINGS OFFICER: HONORABLE E. JOHN MCCONNELL
 2
 3 BLNR Absent: LINDA CHOW, ESQ.
 4 428 S. King Street, Rm. 500
 5 Honolulu, Hawaii 96813
 6 For EMI and ASB: DAVID SCHULMEISTER, ESQ.
 7 100 West Kapahulu Street, Rm. 500
 8 Honolulu, Hawaii 96813
 9 For Maui Land & Pineapple, Inc.: DAVID B. MERCHANT, ESQ.
 10 664 Maui Highway, Ste. 204
 11 Paipae, Maui, Hawaii 96753
 12 For County of Maui: JANE E. LOVELL, ESQ.
 13 Deputy Corporation Counsel
 14 Wehihiki, Hawaii 96783
 15 For Maui Tomorrow: ISAAC HALL, ESQ.
 16 Wehihiki, Hawaii 96783
 17 For Na Moku Aupuni: ALAN I. MURAKAMI, ESQ.
 18 P.O. Box 11164 Bishop Street, Ste. 1208
 19 Honolulu, Hawaii 96813
 20 Hawaii Farm Bureau: SAT KHALISA FREEDMAN, ESQ.
 21 1605 Puuahi Tower
 22 Honolulu, Hawaii 96813
 23
 24
 25
 26

1 Attorney General assigned to the board.
 2 Specifically, who were to proceed
 3 this morning with ASB, Mr. MERCHANT.
 4 MR. HALL: We have one more.
 5 HEARINGS OFFICER JUDGE MCCONNELL: That's
 6 right. I know that we hadn't gotten to her, but if
 7 you're ready to proceed, that would be your final
 8 witness then?
 9 MR. HALL: Judge, can I take care of one
 10 quick matter with regard to the evidence before you
 11 start?
 12 HEARINGS OFFICER JUDGE MCCONNELL: Sure.
 13 MR. HALL: I've distributed and placed
 14 before you our second amended exhibit list as well as
 15 a set of exhibits which has the pictures and exhibits
 16 that we described during our case.
 17 There's nothing new in any of these. They
 18 were also placed during the examination and I
 19 promised the hearing officer that I would
 20 would bring these exhibits with me when the hearing
 21 reconvened and that's what I've done. I just wanted
 22 to place that on the record.
 23 HEARINGS OFFICER JUDGE MCCONNELL: Okay.
 24 And I assume they will be in evidence then.
 25 MR. HALL: I think they were already in
 26

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1 evidence subject to my bringing them and I brought
 2 them. And I'm not going to be able to attend the
 3 whole of this hearing, so I will excuse myself.
 4 HEARINGS OFFICER JUDGE MCCONNELL: Thank
 5 you very much. Sorry we got a late start.
 6 MR. SCHULMEISTER: In terms of
 7 housekeeping, I have tried to sort of estimate with
 8 the hearing officer today, and then we will call
 9 Garret New and Mark Yip, and then we will take
 10 most of the day. With that anticipation I told Mr.
 11 Heidey and Mr. Jakeway, my final two witnesses, to be
 12 available tomorrow morning at 9:00. If anyone has a
 13 problem with that estimate --
 14 about it, he -- Warren Watanabe is only available
 15 today. So if we can work him in today in the
 16 afternoon.
 17 MR. FREEDMAN: I need about 90 minutes head
 18 time. He's up in Kula and we'd prefer to have him in
 19 the afternoon if possible, because he has a meeting in
 20 town at 9:30 and that way he doesn't have to make two
 21 trips.
 22 HEARINGS OFFICER JUDGE MCCONNELL: Okay.
 23 Remaining as at luncheon time. All right.
 24 Thank you right thank, please.
 25
 26

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1 week previous to the anticipated storm correct?
2 A. As I recall, I've only done it once with the East Maui
3 with, I believe, anywhere from half to nine inches of
4 rain, predicted to fall overnight. And we made a
5 decision that we would cut the flow back in our EMI
6 system in order to avoid any damage to our ditch
7 system and/or to property adjacent to our ditch system
8 and also to HC&S.
9 Q. More specifically though, when was the storm
10 predicted to hit Maui?
11 A. Last night.
12 Q. How long though?
13 A. I don't remember the exact date, sometime in
14 gates a week before?
15 A. No. We opened the gates, I believe it was
16 probably one or two days prior to anticipation of that
17 storm hitting the island.
18 Q. You know what, I want to direct your
19 attention to some other exhibits of A & B that you're
20 responsible for, and that would be A-2, A-3, and A-4.
21 Are you at A-2 right now?
22 A. Yes.
23 Q. And what is your understanding, what is this
24 exhibit?
25

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1 A. Exhibit A-2 is Revocable Permit S-7284,
2 covers Alexander & Baldwin, Inc. Revocable Permit for
3 the Huelo License area.
4 Q. Is that permit still in effect?
5 A. Yes.
6 MR. SCHULMEISTER: Object, calls for legal
7 conclusion.
8 HEARINGS OFFICER JUDGE MCCONNELL: I'll
9 sustain that.
10 Q. MR. HAJIA: Mr. Hew, do you know whether or
11 not Alexander & Baldwin and EMI are still operating
12 under the revocable permit S-7284 to take water out of
13 the Huelo area?
14 A. Yes, I believe that's correct. We still are
15 operating under that premise.
16 Q. Okay. Now, this permit is for what is called
17 the Huelo area, correct?
18 A. Yes.
19 Q. And that is an area of what, approximately
20 8,752,680 acres, correct?
21 A. Yes.
22 Q. And for this permit, A & B, EMI was paying
23 6,000 dollars per month, is that correct?
24 A. That is a rental per month, yes.
25 Q. And A & B is still presently paying that

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1 not be sold, as conveyed, mortgaged, or
2 otherwise encumbered.
3 MR. HAJIA: I believe that's correct. Do EMI have an
4 agreement with Maui Land & Pine that allows Maui Land
5 & Pine to divert water from your ditch system?
6 A. Yes, we do have an agreement with Maui Pine.
7 Q. And what is that agreement?
8 A. That is an agreement for Maui Pine to use a
9 portion of our ditch system to transport water that
10 they pump into our ditch system for use for pineapple
11 culture in Central Maui.
12 Q. Do you know if there's also an agreement that
13 would allow Maui Land & Pine to take more than what
14 they pump into the ditch system?
15 A. Yes.
16 Q. What is your understanding of what that
17 agreement provides for?
18 A. That agreement, it depends upon the flow of
19 the ditch at a particular time of day, and they have
20 the right to access up to 1.5 million gallons per day.
21 Q. And are there any stipulations or conditions
22 upon which Maui Land & Pine can take that water out of
23 the system?
24 A. It's basically based on ditch flow at that
25 one particular time of the day.

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1 agriculture is protected by the Hawaii Constitution
2 and I'm not going to read the whole thing, but I would
3 ask you, is it you, understanding that taro production
4 and cultivation is also agriculture?
5 A. Yes.
6 Q. So would it fall into the same protection?
7 A. Yes. We don't argue against that. We
8 support all of the agriculture.
9 Q. You support it. Then would you also support
10 additional water for taro production in East Maui?
11 A. Well, I think our position is that we want
12 fair distribution of the resource.
13 Q. So if there were on average 165 million
14 gallons of water taken out of East Maui and into
15 Central Maui and also up-country, do you think that
16 Maui taro would be impacted?
17 MR. FREEDMAN: Objection, Your Honor,
18 again, speculation, beyond his expertise. Not sure if
19 he knows what every other industry needs are as far as
20 water.
21 MS. LOVELL: I object to this. It's an
22 incomplete hypothetical.
23 HEARINGS OFFICER JUDGE MCCONNELL: Oh,
24 answer the question.
25

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1 Q. Can you be more specific? Do you know what
2 the flow needs to be in order for this provision to
3 kick in?
4 A. The flow is taken at 7:00 a.m. in the
5 morning. And if the flow is above a certain amount,
6 the rate that is set for that flow, if it's below a
7 certain amount, the rate is set for that amount below
8 that flow.
9 Q. What is the minimum amount of water flowing
10 at a given point that needs to be in the ditch system
11 in order for this to kick in?
12 A. I believe the Waiau-Honopou Ditch has to
13 be at 100 million gallons at the Honopou boundary at
14 7:00 a.m. in the morning. If it's 100 million gallons
15 or above, they can access the water from our system;
16 if it's below 100, they cannot access any water from
17 the system.
18 They can take what they put into the
19 system.
20 HEARINGS OFFICER JUDGE MCCONNELL: Take
21 short recess.
22 MR. HAJIA: (cess was taken.)
23 HEARINGS OFFICER JUDGE MCCONNELL: We're
24 back on the record. Without objection, we're going to
25 take a witness, Mr. Watanabe for the Farm Bureau.

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1 WARREN WATANABE
2 was called as a witness by and on behalf of the Farm
3 Bureau, was sworn to tell the truth, was examined and
4 testified as follows:
5 HEARINGS OFFICER JUDGE MCCONNELL: Would
6 you state your name, please.
7 THE WITNESS: Warren Watanabe.
8 MR. FREEDMAN: Can I submit Mr. Watanabe's
9 written testimony?
10 HEARINGS OFFICER JUDGE MCCONNELL: Yes,
11 that will be in evidence.
12 (Written testimony of Warren Watanabe was
13 received into evidence.)
14 Q. You have no further questions?
15 MR. FREEDMAN: No.
16 HEARINGS OFFICER JUDGE MCCONNELL: Mr.
17 Schulmeister.
18 MR. SCHULMEISTER: No questions.
19 CROSS-EXAMINATION
20 BY MR. HAJIA:
21 Q. Mr. Watanabe, I'm Moses Hala, an attorney
22 representing Na Moku and a couple of other individual
23 petitioners in this contested case. I had just a
24 couple questions for you.
25 Do you have a copy of your written

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1 Q. And this opinion of yours, what's it based
2 on?
3 A. Well, I think it's based on part of the
4 record. They do have some -- they have a track record
5 of being committed to agriculture on Maui.
6 Q. Would it surprise you at all if you learned
7 that in recent times the sugar operation had a
8 profit of \$3 million, a federal subsidy of \$5 million?
9 Same time period, a federal subsidy of \$5 million?
10 MR. FREEDMAN: Objection, Your Honor,
11 assumes facts not in evidence and calls for
12 speculation.
13 MR. HAJIA: I can bring that --
14 HEARINGS OFFICER JUDGE MCCONNELL: I'll
15 permit it. If you know?
16 Q. MR. HAJIA: I'm asking you would it surprise
17 you if you were to find out that very recently
18 the Hawaiian Commercial and Sugar Company had a
19 million dollar profit, a federal subsidy of 5
20 million dollars, and a federal subsidy of \$5 million?
21 Do you know what that
22 means?
23 A. Yeah.
24 Q. Well, I mean that --
25 MR. FREEDMAN: Objection, Your Honor.

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1 This calls for an expert opinion. I'm not sure he's
2 an expert on federal subsidies.
3 MR. HAJIA: He answered he knows what it
4 means.
5 HEARINGS OFFICER JUDGE MCCONNELL: Can w
6 get to the next witness? Does that surprise you?
7 THE WITNESS: No.
8 Q. MR. HAJIA: It doesn't surprise you?
9 A. No.
10 Q. If that was the case, you still believe that
11 the outlook for this company is positive?
12 A. Yes.
13 Q. And that's because --
14 A. Their commitment to agriculture and because
15 of their direction that they plan to take to keep the
16 company afloat.
17 Q. And this understanding is based on what?
18 A. I think part of it is because they have a
19 line of specialty sugars that probably right now
20 doesn't meet the current demands, so there's room for
21 expansion of that. Transferring renewable energy
22 nationwide.
23 Q. Hawaiian Commercial & Sugar?
24 A. Right.
25 Q. At Paragraph 10 you talk about how

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1 agriculture is protected by the Hawaii Constitution
2 and I'm not going to read the whole thing, but I would
3 ask you, is it you, understanding that taro production
4 and cultivation is also agriculture?
5 A. Yes.
6 Q. So would it fall into the same protection?
7 A. Yes. We don't argue against that. We
8 support all of the agriculture.
9 Q. You support it. Then would you also support
10 additional water for taro production in East Maui?
11 A. Well, I think our position is that we want
12 fair distribution of the resource.
13 Q. So if there were on average 165 million
14 gallons of water taken out of East Maui and into
15 Central Maui and also up-country, do you think that
16 Maui taro would be impacted?
17 MR. FREEDMAN: Objection, Your Honor,
18 again, speculation, beyond his expertise. Not sure if
19 he knows what every other industry needs are as far as
20 water.
21 MS. LOVELL: I object to this. It's an
22 incomplete hypothetical.
23 HEARINGS OFFICER JUDGE MCCONNELL: Oh,
24 answer the question.
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1 THE WITNESS: Can you repeat the question?
2 Q. MR. HAJIA: I'll try to make it a complete
3 hypothetical.
4 HEARINGS OFFICER JUDGE MCCONNELL: If you
5 can.
6 MR. HAJIA: There is on record an average of
7 165 million gallons of water per day diverted out of
8 East Maui by this ditch system and that water goes to
9 Hawaiian Commercial & Sugar and various other water
10 uses outside of East Maui.
11 With respect to East Maui, the taro
12 growers in East Maui, do you think there's a fair
13 distribution of water in that allocation?
14 MR. MERCHANT: Objection, incomplete
15 hypothetical.
16 HEARINGS OFFICER JUDGE MCCONNELL: I've
17 already ruled.
18 MR. HAJIA: Don't ask me to repeat it.
19 For me it's difficult because I don't know
20 all the requirements of everybody. What the
21 requirements are, I don't know. I don't have that
22 knowledge.
23 MR. HAJIA: That's all the questions I have
24 for you. MR. HALL: Mr. Watanabe --
25

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1 MR. FREEDMAN: Is this on behalf of Maui
2 Tomorrow?
3 MR. HALL: Yes.
4 MR. FREEDMAN: I was told that at all the
5 status conferences they never indicated an intent to
6 cross our guy.
7 HEARINGS OFFICER JUDGE MCCONNELL: I'll
8 permit it.
9 CROSS-EXAMINATION
10 BY MR. HALL:
11 Q. You're testifying today on behalf of Hawaii
12 Farm Bureau Federation and Maui County Farm Bureau?
13 Q. Correct.
14 Q. And you do have membership in the Maui County
15 Farm Bureau all over Maui, correct?
16 A. Correct.
17 Q. And you have some members in Huelo and
18 Keanae, correct?
19 A. I'm not positive.
20 Q. You have some taro growers, some flower
21 growers in Huelo that are members of the Maui Farm
22 Bureau?
23 A. Yes.
24 Q. As you're here to support them as well?
25 A. Yeah. Well, they are members.

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1 amount?
2 A. I believe that's the correct amount.
3 Q. And what is your understanding of what this
4 payment is for?
5 A. This payment is for the privilege of renting
6 that watershed area, to have the right to divert water
7 off of state-owned lands for the use of sugar
8 cultivation and domestic purposes in Central Maui.
9 Q. So you're saying that you brought
10 along a calculator if you want to verify my
11 calculations -- but for any given year for this area
12 of almost 9,000 acres, A & B, EMI is paying
13 \$79,060.80. Would you have any reason to not let
14 that with my calculation? Because if you do, then I'll
15 you calculate it yourself.
16 A. It's a simple math. If you did the math, it
17 should be correct.
18 Q. I appreciate your faith in me.
19 Do you think that the water on average is
20 developed in the Huelo License area per year?
21 A. Right offhand, no.
22 Q. Can you turn to Page 4 of A-2. And I would
23 direct your attention to Paragraph 7, or provision 7,
24 and I'm going to read it to you.
25 "This Permit or any rights hereunder shall

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2 an expert on federal subsidies.
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4 means.
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7 THE WITNESS: No.
8 Q. MR. HAJIA: It doesn't surprise you?
9 A. No.
10 Q. If that was the case, you still believe that
11 the outlook for this company is positive?
12 A. Yes.
13 Q. And that's because --
14 A. Their commitment to agriculture and because
15 of their direction that they plan to take to keep the
16 company afloat.
17 Q. And this understanding is based on what?
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19 line of specialty sugars that probably right now
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21 expansion of that. Transferring renewable energy
22 nationwide.
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24 A. Right.
25 Q. At Paragraph 10 you talk about how

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3 ask you, is it you, understanding that taro production
4 and cultivation is also agriculture?
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8 support all of the agriculture.
9 Q. You support it. Then would you also support
10 additional water for taro production in East Maui?
11 A. Well, I think our position is that we want
12 fair distribution of the resource.
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14 gallons of water taken out of East Maui and into
15 Central Maui and also up-country, do you think that
16 Maui taro would be impacted?
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18 again, speculation, beyond his expertise. Not sure if
19 he knows what every other industry needs are as far as
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22 incomplete hypothetical.
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7 165 million gallons of water per day diverted out of
8 East Maui by this ditch system and that water goes to
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5 status conferences they never indicated an intent to
6 cross our guy.
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8 permit it.
9 CROSS-EXAMINATION
10 BY MR. HALL:
11 Q. You're testifying today on behalf of Hawaii
12 Farm Bureau Federation and Maui County Farm Bureau?
13 Q. Correct.
14 Q. And you do have membership in the Maui County
15 Farm Bureau all over Maui, correct?
16 A. Correct.
17 Q. And you have some members in Huelo and
18 Keanae, correct?
19 A. I'm not positive.
20 Q. You have some taro growers, some flower
21 growers in Huelo that are members of the Maui Farm
22 Bureau?
23 A. Yes.
24 Q. As you're here to support them as well?
25 A. Yeah. Well, they are members.

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1 Q. You're here to support them?
2 A. (Witness nods head up and down.)
3 Q. You say in Paragraph 13: "Water is the
4 critical component of the success of competitive and
5 diverse agriculture."
6 When you say diverse agriculture, you mean
7 flower farming?
8 A. Yes.
9 Q. You mean taro growing?
10 A. Yes.
11 Q. So water is critical for both of those forms
12 of diverse agriculture?
13 A. (Witness nods head up and down.)
14 Q. (Witness nods head up and down.)
15 Farm Bureau too?
16 A. Yes.
17 MR. FREEDMAN: Objection, Your Honor,
18 argumentative.
19 HEARINGS OFFICER JUDGE MCCONNELL: It is
20 argumentative, Mr. Hall. We have got a lot of work to
21 do.
22 MR. HALL: This is very important to this
23 proceeding.
24 HEARINGS OFFICER JUDGE MCCONNELL: It's an
25 argumentative question.

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1 the state's water?
2 MS. WELLS: Objection, argumentative and
3 again it's an incomplete hypothetical and assumes
4 facts.
5 HEARINGS OFFICER JUDGE MCCONNELL: I'll
6 sustain that.
7 Q. MR. HALL: You're not aware of the percentage
8 as between the state and EMI, correct?
9 A. That's correct.
10 Q. So you're not aware of whether the county's
11 needs would be satisfied from EMI?
12 A. Yeah.
13 MR. HALL: I have no further questions.
14 HEARINGS OFFICER JUDGE MCCONNELL: Any
15 other questions for you, Mr. Watanabe, Okay,
16 we'll resume with Mr. Hew.
17 For the record, Mr. Hew is on the stand.
18 CROSS-EXAMINATION CONTINUED
19 BY MR. HALL:
20 Q. If you recall, we were -- I was asking you
21 questions about Exhibit A-2, and the last series of
22 questions was directed to you, that is EMI's
23 agreement with Maui Land & Pine that allows Maui Land
24 & Pine to take an additional amount of water out of
25

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1 your answer would be the same for all of the permits?
2 TH. NESS: That's correct.
3 Q. MR. HALL: Go to the next exhibit which is
4 A-4. And this permit is for Keane License area.
5 Correct?
6 A. Yes, it is.
7 Q. Comprised of 10,768 acres more or less,
8 correct?
9 A. Yes, it is.
10 Q. And A & B pays to the state \$3,476.72 for
11 this permit per month?
12 A. Correct.
13 Q. And once again, my calculation per year is
14 \$41,720.84. And once again, if you have any concern
15 for the accuracy of this, I have my calculator for
16 you.
17 A. I believe it's accurate.
18 Q. So once again, you don't independently, off
19 the top of your head, have any idea of how much water
20 is developed in Keane per year?
21 A. No. When you say develop --
22 Q. Well, diverted.
23 A. Captured.
24 Q. Captured.
25 A. No.

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1 Q. MR. HALL: In Huelo you're aware there is no
2 county source of water?
3 A. Correct.
4 Q. And those who are engaged in agriculture in
5 Huelo depend upon streamflow in many instances for
6 their water in order to engage in diversified
7 agriculture, you are aware of that?
8 A. Uh-huh.
9 Q. You are?
10 A. Yes.
11 Q. So you would support them having a sufficient
12 amount of water in their streams in order to engage in
13 diversified agriculture?
14 MR. FREEDMAN: Objection, Your Honor,
15 asked and answered. I think he's made it very clear
16 he supports all agriculture in Hawaii.
17 MR. HALL: I would like this question
18 answered.
19 HEARINGS OFFICER JUDGE MCCONNELL: I'll
20 permit it.
21 THE WITNESS: Yes.
22 Q. MR. HALL: You would?
23 A. Correct.
24 Q. And you testify in Paragraph 15 about the
25 needs of up-country Maui farmers?

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1 A. Correct.
2 Q. And those farmers are on the County of Maui
3 water system, correct?
4 A. Correct.
5 Q. So they get some of the 8 million gallons a
6 day that the county gets from EMI, is that correct?
7 A. Yes.
8 Q. So their source is no different from the
9 County of Maui source, correct?
10 A. Correct.
11 Q. And you're not in the ag park.
12 Q. And you're not in the ag park yourself. You
13 talk about your own needs, correct?
14 A. No.
15 Q. So you get in the county system which is part
16 of the 8 million gallons a day, correct?
17 A. Correct.
18 Q. And are you aware that EMI, of that 8 million
19 gallons that county gets from EMI, some of that comes
20 from the state and some of that comes from EMI itself?
21 A. Yes.
22 Q. Are you aware of the percentage as between
23 EMI and the state?
24 A. No.
25 Q. Are you aware that the 8 million gallons
26 could be satisfied from EMI's own water rather than

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1 the ditch system -- and when I say additional, I mean
2 in addition to what they actually -- Maui Land & Pine
3 actually pumps into the ditch system. Do you recall
4 all that discussion?
5 A. Yes.
6 Q. And you charge them for that, right, A & B
7 charges -- A & B and EMI charges Maui Land & Pine, for
8 lack of a better term, privilege of taking that water
9 out of the system, correct?
10 A. No, that's not correct. We do not charge
11 them for the water. We charge them a transportation
12 fee for getting that water to their point of delivery.
13 Q. Okay. So you're charging Maui Land & Pine
14 for that? And that's the same as the series of
15 watersheds and taking it to certain series which
16 Maui Land & Pine is able to take it out of the system;
17 right?
18 A. That's correct.
19 Q. Do you have any other agreements with any
20 other parties or individuals that allow that party or
21 individual to pay for the transportation of water in
22 your ditch system?
23 A. No, we don't.
24 Q. MR. SCHULMEISTER: Did you mean to exclude
25 County of Maui?

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1 in each of these license areas.
2 Q. So you have -- go ahead.
3 A. What was your question? Could you clarify
4 your question, please?
5 Q. I'm asking you whether or not the numbers
6 that are used in terms of amount of water developed in
7 a specific license area are from 1987 to determine the
8 lease rents or the permit amount that you pay for the
9 use of this acreage?
10 A. I don't know what you mean by develop, but
11 this is what the state charges us for that license
12 area.
13 Q. And you know whether or not the data used
14 to come to those numbers is current? In other words,
15 as recent as -- well, July 1st, 2000 when these
16 permits were entered into?
17 A. No, I don't.
18 Q. Would you turn to -- I would ask you, are the
19 conditions in each one of these permits -- they're
20 four license areas, so there's four permits?
21 A. Correct.
22 Q. And the conditions the same for each one of
23 the permits?
24 A. As far as I understand it, they are all the

150
1 same.
2 Q. Okay. So this permit would not allow A & B,
3 EMI to sell water?
4 MR. SCHULMEISTER: Objection --
5 MR. HALL: To sell their --
6 MR. SCHULMEISTER: When you're done with
7 your question, I'll make my objection.
8 Q. MR. HALL: Let me refer you to Page 4,
9 Paragraph 7 of this exhibit. It reads:
10 "This permit confers no rights hereunder
11 shall not be used to grant, lease, convey, lease,
12 mortgage, or otherwise transferred or disposed of."
13 MR. SCHULMEISTER: Are you asking whether
14 you read it correctly? I think we will stipulate to
15 that.
16 Q. MR. HALL: So I'm asking you -- well,
17 basically that applies to this specific area too,
18 right, that A & B cannot sell, assign, convey, lease,
19 mortgage or otherwise transfer, dispose of any of the
20 rights provided under this permit?
21 A. Correct.
22 Q. And just to clarify, you cannot sell
23 selling water. You can charge a transportation fee.
24 Q. Okay.
25 HEARINGS OFFICER JUDGE MCCONNELL: And

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1 permit pursuant to this permit for 3,381
2 acres?
3 That's correct.
4 I also did math again, Mr. Hew, and I
5 calculated that to a yearly payment. I come up with
6 \$20,379.84. Do you have any reason, or basis to
7 dispute that? Because once again I'll let you
8 calculate it on your own.
9 A. No, I believe your math is correct.
10 Q. Do you have any idea of the average amount of
11 water developed per year in this permit area?
12 A. No, I don't.
13 Q. Would you access records that would allow you
14 to find out what that is?
15 A. Yes.
16 Q. And what records are those?
17 A. Those are records prior to 1987 when the
18 amount that was diverted out of each area was reported
19 to the state.
20 Q. So do I understand you to say that the
21 numbers that the state and A & B and EMI are currently
22 operating under were developed in 1987?
23 MR. SCHULMEISTER: Let me object. When
24 you say numbers, what are you referring to?
25 MR. HALL: The amount of water developed

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1 Q. Is there any other understanding you have,
2 you asked that question? When I say developed, is
3 with respect to water? A & B, EMI acts under this permit
4 with respect to water?
5 A. I just wanted clarification on the word
6 "developed".
7 Q. Let's go now to Exhibit A-5 Revocable Permit
8 S-7266 for the Nahiku License area, which is made up
9 of 10,111,220 acres more or less, correct?
10 A. That's correct.
11 Q. And for which A & B, EMI pays \$1,426.88 per
12 month, correct?
13 A. Yes.
14 Q. And my calculation per year is \$17,122.56 per
15 year. Do you have any reason to dispute my math?
16 A. No.
17 Q. Do you have any idea of how much water is
18 developed per year in Nahiku?
19 A. No, I don't.
20 Q. But, Mr. Hew, you do have an average for all
21 four areas of how much water is developed from all
22 four areas per year, don't you?
23 A. We have a figure comprising all four license
24 areas, how much water is diverted out of these four
25 license areas.

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1 Per year?
2 A. Per year.
3 Q. What is that number?
4 A. It varies from year to year.
5 Q. What was it last year? Do you have an
6 average from those variances? That's what I want, an
7 average.
8 A. I know it's somewhere around 58, 59 billion
9 gallons a year. I know for the last 11 years we've
10 been in a low drought situation, so I think only a
11 couple those years were in that figure.
12 Q. So per year from these four license areas of
13 water per year from these four license areas?
14 A. Correct.
15 Q. I also added up the yearly rent payments for
16 all four permitted areas, and I come up with
17 \$158,283.84.
18 Do you have any reason to dispute my math?
19 A. No.
20 Q. And conservatively speaking, let's say 58
21 billion gallons of water per year is taken out of
22 the four license areas, and EMI pays per thousand gallons
23 terms of how much A & B, EMI pays per thousand gallons
24 of water out of that area and I come up with a number
25 that is around a fifth of a cent per thousand gallons.

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14 \$41,720.84. And once again, if you have any concern
15 for the accuracy of this, I have my calculator for
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19 the top of your head, have any idea of how much water
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4 your question, please?
5 Q. I'm asking you whether or not the numbers
6 that are used in terms of amount of water developed in
7 a specific license area are from 1987 to determine the
8 lease rents or the permit amount that you pay for the
9 use of this acreage?
10 A. I don't know what you mean by develop, but
11 this is what the state charges us for that license
12 area.
13 Q. And you know whether or not the data used
14 to come to those numbers is current? In other words,
15 as recent as -- well, July 1st, 2000 when these
16 permits were entered into?
17 A. No, I don't.
18 Q. Would you turn to -- I would ask you, are the
19 conditions in each one of these permits -- they're
20 four license areas, so there's four permits?
21 A. Correct.
22 Q. And the conditions the same for each one of
23 the permits?
24 A. As far as I understand it, they are all the

156
1 Per year?
2 A. Per year.
3 Q. What is that number?
4 A. It varies from year to year.
5 Q. What was it last year? Do you have an
6 average from those variances? That's what I want, an
7 average.
8 A. I know it's somewhere around 58, 59 billion
9 gallons a year. I know for the last 11 years we've
10 been in a low drought situation, so I think only a
11 couple those years were in that figure.
12 Q. So per year from these four license areas of
13 water per year from these four license areas?
14 A. Correct.
15 Q. I also added up the yearly rent payments for
16 all four permitted areas, and I come up with
17 \$158,283.84.
18 Do you have any reason to dispute my math?
19 A. No.
20 Q. And conservatively speaking, let's say 58
21 billion gallons of water per year is taken out of
22 the four license areas, and EMI pays per thousand gallons
23 terms of how much A & B, EMI pays per thousand gallons
24 of water out of that area and I come up with a number
25 that is around a fifth of a cent per thousand gallons.

143
1 the state's water?
2 MS. WELLS: Objection, argumentative and
3 again it's an incomplete hypothetical and assumes
4 facts.
5 HEARINGS OFFICER JUDGE MCCONNELL: I'll
6 sustain that.
7 Q. MR. HALL: You're not aware of the percentage
8 as between the state and EMI, correct?
9 A. That's correct.
10 Q. So you're not aware of whether the county's
11 needs would be satisfied from EMI?
12 A. Yeah.
13 MR. HALL: I have no further questions.
14 HEARINGS OFFICER JUDGE MCCONNELL: Any
15 other questions for you, Mr. Watanabe, Okay,
16 we'll resume with Mr. Hew.
17 For the record, Mr. Hew is on the stand.
18 CROSS-EXAMINATION CONTINUED
19 BY MR. HALL:
20 Q. If you recall, we were -- I was asking you
21 questions about Exhibit A-2, and the last series of
22 questions was directed to you, that is EMI's
23 agreement with Maui Land & Pine that allows Maui Land
24 & Pine to take an additional amount of water out of
25

144
1 the ditch system -- and when I say additional, I mean
2 in addition to what they actually -- Maui Land & Pine
3 actually pumps into the ditch system. Do you recall
4 all that discussion?
5 A. Yes.
6 Q. And you charge them for that, right, A & B
7 charges -- A & B and EMI charges Maui Land & Pine, for
8 lack of a better term, privilege of taking that water
9 out of the system, correct?
10 A. No, that's not correct. We do not charge
11 them for the water. We charge them a transportation
12 fee for getting that water to their point of delivery.
13 Q. Okay. So you're charging Maui Land & Pine
14 for that? And that's the same as the series of
15 watersheds and taking it to certain series which
16 Maui Land & Pine is able to take it out of the system;
17 right?
18 A. That's correct.
19 Q. Do you have any other agreements with any
20 other parties or individuals that allow that party or
21 individual to pay for the transportation of water in
22 your ditch system?
23 A. No, we don't.
24 Q. MR. SCHULMEISTER: Did you mean to exclude
25 County of Maui?

145
1 your answer would be the same for all of the permits?
2 TH. NESS: That's correct.
3 Q. MR. HALL: Go to the next exhibit which is
4 A-4. And this permit is for Keane License area.
5 Correct?
6 A. Yes, it is.
7 Q. Comprised of 10,768 acres more or less,
8 correct?
9 A. Yes, it is.
10 Q. And A & B pays to the state \$3,476.72 for
11 this permit per month?
12 A. Correct.
13 Q. And once again, my calculation per year is
14 \$41,720.84. And once again, if you have any concern
15 for the accuracy of this, I have my calculator for
16 you.
17 A. I believe it's accurate.
18 Q. So once again, you don't independently, off
19 the top of your head, have any idea of how much water
20 is developed in Keane per year?
21 A. No. When you say develop --
22 Q. Well, diverted.
23 A. Captured.
24 Q. Captured.
25 A. No.

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1 Q. MR. HALL: In Huelo you're aware there is no
2 county source of water?
3 A. Correct.
4 Q. And those who are engaged in agriculture in
5 Huelo depend upon streamflow in many instances for
6 their water in order to engage in diversified
7 agriculture, you are aware of that?
8 A. Uh-huh.
9 Q. You are?
10 A. Yes.
11 Q. So you would support them having a sufficient
12 amount of water in their streams in order to engage in
13 diversified agriculture?
14 MR. FREEDMAN: Objection, Your Honor,
15 asked and answered. I think he's made it very clear
16 he supports all agriculture in Hawaii.
17 MR. HALL: I would like this question
18 answered.
19 HEARINGS OFFICER JUDGE MCCONNELL: I'll
20 permit it.
21 THE WITNESS: Yes.
22 Q. MR. HALL: You would?
23 A. Correct.
24 Q. And you testify in Paragraph 15 about the
25 needs of up-country Maui farmers?

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1 A. Correct.
2 Q. And those farmers are on the County of Maui
3 water system, correct?
4 A. Correct.
5 Q. So they get some of the 8 million gallons a
6 day that the county gets from EMI, is that correct?
7 A. Yes.
8 Q. So their source is no different from the
9 County of Maui source, correct?
10 A. Correct.
11 Q. And you're not in the ag park.
12 Q. And you're not in the ag park yourself. You
13 talk about your own needs, correct?
14 A. No.
15 Q. So you get in the county system which is part
16 of the 8 million gallons a day, correct?
17 A. Correct.
18 Q. And are you aware that EMI, of that 8 million
19 gallons that county gets from EMI, some of that comes
20 from the state and some of that comes from EMI itself?
21 A. Yes.
22 Q. Are you aware of the percentage as between
23 EMI and the state?
24 A. No.
25 Q. Are you aware that the 8 million gallons
26 could be satisfied from EMI's own water rather than

148
1 the state's water?
2 MS. WELLS: Objection, argumentative and
3 again it's an incomplete hypothetical and assumes
4 facts.
5 HEARINGS OFFICER JUDGE MCCONNELL: I'll
6 sustain that.
7 Q. MR. HALL: You're not aware of the percentage
8 as between the state and EMI, correct?
9 A. That's correct.
10 Q. So you're not aware of whether the county's
11 needs would be satisfied from EMI?
12 A. Yeah.
13 MR. HALL: I have no further questions.
14 HEARINGS OFFICER JUDGE MCCONNELL: Any
15 other questions for you, Mr. Watanabe, Okay,
16 we'll resume with Mr. Hew.
17 For the record, Mr. Hew is on the stand.
18 CROSS-EXAMINATION CONTINUED
19 BY MR. HALL:
20 Q. If you recall, we were -- I was asking you
21 questions about Exhibit A-2, and the last series of
22 questions was directed to you, that is EMI's
23 agreement with Maui Land & Pine that allows Maui Land
24 & Pine to take an additional amount of water out of
25

149
1 the ditch system -- and when I say additional, I mean
2 in addition to what they actually -- Maui Land & Pine
3 actually pumps into the ditch system. Do you recall
4 all that discussion?
5 A. Yes.
6 Q. And you charge them for that, right, A & B
7 charges -- A & B and EMI charges Maui Land & Pine, for
8 lack of a better term, privilege of taking that water
9 out of the system, correct?
10 A. No, that's not correct. We do not charge
11 them for the water. We charge them a transportation
12 fee for getting that water to their point of delivery.
13 Q. Okay. So you're charging Maui Land & Pine
14 for that? And that's the same as the series of
15 watersheds and taking it to certain series which
16 Maui Land & Pine is able to take it out of the system;
17 right?
18 A. That's correct.
19 Q. Do you have any other agreements with any
20 other parties or individuals that allow that party or
21 individual to pay for the transportation of water in
22 your ditch system?
23 A. No, we don't.
24 Q. MR. SCHULMEISTER: Did you mean to exclude
25 County of Maui?

150
1 Per year?
2 A. Per year.
3 Q. What is that number?
4 A. It varies from year to year.
5 Q. What was it last year? Do you have an
6 average from those variances? That's what I want, an
7 average.
8 A. I know it's somewhere around 58, 59 billion
9 gallons a year. I know for the last 11 years we've
10 been in a low drought situation, so I think only a
11 couple those years were in that figure.
12 Q. So per year from these four license areas of
13 water per year from these four license areas?
14 A. Correct.
15 Q. I also added up the yearly rent payments for
16 all four permitted areas, and I come up with
17 \$158,283.84.
18 Do you have any reason to dispute my math?
19 A. No.
20 Q. And conservatively speaking, let's say 58
21 billion gallons of water per year is taken out of
22 the four license areas, and EMI pays per thousand gallons
23 terms of how much A & B, EMI pays per thousand gallons
24 of water out of that area and I come up with a number
25 that is around a fifth of a cent per thousand gallons.

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1 permit pursuant to this permit for 3,381
2 acres?
3 That's correct.
4 I also did math again, Mr. Hew, and I
5 calculated that to a yearly payment. I come up with
6 \$20,379.84. Do you have any reason, or basis to
7 dispute that? Because once again I'll let you
8 calculate it on your own.
9 A. No, I believe your math is correct.
10 Q. Do you have any idea of the average amount of
11 water developed per year in this permit area?
12 A. No, I don't.
13 Q. Would you access records that would allow you
14 to find out what that is?
15 A. Yes.
16 Q. And what records are those?
17 A. Those are records prior to 1987 when the
18 amount that was diverted out of each area was reported
19 to the state.
20 Q. So do I understand you to say that the
21 numbers that the state and A & B and EMI are currently
22 operating under were developed in 1987?
23 MR. SCHULMEISTER: Let me object. When
24 you say numbers, what are you referring to?
25 MR. HALL: The amount of water developed

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1 in each of these license areas.
2 Q. So you have -- go ahead.
3 A. What was your question? Could you clarify
4 your question, please?
5 Q. I'm asking you whether or not the numbers
6 that are used in terms of amount of water developed in
7 a specific license area are from 1987 to determine the
8 lease rents or the permit amount that you pay for the
9 use of this acreage?
10 A. I don't know what you mean by develop, but
11 this is what the state charges us for that license
12 area.
13 Q. And you know whether or not the data used
14 to come to those numbers is current? In other words,
15 as recent as -- well, July 1st, 2000 when these
16 permits were entered into?
17 A. No, I don't.
18 Q. Would you turn to -- I would ask you, are the
19 conditions in each one of these permits -- they're
20 four license areas, so there's four permits?
21 A. Correct.
22 Q. And the conditions the same for each one of
23 the permits?
24 A. As far as I understand it, they are all the

153
1 same.
2 Q. Okay. So this permit would not allow A & B,
3 EMI to sell water?
4 MR. SCHULMEISTER: Objection --
5 MR. HALL: To sell their --
6 MR. SCHULMEISTER: When you're done with
7 your question, I'll make my objection.
8 Q. MR. HALL: Let me refer you to Page 4,
9 Paragraph 7 of this exhibit. It reads:
10 "This permit confers no rights hereunder
11 shall not be used to grant, lease, convey, lease,
12 mortgage, or otherwise transferred or disposed of."
13 MR. SCHULMEISTER: Are you asking whether
14 you read it correctly? I think we will stipulate to
15 that.
16 Q. MR. HALL: So I'm asking you -- well,
17 basically that applies to this specific area too,
18 right, that A & B cannot sell, assign, convey, lease,
19 mortgage or otherwise transfer, dispose of any of the
20 rights provided under this permit?
21 A. Correct.
22 Q. And just to clarify, you cannot sell
23 selling water. You can charge a transportation fee.
24 Q. Okay.
25 HEARINGS OFFICER JUDGE MCCONNELL: And

154
1 your answer would be the same for all of the permits?
2 TH. NESS: That's correct.
3 Q. MR. HALL: Go to the next exhibit which is
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11 this permit per month?
12 A. Correct.
13 Q. And once again, my calculation per year is
14 \$41,720.84. And once again, if you have any concern
15 for the accuracy of this, I have my calculator for
16 you.
17 A. I believe it's accurate.
18 Q. So once again, you don't independently, off
19 the top of your head, have any idea of how much water
20 is developed in Keane per year?
21 A. No. When you say develop --
22 Q. Well, diverted.
23 A. Captured.
24 Q. Captured.
25 A. No.

155
1 in each of these license areas.
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3 A. What was your question? Could you clarify
4 your question, please?
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6 that are used in terms of amount of water developed in
7 a specific license area are from 1987 to determine the
8 lease rents or the permit amount that you pay for the
9 use of this acreage?
10 A. I don't know what you mean by develop, but
11 this is what the state charges us for that license
12 area.
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14 to come to those numbers is current? In other words,
15 as recent as -- well, July 1st, 2000 when these
16 permits were entered into?
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18 Q. Would you turn to -- I would ask you, are the
19 conditions in each one of these permits -- they're
20 four license areas, so there's four permits?
21 A. Correct.
22 Q. And the conditions the same for each one of
23 the permits?
24 A. As far as I understand it, they are all the

156
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5 Q. What was it last year? Do you have an
6 average from those variances? That's what I want, an
7 average.
8 A. I know it's somewhere around 58, 59 billion
9 gallons a year. I know for the last 11 years we've
10 been in a low drought situation, so I think only a
11 couple those years were in that figure.
12 Q. So per year from these four license areas of
13 water per year from these four license areas?
14 A. Correct.
15 Q. I also added up the yearly rent payments for
16 all four permitted areas, and I come up with
17 \$158,283.84.
18 Do you have any reason to dispute my math?
19 A. No.
20 Q. And conservatively speaking, let's say 58
21 billion gallons of water per year is taken out of
22 the four license areas, and EMI pays per thousand gallons
23 terms of how much A & B, EMI pays per thousand gallons
24 of water out of that area and I come up with a number
25 that is around a fifth of a cent per thousand gallons.

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1 Would you dispute that?

2 A. No.

3 Q. Do you have a better estimate of what that

4 total is?

5 A. Based strictly on what we pay for our

6 revocable permits and the amount diverted, that seems

7 accurate.

8 Q. A & B, EMI pays a fifth of a cent per

9 thousand gallons of water diverted out of these four

10 license areas, correct?

11 HEARINGS OFFICER JUDGE MCCONNELL: Per

12 gallon or per thousand?

13 MR. HAIA: Per thousand gallons.

14 A. That's correct. But it doesn't include the

15 cost of operation of the system.

16 Q. But with specific respect to these four

17 permits, that's my question. A & B, EMI pays a fifth

18 of a cent per thousand gallons? I believe it is.

19 A. Your math is correct, I believe it is.

20 Q. Once again, I ask you, do you have any

21 concerns?

22 A. I believe it's correct.

23 Q. Thank you.

24 And you, once again, you charge the county

25 six cents per thousand gallons?

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1 enough water.

2 doesn't believe.

3 MR. HAIA: Mr. Hew --

4 HEARINGS OFFICER JUDGE MCCONNELL:

5 Rephrase the question.

6 Presently there is enough water flowing to the

7 Kekahuna property to allow -- I guess this is the

8 question. Do you believe there is enough water that

9 presently flows to the Kekahuna property that would

10 allow every lot on that property to receive a

11 sufficient amount of irrigation water?

12 A. Yes.

13 Q. And how I'm asking you, if at a point in time

14 when full build-out at Kekahuna parcels, and in fact

15 there is not enough water for taro cultivation and

16 irrigation on all of those lots, is A & B, EMI ready,

17 willing and able to provide the Kekahunas with

18 additional water?

19 A. We would be willing to help Mrs. Kekahuna as

20 long as taro is being grown on those parcels.

21 Q. If that requires A & B, EMI to release more

22 water so that it gets to the Kekahuna parcel, would

23 they stand ready, willing and able to do that?

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1 A. We charge them a transportation fee.

2 Q. Right.

3 A. Six cents per thousand gallons.

4 Q. Do you have any idea what the average rate on

5 agricultural water is in Hawaii today? How much are

6 agricultural users generally being charged for a

7 thousand gallons of water?

8 A. I don't know the average in Hawaii.

9 Q. You don't know the average, I believe

10 it's in your direct written testimony, that A & B and

11 EMI stand ready, willing and able to help the

12 Kekahunas, the taro farmers in Weiluuanui; is that

13 correct?

14 A. That's correct.

15 Q. In our last visit out to the Kekahuna parcel

16 we saw some changes, correct, in terms of land opened

17 ready for cultivation? Are you ready, willing and

18 able to ensure that the Kekahunas receive a sufficient

19 amount of water to grow taro adequately in those lots,

20 that their needs are met with respect to those lots?

21 A. I believe they have sufficient water now to

22 plant all of the lots with what's in Honopou Stream

23 right now.

24 Q. What if it turns out that they don't? The

25 help them?

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1 A. I think we would but first -- I think we

2 would try to investigate if there is a problem in the

3 stream, any sinkholes or anything that is happening

4 abnormally as far as flow, why it's not getting down

5 there.

6 Q. Okay. So you would investigate, determine

7 the way of her getting enough water, correct?

8 A. Yes.

9 Q. And if you get to a point where you do that

10 investigation and clearly you need -- they need more

11 water, is A & B going to provide them with more water?

12 A. If there's water available and we can provide

13 it, as long as she's growing taro on an active basis,

14 I don't see a problem.

15 Q. The point at which you allow Maui Land & Pine

16 to take water out of the ditch system is not the point

17 at which you determine how much water you need in the

18 ditch system before you allow them to take it out,

19 right?

20 A. At what point -- my question is, at what

21 point in the system do you determine whether there's

22 sufficient amount of water to allow Maui Land & Pine

23 to exercise its option to take water out of the ditch

24 system?

25

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1 same question, you stand, ready, willing and able to

2 help them?

3 MR. SCHULMEISTER: Calls for speculation,

4 lack of foundation. What if it turns out that they

5 don't. I mean that's a lack of foundation.

6 HEARINGS OFFICER JUDGE MCCONNELL: Yeah.

7 You got to speculate.

8 Q. MR. HAIA: In fact the water that you

9 believe is sufficient to grow taro on the Kekahuna

10 parcel, is A & B, EMI still ready, willing and able to

11 provide additional water to meet those needs?

12 A. First of all, we would be willing to help

13 Mrs. Kekahuna to see what is going on with the system,

14 if anything.

15 Q. Would that include providing her with

16 additional water if need be?

17 A. I think that's correct, I think there is sufficient

18 water right now in the stream to meet all of her taro

19 growing needs.

20 Q. That's not responsive. I'm asking him

21 whether, if there is not enough water, A & B will

22 stand ready, willing and able to provide additional

23 water to meet those needs?

24 MR. SCHULMEISTER: Same objection. Vague.

25 as to under what circumstances there wouldn't be

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1 MR. MERCHANT: Objection, vague. He's

2 talking from a geographic point --

3 MR. HAIA: The point in the ditch system.

4 MR. MERCHANT: So geographic?

5 MR. HAIA: Yes.

6 Can you clarify the question?

7 A. I'm asking you to determine whether the flow to

8 determine whether or not Maui Land & Pine can exercise

9 their option to take additional water out of the

10 system?

11 A. We're measuring that point at Honopou Stream

12 boundary on the two ditches, Waioa and the New

13 Hamakua Ditch.

14 Q. So they can take at least 1.5 million gallons

15 of water a day as long as there's a certain amount of

16 water at Honopou Stream, and you would allow Maui Land

17 & Pine to exercise its option to take additional water.

18 A. What I am getting to is, if you're making

19 that determination at Honopou Stream, what is that

20 based upon?

21 MR. SCHULMEISTER: Talking about Maui Land

22 & Pine's determination?

23 MR. HAIA: Yes.

24 A. That's based on the flows that we believe we

25 need at HC&S. So at any time if the flow at the

NATIVE HAWAIIAN LEGAL CORPORATION
1164 Bishop Street, Suite 1205
Honolulu, Hawaii 96813
Telephone: 521-2302

ALAN T. MURAKAMI 2285
MOSES K. N. HAJIA III 6277

Attorneys for Petitioners
Na Moku Aupuni O Ko 'olau Hui,
Beatrice Kekahuna and Marjorie Wallett

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

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RESOURCE MANAGEMENT

2008 MAY 29 P 4: 12
DEPARTMENT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

In the Matter of the Contested Case)
Hearing Regarding Water Licenses at)
Honomanu, Keamae, Nahiku, and Huelo,)
Maui)
) DLNR FILE NO. 01-05-MA
) PETITIONERS' MOTION TO ENFORCE
) MARCH 23, 2007 FINDINGS OF FACT,
) CONCLUSIONS OF LAW, AND DECISION
) AND ORDER; MEMORANDUM IN SUPPORT
) OF PETITIONERS' MOTION TO ENFORCE
) MARCH 23, 2007 FINDINGS OF FACT,
) CONCLUSIONS OF LAW, AND DECISION
) AND ORDER;
) EXHIBITS "A" TO "Q"; APPENDIX "1";
) DECLARATION OF ALAN T. MURAKAMI;
) DECLARATION OF MOSES K.N. HAJIA, III;
) DECLARATION OF BEATRICE KEKAHUNA;
) CERTIFICATE OF SERVICE
)
) Hearing Date: _____, 2008
) Time: _____ a.m.

**PETITIONERS' MOTION TO ENFORCE MARCH 23, 2007
FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER**

Intervenor NA MOKU AUPUNI O KO 'OLAU HUI, INC., BEATRICE KEKAHUNA,
AND MARJORIE WALLET hereby move for an order to enforce this Board's March 23, 2007
FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER in this

29.8-1

docket by immediately ordering that DLNR staff:

1. issue a progress report of implementation of the March 23, 2007 Interim Order to the board within 21 days;
2. appoint a field monitor with direct accountability to the board for implementing the Interim Order within 21 days,
3. set the following deadlines for implementation, subject to review by the board, should circumstances require it:
 - a. within 21 days of the appointment of the field monitor, with the appropriate burden of proof on A&B/EMI, establish the amount of additional water needed to keep the temperature of irrigation water used by Beatrice Kekahuna and Marjorie Wallett to grow additional taro on their kalo lo'i in Honopou Valley below 77 degrees in order to avoid pythium rot;
 - b. within 21 days of the appointment of the field monitor, with the appropriate burden of proof on A&B/EMI, release all water from existing diversions into current EMI ditch systems back into Wailuanui Stream to keep the temperature of irrigation water used by Na Moku farmers to grow taro on their kalo lo'i in Waihanui Valley below 77 degrees in order to avoid pythium rot;
 - c. within 60 days of the appointment of the field monitor, install gauges above and below all points of diversion pursuant to paragraph 5;
 - d. within 30 days of the appointment of the field monitor, install temperature gauges pursuant to paragraph , or at other locations within affected kalo lo'i to implement the terms of paragraphs 2(a) and 2(b) above;
 - e. after the appointment of the field monitor, resolve controversies reported to the field monitor, or make recommendations to the board for such resolution within 14 days of any complaint filed;
4. present a budget allocating adequate resources to allow the field monitor to implement all terms of the Interim Order within 30 days, including any need for requests for funding;

In the alternative, after consultation and an opportunity to be heard, present a schedule of

29.8-2
2

implementation of the Interim Order to the board within 30 days of its order.

This motion is necessary due to the failure of the Department of Land and Natural Resources to timely implement its terms and the resulting harm to downstream taro growers and cultural practitioners who have suffered from this failure to timely abide by the terms of the order. This Motion is supported by the attached Memorandum in Support of Motion.

DATED: Honolulu, Hawai'i, May 29, 2008.



ALAN T. MURAKAMI
MOSES K. N. HAIJA III
Attorney for Petitioners
Na Moku Aupuni O Ko'olau Hui, et al.

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of the Contested Case Hearing) DLNR FILE NO. 01-05-MA
Regarding Water Licenses at Honomauu,)
Ke ana'e, Nahuku, and Huelo, Maui)
MEMORANDUM IN SUPPORT OF
PETITIONERS' MOTION TO ENFORCE
MARCH 23, 2007 FINDINGS OF FACT,
CONCLUSIONS OF LAW, AND DECISION
AND ORDER)

**MEMORANDUM IN SUPPORT OF PETITIONERS' MOTION TO
ENFORCE MARCH 23, 2007 FINDINGS OF FACT,
CONCLUSIONS OF LAW, AND DECISION AND ORDER**

I. INTRODUCTION

Petitioners hereby request immediate enforcement of the order, which the Board of Land and Natural Resources ("BLNR") entered on March 23, 2007. See, FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER ("Interim Order"), attached as *Exh. "A"*. In this Interim Order, the BLNR concluded and ordered, *inter alia*:

- Alexander & Baldwin ("A&B") to decrease current diversions on Waiokamilo Stream such that water flow below dam #3 would measure 6 mgd "subject to adjustment based on further monitoring." Interim Order 44, COL E. 13.
 - should Honopou residents and Petitioners Beatrice Kekahuna and Marjorie Walleit open more taro lo'i, they "may require additional water for these additional fields."
- Id.* at 43, Conclusion Of Law ("COL") D. 10;

The BLNR ordered that the amount of water to be left in the stream for additional use by Kekahuna will be set either by (1) the parties with or without the assistance of a DLNR-appointed monitor or (2) the Board if no agreement can be reached. The monitor is to be available to the parties upon request, in order to ensure compliance with this Interim Order and to investigate and resolve, if possible, all complaints regarding stream flows by any of the parties to this proceeding. Furthermore, the monitor is also responsible for verifying if the Board's understanding of the facts in this case is correct.

These measures were designed to grant PROMPT relief to Petitioners to end the ongoing

denial of their constitutionally protected activities pursuant to Haw. Const., Art. XII, § 7, amongst which is the growing of food, primarily taro, and gathering from streams. Despite the entry of the Interim Order more than a year ago, staff delay and inaction has denied Petitioners the bulk of the relief under core terms of the Interim Order. Accordingly, Petitioners hereby move for an order to enforce this Board's Interim Order by setting firm deadlines for the implementation of paragraphs 1, 2, 3, 4, 5, 6, 7, and 8 of the Order.

II. Background

A. Parties

Na Moku Aupuni O Ko'olau Hui ("Na Moku") is a nonprofit corporation organized by Native Hawaiian residents of the Ke'anae-Wailuanui ahupua'a, which encompasses the Nahiku, Ke'anae, and Honomanu license areas.¹ Na Moku was formed to promote the general welfare of the tenants and descendants of the ahupua'a of Ke'anae-Wailuanui and elsewhere, in social, spiritual, cultural, educational and economic affairs; to preserve, protect, and enhance the quality of the existing life of the people within the Ke'anae-Wailuanui ahupua'a, and to provide a formal voice and organization through which the residents of the community may participate fully and more meaningfully in the determination and development of policies and decisions affecting their destiny. Na Moku's membership currently exceeds 500. Because of the crisis created by A&B/EMI's East Maui streamwater diversions and the resulting lack of water, many kuleana landowners and others with legal interests in land with rights to water in Wailuanui have provided the Native Hawaiian Legal Corporation with formal attestations of their desire that water be immediately restored so that their families can grow taro and gather food as they and their ancestors have always done.

Marjorie Walleit and Beatrice Kekahuna are native Hawaiians and are residents of the Huelo license area. Each has a property interest in kuleana land identified as TMK: 2-9-001-014, consisting of LCA 5595-E-1, Grant 1918-1, Grant 3101-2 and Grant 1082, located in Honopou,

¹ In 1939, the Territory of Hawai'i and EMI entered into the East Maui Water Agreement. This agreement granted the Territory and EMI joint use of the ditch system that diverts an average of 160 million gallons per day of stream water from East Maui streams. The agreement established four (4) license areas identified as Honomanu, Huelo, Ke'anae, and Nahiku and provided for the disposition of these four (4) water licenses at public auction to the highest bidder.

Maui. This land is riparian to Honopou Stream. Because Honopou Stream fed ancient lo'i on this land since at least prior to November 25, 1892, if not since the time of the Mahele, traditional and/or appurtenant rights and/or riparian use to water from Honopou Stream are associated with these lands.

Beatrice Kekahuna also has property interests in kuleana land identified as TMK: 2-9-001-006 and 2-9-001-014, consisting of LCA 5459-X-2, which is located in Honopou, Maui, and is riparian to Honopou Stream. This stream has been the traditional source of irrigation water for lo'i on this kuleana since time immemorial.

In order to support their appurtenant and traditional and customary use of water to grow taro and gather from the stream, Ms. Kekahuna and Ms. Walleit seek to restore streamflow to Honopou and other streams affected by A&B/EMI ditch system diversions.

Maui Tomorrow, formally known as Maui Tomorrow Foundation, Inc. is a Hawaii nonprofit corporation. The mission of Maui Tomorrow is to foster responsible land use planning, community design and responsible growth for Maui County. Supporters of Maui Tomorrow like Neola Caveny and Ernest Schupp legally reside on property in East Maui and possess riparian and/or appurtenant water rights in streams with insufficient stream flow due to the EMI diversions. Both seek to enforce their appurtenant and/or riparian rights on these lands. This statement, while submitted by attorneys for Na Moku, et al., covers the position of Maui Tomorrow as well.

B. History

In 1876, construction of the system of ditches and tunnels that diverts on average 160 million gallons of water per day ("mgd") from East Maui streams was commenced. Construction of this ditch system was conditioned upon non-interference with the water and other rights of East Maui landowners. East Maui Irrigation ("EMI"), a subsidiary of Alexander & Baldwin ("A&B"), operates this system consisting of at least four parallel levels of water ditches that run from east to west across the East Maui mountain range intersecting streams within the area and diverting stream flow to Central Maui.²

² Nearly sixty years into these diversions, in 1939, the Territory of Hawai'i and EMI entered into the East Maui Water Agreement. The agreement established four (4) license areas identified as Honomanu, Huelo, Ke'anae, and Nahiku and provided for the disposition of these

Scope of diversions. Although the current average daily water delivery through this system is 160 mgd, it is capable of capturing and, during storm events, captures as much as 445 mgd. While some of the water diverted goes to domestic and other uses, the vast majority irrigates sugar cane in fields in Central Maui owned by Hawai'i Commercial and Sugar ("HC&S"), another A&B subsidiary. To place this volume in perspective, all domestic water uses on O'ahu total about 160 mgd.

Common Law Limitations. In a dramatically revealing irony, in or around 1900, approximately thirty years into its out-of-watershed diversion of East Maui stream water, HC&S filed a suit in equity for an injunction to restrain its competitor Wailuku Sugar Company from making out-of-watershed diversions of Wailuku Stream stream water. *Hawaiian Commercial & Sugar Company v. Wailuku Sugar Company*, 15 Haw. 675 (1904) ("HCS v. WSC").

In *HC&S v. WSC*, the Court ruled that Wailuku Sugar Co.'s diversions and resulting use of water could "not violate the requirement of the well established rule that such diversion shall be without injury to the rights of others." *Lonoaea, et al. v. Wailuku Sugar Company and Claus Spreckels*, 9 Haw. 651 (1895) ("Lonoaea"). Because the Court found that since 1894 Wailuku Sugar Co. had exceeded its rights as determined in *Lonoaea*, it issued an injunction restraining Wailuku Sugar Co. from continuing to "commit any acts in excess of its rights."

So, while A&B/EMI benefited greatly from this precedent in the above case, and specifically agreed initially that it would not interfere with the rights of landowners in East Maui, it nonetheless continues to turn a blind eye to the rights of East Maui landowners and native tenants, ignoring these rights in its wholesale diversions of East Maui stream flow.

Moreover, many of Na Moku's members have property interests in kuleana and other lands in the Nahiku, Ke'anae, and Honomanu license areas, upon which they seek to grow healthy taro. Native Hawaiian members of Na Moku also have claims to the public lands that comprise these license areas that remain unresolved. *Office of Hawaiian Affairs v. Hous. & City. Dev. Corp.*, 177 P.3d 884 (2008) (holding that the adoption of Apology Resolution by Congress subjects these lands to a claim by Hawaiians dispossessed of their government and lands illegally with the participation of the United States).

four (4) water licenses at public auction to the highest bidder. The original lease term for these four areas was set at 21 years and at five-year intervals. The Ke'anae license expired on June 30, 1972, Nahiku on June 30, 1977, Hueilo on June 30, 1982, and Honomanu on June 30, 1986.

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Challenges to Continued Diversion. On May 14, 2001, A&B/EMI filed an application with BLNR for the sale of a thirty (30) year lease for the right, privilege and authority to enter and go upon public lands in East Maui for the purpose of developing, diverting, transporting and using water related to such land. The application also requested that the State of Hawaii continue to issue A&B/EMI yearly revocable permits in the interim.

Waste of Water by HC&S. It is abundantly clear that the State and its predecessors have never, in the 130-year history of A&B/EMI's diversions of East Maui stream flow, required A&B/EMI to justify its use by providing credible evidence of its water needs. Moreover, as Lee Jakeway made abundantly clear in his written and live testimony during the hearing on interim relief, A&B/EMI is wasting water. Using figures for average water consumption by A&B/EMI to supposedly irrigate their sugar fields, the interim hearings revealed that, in the wet winter months of November to April between 2002 and 2004, it applied 134 million gallons per day (MGD) to 7560 acres (of the 25,000 acres irrigated with the use of both ground and East Maui water). Therefore, in any given 2-day rotation schedule during that time period, A&B/EMI applied an average of **17,725 gallons per acre per day (gad)**.

In the dry summer months of May to October between 2002 and 2004, A&B/EMI applied 268 MGD on 7560 acres (of the 25,000 acres irrigated with the use of both ground and East Maui water). Therefore, in any given 2-day rotation schedule during this dry period, A&B/EMI applied an average of **35,450 gad**.

This extravagant use of water at a usage charge of next to nothing (0.2 cent per 1000 gallons) indicates the ludicrous position of this private commercial entity. Small farmers subscribing to state irrigation system water delivery typically pay 35 cents per 1000 gallons or more. A&B/EMI has no legal rights to this water, and is apparently wasting what it diverts, but has, through sheer inertia and economic power, trumped superior common law, and the constitutional and statutory rights of Na Moku, et al. Furthermore, A&B provides Maui Land & Pine with the option of purchasing diverted water if, at 7:00 a.m., water flowing in the ditch system at Honopou is measured at 100 mgd or more.

C. **Burden of Proof**

Under Hawai'i's Constitution Article XII, § 7, HRS § 1-1, and HRS § 7-1,³ the

³ The land upon which the water diverted is developed is ceded land. Both Marjorie

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reasonable exercise of ancient Hawaiian usage is entitled to protection. *Public Access Shoreline Hawaii v. Hawaii County Planning Commission*, 79 Haw. 425, 903 P.2d 1246 (1995) certiorari denied, 517 U.S. 1163, 116 S. Ct. 1559, 134 L. Ed. 2d 660 (1996). Moreover, this protection mandates that this Board consciously identify the traditional and customary practices subject to this protection, assess the potential impact of its permit decisions, and seek actively to reasonably protect those practices from interference. *Ka Pa 'akai O Ka 'Aina vs. Land Use Commission*, 94 Haw. 31; 7 P.3d 1068 (2000).

In general, the diverter always has the burden of proof to justify the diversion. *In Re Water Use Permit Applications*, 94 Hawaii'i 97, 142, 9 P.3d 409, 454 (2000) (*Waiahole I*) (holding that the Water Commission must "prescribe a higher level of scrutiny for private commercial uses . . ." meaning, in practical terms, that the burden ultimately lies with those seeking or approving such uses to justify them in light of the purposes protected by the [public trust]). In line with a long legal history of protecting the water rights of taro farmers, prior precedent,⁴ and Haw. Const. art. XII, § 7,⁵ the Court has steadfastly upheld the exercise of Native Hawaiian and traditional and customary rights as a public trust purpose.⁶ The trust's protection of traditional and customary rights also extends to appurtenant rights.⁷

Wallett and Beatrice Kekahuna are also native Hawaiian beneficiaries of the trust established pursuant to Section 5(f) of the Hawaii Admission Act and, as such, have a right to expect reasonable revenues from the lease of public lands subject to the provisions of the trust for the support of programs for "the betterment of the conditions of native Hawaiians." (Id.)

⁴ See *Kalipi v. Hawaiian Trust Co.*, 66 Haws. 1, 656 P.2d 745 (1982); *Public Access Shoreline Hawaii'i v. Hawaii Planning Comm'n*, 79 Haw. 425, 438-447, 903 P.2d 1246, 1259-68 (1995), cert. denied, 517 U.S. 1163, 134 L. Ed. 2d 660, 116 S. Ct. 1559 (1996) [hereinafter PASH].

⁵ Article XII, Section 7 provides:

The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Island prior to 1778, subject to the right of the State to regulate such rights.

⁶ *Waiahole I*, 94 Haw. at 137, 9 P.3d at 449 (upholding "the exercise of Native Hawaiian and traditional and customary rights as a public trust purpose."), citing Haw. Const., Art. XII, § 7; PASH; *Kalipi*.

⁷ *Waiahole I*, 94 Hawaii'i at 137, 9 P.3d at 449, citing *Peck v. Bailey*, 8 Haw. 658, 661 (1867) (recognizing "appurtenant rights" to water based on "immemorial usage"); See, generally Elizabeth Ann Hooipo Pa Martin et al., *Cultures in Conflict in Hawaii: The Law and Politics of Native Hawaiian Water Rights*, 18 U. Haw. L. Rev. 71, 147-79 (1996) (surveying various

In its assessment of a water use permit application filed by Waiola O Molokai, the CWRM had to determine whether to grant a permit to allow the use of a new well that could impact the water discharging along the southern coast of Molokai, where extensive subsistence gathering occurs. *In Re Waiola O Molokai*, 103 Hawaii'i 401, 442, 83 P.3d 664, 705 (2004). The Court, following *Waiahole I*, concluded, "an applicant for a water use permit bears the burden of establishing that the proposed use will not interfere with any public trust purposes; likewise, the Commission is duty bound to hold an applicant to its burden during a contested-case hearing." *103 Hawaii'i at 441*, 83 P.3d at 704. This burden obligates the applicant:

...to demonstrate affirmatively that the proposed well would not affect native Hawaiian's rights; in other words, *the absence of evidence* that the proposed use would affect native Hawaiian's rights *was insufficient to meet the burden imposed upon [the applicant]* by the public trust doctrine, the Hawaii Constitution, and the Code.

Id. at 442, 83 P.3d at 705 (emphases added and omitted).

Without regard for the applicable legal principles, the CWRM concluded, based on no "clearly articulated finding of fact" that there would be no harm to practitioners attempting to continue gathering activities simply because they had *not* demonstrated that harm would occur.⁸ Reversing the Commission, with the applicable legal burden in mind, the Court concluded that this position "erroneously placed the burden on the Petitioners to establish that the proposed use would abridge or deny their traditional and customary gathering rights." *Waiola*, 103 Hawaii'i at 442, 83 P.3d at 705. Instead, the Court held that Waiola O Molokai was obligated to demonstrate *affirmatively* that the proposed well would not affect native Hawaiians' rights. It concluded, "in other words, the *absence of evidence* that the proposed use would affect native

rights).

Specifically, in *Waiola*, the Commission concluded in its "COL No. 24":

...that no evidence was presented that the drilling of the well would affect the exercise of traditional and customary native Hawaiian rights. Nor does the Commission find that any evidence was presented that the proposed use will affect any access to the shoreline or the nearshore areas. Therefore, the Commission finds that the proposed use will not in any way diminish access for the purpose of practicing traditional and customary native Hawaiian rights in the project area, shoreline, or nearshore areas.

103 Haw. at 442, 83 P.3d at 705.

Hawaiians' rights was *insufficient* to meet the burden imposed upon MR- Waiola by the public trust doctrine, the Hawaii Constitution, and the Code." *Id.* (emphases added).

Similarly, in a *second* water use permit application by the same landowner, the Court faced a similar claim by cultural practitioners representing a long line of gatherers⁹ that certain water uses by Molokai Properties, Ltd. subscribers were interfering with these same traditional and customary practices.¹⁰ In that decision, the Court, building on the *Waiola* precedent, once again found that the CWRM had misapplied the burden of proof, by concluding in Conclusion #40:

... no evidence was presented that the use of water from Well 17 would adversely affect the exercise of traditional and customary native Hawaiian rights. Nor does the Commission conclude that any evidence was presented that the existing or proposed uses would adversely affect any access to the shoreline or the nearshore areas. Therefore, the Commission concludes that the allocation will not in any way diminish access for traditional and customary native Hawaiian practices in the project area, shoreline, or nearshore areas.

⁹ The Court noted:

The Commission found and concluded in its Decision and Order that "[t]he gathering of crab, fish, limu, and octopus are traditional and customary practices that have persisted on Molokai for generations." The population of the island of Molokai consists "[*81] primarily of Hawaiians, many of whom "rely on the natural resources of the land and ocean[]" for such "subsistence activities" that include "gathering of marine resources including fish, shellfish, ula, he e and limu to feed their ohana (extended family)."

In the Matter of the Contested Case Hearing on Water Use Permit Application of Kukui (Molokai), Ltd., 116 Haw. 481, 508, 174 P.3d 320, 347 (2007)
¹⁰ HRS § 174C-10(c) and (d) provides, in its entirety:

(c) Traditional and customary rights of ahupua`a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778 shall not be abridged or denied by this chapter. Such traditional and customary rights shall include, but not be limited to, the cultivation or propagation of taro on one's own kuleana and the gathering of hihuiwai, opae, o opu, limu, thatch, ti leaf, aho cord, and medicinal plants for subsistence, cultural, and religious purposes.

(d) The appurtenant water rights of kuleana and taro lands, along with those traditional and customary rights assured in this section, shall not be diminished or extinguished by a failure to apply for or to receive a permit under this chapter.

In re Contested Case Hearing on the Water Use Permit Application Filed by Kukui, 116 Haw. 481, 509, 174 P.3d 320, 348 (2007) [hereafter, "*KMF*"]. Citing heavily to *Waiola*, the Court rejected an almost identical conclusion¹¹ in that case, which also relied on the *absence of evidence* that the proposed use would affect native Hawaiian's rights. The Court concluded that this CWRM conclusion "was insufficient to meet the burden imposed upon [the applicant] by the public trust doctrine, the Hawaii Constitution, and the Code." *Id.* citing *Waiola*, 103 Haw. at 442, 83 P.3d at 705. The Commission's conclusion that "no evidence was presented" to suggest that the rights of native Hawaiians would be adversely affected erroneously shifted the burden of proof to cultural practitioners Caparida and Kuauiua. *Id.*, citing *Waiola*, 103 Hawai'i at 442, 83 P.3d at 705. Accordingly, the Court held that the Commission failed to adhere to the proper burden of proof standard to maintain the protection of native Hawaiians' traditional and customary gathering rights in discharging its public trust obligation. *Id.*, citing *Waiola*, 103 Haw. at 443, 83 P.3d at 706. To ensure there would be no confusion going forward the Court noted, "[t]o the extent that harm to a public trust purpose... is **alleged**, the permit applicant must demonstrate that there is, in fact, no harm, or that any potential harm does not rise to a level that would preclude a finding that the requested use is nevertheless reasonable-beneficial. (Emphasis added). *Id.* at 499.

In this instance, Marjorie Wallert and Beatrice Kekahuna, Native Hawaiians each have legal interests in ancient lo`i in Honopou on which their ancestors lived and grew taro for generations. As Hawaiians, they also have unresolved claims to the public lands that comprise the four license areas. But for the State's failure to implement the terms of the Interim Order and the EMI diversions, Marjorie Wallert and Beatrice Kekahuna and their `ohana would cultivate taro on these lands and exercise traditional and customary rights in and around Honopou Stream and other streams.

¹¹ The CWRM Conclusion of Law #40 mirrors almost verbatim the Finding of Fact #24 that the *Waiola* Court rejected on identical grounds in that case:

... that no evidence was presented that the drilling of the well would affect the exercise of traditional and customary native Hawaiian rights. Nor does the Commission find that any evidence was presented that the proposed use will affect any access to the shoreline or the nearshore areas. Therefore, the Commission finds that the proposed use will not in any way diminish access for the purpose of practicing traditional and customary native

Similarly, consistent with prior common and statutory law, Na Moku has for years endeavored to convince the BLNR to restore streamflow in streams within the Hueho, Nahiku, Ke'anae, and Honomanu license areas to their natural or sufficient levels so Petitioners may restore kalo cultivation in these lo'i and exercise their appurtenant, riparian and traditional and customary rights ensured by Hawai'i's Constitution Article XI, §§ 1 & 7, Article XII, § 7, and HRS § 174C-63.¹²

Statutory limitations. HRS § 171-58(c) restricts the disposition of temporary water rights under those conditions that will best serve the interests of the State and to a maximum term of one year. Over the past nearly 30 years, the State has attempted to avoid the one-year maximum term restriction by alternating permits between A&B and EMI each year. Since the expiration of the original lease and up through 2000, the BLNR has regularly issued a revocable permit for each of four license areas. See, note 2 on page 4.

For nearly 30 years the BLNR issued these four revocable permits by alternating them between A&B and EMI, subject to the following condition:

The State reserves the right, subject to not less than thirty (30) days written notice, to withdraw water from this revocable permit to meet the following requirements as the State in its sole discretion may determine: Constitutionally protected water rights, instream flow standards, reservations needed to meet the Department of Hawaiian Home Lands rights under section 221 of the Hawaiian Homes Commission Act as well as other statutory or judicially recognized interests relating to the right to withdraw water for the purposes of and in accordance with the provisions of section 171-58(d), Hawaii Revised Statutes.

III. Petitioners' Partial Success in Obtaining Interim Relief.

In an attempt to secure immediate relief from the EMI diversions, pending the outcome of the contested case hearings initiated by Petitioners' challenge to the reissuance of permits or a

¹² Hawaiian rights in the project area, shoreline, or nearshore areas.

Na Moku also represents the interests of certain of its members who are beneficiaries of the trust created by the Hawaiian Homes Commission Act ("Act") and have applied for pastoral and agricultural homesteads within the Ke'anae-Wailuanui ahupua'a. Pursuant to Section 213(i) of the Act, they have a right to expect reasonable revenues to support programs for native Hawaiians and, pursuant to Sections 101 and 221 of the Act, sufficient water to support homesteading.

Na Moku also represents the interest of its members who are beneficiaries of the trust established pursuant to Section 5(f) of the Hawaii Admission Act. As beneficiaries of this trust, Na Moku members have a right to expect reasonable revenues from the lease of trust lands to

lease to A&B/EMI, the BLNR held interim relief hearings in October and November 2005. The specific issue addressed during these hearings was whether and to what extent current stream diversions should be reduced pending a final disposition of this contested case in order to protect the constitutional or legally protected rights of the parties. See, Minute Order #10, paragraph 2. After much debate, hearing, testimony, argument, evidence, and an *unfavorable* recommendation from the hearing officer, the BLNR issued its Interim Order. *Exh. "A."*

This Board's March 23, 2007 Interim Order improperly assigned a claimant the "burden of coming forward to make a prima facie showing identifying the claimed interest and, with reasonable specificity, the quantity of water required to satisfy that interest." *Id.* at 40, COL 1. The BLNR also noted that the "ultimate burden of persuasion, however, rests on the State and A&B/EMI to show that the continued diversion will not harm previously established rights." *Id.* at 40-41, COL 1. Notwithstanding that the BLNR's interpretation of the burden above flits in the face of the Supreme Court's most recent pronouncement that "[t]o the extent that harm to a public trust purpose...is alleged, the permit applicant must demonstrate that there is, in fact, no harm, or that any potential harm does not rise to a level that would preclude a finding that the requested use is nevertheless reasonable-beneficial[.]", Petitioners looked to the Order's other terms noted below in Subsection A. **The Terms of the March 23, 2007 Order**, to seek redress.

By these terms, the BLNR provided Petitioners Kekahuna and Wailett the opportunity for relief upon a showing that they intended to grow more taro:

10. Kekahuna would like to open more taro lo'i in the future and may require additional water for these additional fields.

Id. at 43. Similarly, the BLNR preliminarily concluded that:

13. What evidence was presented at the Evidentiary Hearing suggests that taro farmers in the lower Wailuanui valley have inadequate water in the lower valley that is available to them for their present taro growing needs. The precautionary principle requires an interim release of water into Waiokamilo Stream, *subject to adjustment based on further monitoring.*

Although A&B/EMI has decreased its diversions of Waiokamilo Stream as the BLNR ordered, Petitioners' inspections of these diversions left them with many concerns. Those

support programs "for the betterment of the conditions of native Hawaiians."

concerns were outlined in a letter to Morris Atta, the Honolulu DLNR staff member who, on June 21, 2007, replaced Maui DLNR staffer Daniel Ornellas, as the monitor. *See, Letter dated July 3, 2007, attached hereto as Exh. "E."* These concerns have never been addressed and, since December 2007, there has been no monitor to ensure compliance with the Interim Order. Practically speaking, the Interim Order's concept of a monitor has been no more than a concept awaiting implementation since the summer of 2007.

So, by all accounts, the Interim Order is currently nothing more than window dressing. Despite its clear and unambiguous terms, the DLNR staff has failed to timely implement the procedures outlined therein to monitor A&B/EMI's diversions, to ensure that A&B/EMI has complied with the requirement to permanently decrease its Waiokamilo stream diversions, and to deal with and resolve any and all other water related issues. With no timely administrative recourse, the DLNR staff violates the terms of the Interim Order and thereby unequivocally and knowingly continues to breach its fiduciary duty to those who have clear rights. NHLC has repeatedly informed the DLNR staff of these duties in past communications. Nevertheless, the DLNR staff is forcing Hawaiian taro farmers and gatherers from East Maui to bear the expense and burden of implementing the Order, in their attempt to enforce their basic rights. This refusal to cooperate has effectively imposed tremendous and onerous burdens on Petitioners in their efforts to simply practice their culture. *Declaration of Beatrice Kekahuna; Declaration of Alan T. Murakami, citing to Declaration of Edward Wendt and Declaration of Beatrice Kekahuna.*

A. The Terms of the March 23, 2007 Order

Under the terms of its Interim Order, the BLNR has required that the DLNR:

1. ... determine the status of pending petitions at the CWRM and if necessary file an appropriate petition with the CWRM for determination of the petitions for amendment of the IIFS for the diverted streams which are the subject of this action.
2. ... if necessary ... take all administrative steps necessary to assist the CWRM in the amendment of the IIFS, prepare an EA in accordance with HRS Chapter 343, and discharge its public trust and HRS Chapter 171 responsibilities.

Despite these directions, the DLNR staff has done nothing to implement these terms.

Pursuant to paragraph 3 of the Interim Order, the BLNR further ordered that A&B/EMI:

- a. Establish monthly inspections of all its diversions for the purpose of ensuring that by-pass facilities are clear of debris and otherwise are in good

working order.

b. Establish a program to promptly effect any repairs to such by-pass facilities which may appear necessary.

c. In recognition of the precautionary principle and the need to take proactive measures to protect public trust purposes, A&B/EMI shall decrease current diversions on Waiokamilo Stream such that the water flow can be measured below Dam #3 at the rate of 6,000,000 gpd based on a monthly moving average on an annual basis. *The DLNR monitor will make appropriate investigations to determine that this amount will meet the needs of the Na Moku members while not exceeding current or foreseeable requirements of the Na Moku members.* A&B/EMI may request through the DLNR monitor to adjust this amount if it can show that it cannot meet the required amount of flow below Dam #3 without A&B/EMI having to increase diversions from alternate sources.

d. In the event Kekahuna increases the amount of acreage that she has in cultivation as taro lo'i, A&B/EMI may be required to decrease diversions to allow Kekahuna sufficient water to irrigate her additional taro lo'i. *The amount of water to be left in the stream for use by Kekahuna will be set either by the parties with or without the assistance of the DLNR monitor or by the Board if no agreement can be reached.*

Exh. "A" at 46-47 (emphases added). The initial DLNR monitor succeeded in obtaining release of a portion of the stream flow back into Waiokamilo Stream. However, because the DLNR staff has not assured that a regular monitor timely performs the highlighted functions above, the Interim Order has been rendered essentially meaningless in every other regard.

Additionally, the BLNR directed the DLNR staff to:

5. ... immediately establish a program to monitor stream flows upstream and downstream of each diversion.
6. ... appoint an appropriate monitor, presumably but not necessarily an official of the Department, to ensure compliance with its order and to investigate and resolve if possible all complaints regarding stream flows by any of the parties to this proceeding. *In this regard it is recommended that the monitor appointed pursuant to this sub paragraph be available in the field upon written notice to all affected parties. The monitor will make recommendations to the Board for action by the Board for disputes which cannot be resolved by the monitor.*

Id. at 47-48 (emphases added).

Finally, the BLNR ordered that the appointed monitor:

7. ... will also be responsible for verifying if the Board's understanding of the facts in this case, as set forth above, are correct.
8. ... pursuant to subparagraph (d) above periodically record the temperature of the streams in question and make recommendations for further

decreases of diversions should it appear such action is necessary to control pythium rot.

Id. at 48. With no regular monitor available to the parties, there has been no investigation or verification of the critical facts in this case, leaving the BLNR in the dark about the truth of the circumstances and Petitioners without any effective interim relief. Moreover, without a regular monitor available to the parties, no temperature readings have been taken of any stream flow in over a year since the issuance of the Interim Order.

B. Na Moku's Attempts to Implement the Order

In their desire for and right to prompt implementation of the terms of the Interim Order, Petitioners have worked diligently to cooperate with the DLNR staff to assure that all terms of the BLNR Interim Order be implemented. Meeting with A&B/EMI workers and the assigned DLNR staff, Petitioners were able to:

- (1) initially get the appointment of one monitor, DLNR Maui staff Daniel Ornellas, to implement the terms of the Interim Order for the first several weeks after the order was issued. See, Email from L. Chow to Counsel dated April 20, 2007, attached as *Exh. "B"*.
- (2) enjoy the release of Waiokamilo and Kulani Stream¹³ (although it is unclear whether all possible releases have occurred to allow for the release of 6 mgd). *Declaration of Alan T. Murakami.*
- (3) communicate the outstanding issues related to implementation of the Order. *Id.*

With a significant amount of time, money and energy devoted to attempting to collaborate with the DLNR staff and deputy attorney general, Petitioners have only been partially successful in their repeated attempts to have the Interim Order implemented by:

- (1) Working with DLNR staff to set up an automated flow meter on Waiokamilo Stream just mauka of Dam #3. *Id.*
- (2) Meeting with the initial monitor appointed by DLNR staff in the field to go over outstanding issues related to errors in the Order. *Id.*

¹³ Under the prior sworn testimony by EMI Supervisor Garrett Hew, which led to Finding of Fact 81, the BLNR erroneously found that EMI did not divert water from Kulani, also known as Hamau, stream.

- (3) Meeting on multiple occasions with Morris Atta, the second DLNR employee designated as the field monitor, to elaborate on the various concerns Petitioners have raised in the implementation of the Interim Order. *Id.*

C. DLNR's Failures to Implement the Interim Order

Since the Interim Order was issued last year, the DLNR staff has utterly failed to implement the heart of the Interim Order, including the following major terms:

- (1) Timely appointing "an appropriate monitor ... to ensure compliance with its order and to:
 - a. "... investigate and resolve if possible all complaints regarding stream flows by any of the parties to this proceeding" (paragraph 6);
 - b. "... be available in the field upon written notice to all affected parties" (paragraph 6);
 - c. "... make recommendations to the Board for action by the Board for disputes which cannot be resolved by the monitor" (paragraph 6).
 - d. Make "appropriate investigations to determine that [the water released from Waiokamilo Stream] will meet the needs of the Na Moku members while not exceeding current or foreseeable requirements of the Na Moku members." (paragraph 3c);
 - e. "... be responsible for verifying if the Board's understanding of the facts in this case, as set forth in [its March 23, 2007 findings of fact] are correct. (paragraph 7);
 - f. "... periodically record the temperature of the streams in question and make recommendations for further decreases of diversions should it appear such action is necessary to control pythium rot. (paragraph 8).
- (2) Setting, "with or without the assistance of the DLNR monitor," in the absence of any agreement between A&B/EMI and Kekahuna/Wallett, "[t]he amount of water to be left in the stream for use by Kekahuna" ... "[i]n the event Kekahuna increases the amount of acreage that she has in cultivation as taro lo'i."

- (3) Determine whether it was necessary to “file an appropriate petition with the CWRM for determination of the petitions for amendment of the IIFS for the diverted streams” (paragraph 1);
- (4) “[I]f necessary ... take all administrative steps necessary to assist the CWRM in the amendment of the IIFS, prepare an EA in accordance with HRS Chapter 343, and discharge its public trust and HRS Chapter 171 responsibilities” (paragraph 2).

Petitioners have been repeatedly frustrated by the lack of prompt and timely action by the DLNR staff in responding to the Interim Order. While some of the delay can be tolerated simply because the tasks involved require some time to implement, the extent of the current delay has reached ridiculous proportions.

The impact of the delays on Petitioners has been predictably devastating. The inaction by DLNR staff has gone unremedied. By its inactions and inattention to this requirement under the Interim Order, the DLNR has completely disregarded the crucial function the BLNR envisioned for the monitor. He has *not*:

- (a) been “available in the field” (para. 6);
 - (b) investigated and resolved “all complaints regarding stream flows” (para. 7);
 - (c) recommended to the BLNR any action for “disputes which cannot be resolved by the monitor” (para. 6);
 - (d) made any “appropriate investigations to determine that [the water released from Waiokamilo Stream] will meet the needs of the Na Moku members” (para. 3c);
 - (e) been “responsible for verifying if the Board’s understanding of the facts in this case, as set forth in [its March 23, 2007 findings of fact] are correct” (para. 8);
 - (f) periodically recorded the temperature of streams and made “recommendations for further decreases of diversions should it appear such action is necessary to control pythium rot” (paragraph 8).
- As a result, the DLNR has violated and disrespected much of the letter and spirit of the Order.

- 1) **The monitor has failed to be “available in the field” to the parties upon request (Order, Para. 6)**

After a delay of some weeks after the Interim Order was issued, the DLNR appointed the initial monitor, Daniel Ornellas, a Maui DLNR staff member. *Exh. “B”*. Mr. Ornellas appeared to fit the description outlined in the Order. *Declaration of Alan T. Murakami*. He was available in the field, responsive to concerns raised by Petitioners, and diligent in collecting the information on which he was preparing to act consistent with the terms of the Order. *Id.* Mr. Ornellas, besides being accessible by phone to those Petitioners who raised concerns about the implementation of the Order, formally scheduled and attended a site visit to orient himself to the field conditions relevant to the implementation of the Order. Email from Daniel Ornellas to Garrett Hew dated June 15, 2007, attached as *Exh. “C”*.

Under the supervision and oversight of Mr. Ornellas, staff from the U.S. Geological Survey installed a real time water flow gauge on Waiokamilo Stream just mauka of Diversion Dam #3, which directs water to the main diversion point that feeds water into the Wailuani Valley auwai system. *Id.* This gauge is highly useful to monitoring the release of Waiokamilo Stream which the BLNR ordered. *Id.*

On June 21, 2007, the DLNR substituted Morris Atta for Mr. Ornellas as the field monitor, allegedly so Mr. Ornellas could perform other duties assigned to him. *Letter of Allan Smith dated June 21, 2007, attached as Exh. “D”*. Petitioners objected, challenging the application of higher work priorities being assigned to Mr. Ornellas at the cost of implementing a direct Order from the BLNR and fearing the loss of access to a field monitor stationed on Maui. *Declaration of Alan T. Murakami; see, also, Exhs. “F” and “M.”* The replacement monitor, Morris Atta, resides on O’ahu and Petitioners objected to the likelihood that he could not provide the same level of accessibility in the field upon request. *Id.* Petitioners nevertheless formally notified Mr. Atta of the corrections they sought in the Interim Order and additional water needed to meet the traditional and customary practices of Petitioners that were adversely affected by the diversions. *Letter from M. Haia to M. Atta dated July 3, 2007, attached as Exh. “E”*.

On September 28, 2007, Petitioners’ counsel and Edward Wendt met with Mr. Atta and Deputy Attorney General Linda Chow in Honolulu because, as Petitioners’ feared initially with his appointment, Mr. Atta was not “available in the field upon written request” of Petitioners, as required under paragraph 6 of the March Order. *Declaration of Alan T. Murakami*. In fact, he was completely absent from the realities of the circumstances in East Maui and was not contributing at all to the changes sought by Petitioners. *Id.* His absence directly contributed to

the lack of progress or response to their complaints and requests for investigation and resolution of disputes, as contained in their prior written request. *Id.*; see, also, *Exhs. "E" and "F."*

At that meeting, Petitioners requested a commitment from Mr. Atta to make regular scheduled visits to Honopou and Wailuanui, so taro farmers would have direct access to him to demonstrate the harm they were suffering as a result of the failure to release diverted water. Mr. Atta and Ms. Chow verbally agreed that: (1) Mr. Atta would fly to Maui at least each month thereafter to be accessible to the parties; and (2) between these scheduled visits, they also agreed to allow Daniel Ornellas, the prior monitor, to schedule site visits to Honopou and Wailuanui Valleys to listen to any concerns of the parties. *Email from A. Murakami to M. Atta, dated Dec. 5, 2007, attached as Exh. "F."*

Subsequently, Mr. Atta made two trips to Maui to supposedly implement the Order.

(1) On October 4, 2007, he brought along a UH CTAHR Extension Agent, Robin Shimabukuro, assertedly to assist him in determining appropriate methods and locations for measuring stream flow and temperature readings contemplated in the Order. *Declaration of Alan T. Murakami.* In the presence of Petitioners, he and Mr. Shimabukuro, who was already familiar with the layout of the Kekahuna-Wallett taro field in Honopou, conducted a site visit to listen to the request for more water for expanded taro cultivation envisioned by Ms. Kekahuna, Ms. Wallett, and their ohana. *Id.*

(2) On December 17, 2007, he conducted a second site visit, bringing no new information about how he planned to measure water flow or take temperature measurements or to resolve Ms. Kekahuna's declared need for more water to grow taro. *Declaration of Moses K.N. Haia.* He then reported that he had been promoted at the DLNR and could no longer serve as monitor. *Id.* He then asked for suggestions for a replacement monitor. *Id.*

Since the September 28, 2007 meeting, at which Ms. Chow and Mr. Atta agreed to schedule regular site visits, without any prior notice or consultation with Petitioners, they have reneged on their agreement over Petitioners' objections that the lack of accessibility was seriously compromising the vitality of the BLNR's Order. *Declaration of Alan T. Murakami.* Petitioners only discovered this unilateral decision when they inquired about the failure of Mr. Atta to make his planned November 2007 trip to Maui. *Id.* In the meantime, neither Mr. Atta, nor Maui DLNR field staff, have arranged for any regular site visits to receive input from the parties, or report on progress on prior requests for action. *Id.* Moreover, Petitioners learned of

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DLNR's disavowal of this previously agreed upon schedule by Mr. Atta's failure to adhere to it, and without any prior consultation with the DLNR staff. *Id.*

During his December 17, 2007 site visit, Mr. Atta announced he had been promoted and could not serve as the monitor any longer, and asked for suggestions as to who might succeed him *Declaration of Moses K.N. Haia, III.* Despite seeking names for a successor monitor, the DLNR appears to place no priority in filling that position, now functionally vacant for over 5 months. Petitioners, fearing more delay, urged that, in the interim, DLNR appoint Daniel Ornellas once again to fill the vacuum and grant him sufficient staff time to function as the monitor. See, *email from A. Murakami to L. Chow dated January 16, 2008, attached as Exh. "P."*

Petitioners also requested that the DLNR overcome any funding shortfall to fill the monitor position by seeking legislative funding. *Id.* Finally, Petitioners outlined in detail the systemic failure of the DLNR to perform its duties under the Interim Order after 9 months had passed. *Id.* Finally, Petitioners formally requested resumption and conclusion of the pending contested case hearings, which has appeared to be indefinitely suspended with no schedule for resumption and final disposition and an immediate hearing before the BLNR to resolve any differences. No one on the DLNR staff has responded to any of these requests for implementation of the Order.

Petitioners, at the invitation of Mr. Atta and Ms. Chow, also suggested a permanent replacement for Mr. Atta in January 2008. *Declaration of Moses K.N. Haia, III.* Despite that solicited suggestion, the DLNR has not responded. This position, which is key to the entire implementation of interim relief, still sits functionally vacant. It has been at least 6 months since the DLNR announced that the monitor position was vacant.

In summary, since March 23, 2007, when the BLNR issued its Interim Order requiring that the DLNR appoint a monitor to be "available in the field" to the parties, there have been 2 monitors. Until June 21, 2007, the DLNR provided that monitor, who, as a Maui DLNR field staff person, was available to the parties. However, when the DLNR substituted the Honolulu-based Morris Atta for Mr. Ornellas, it violated the order by not assigning a monitor who could be "available" to the parties upon request. Then, after his *de facto* departure as monitor and despite their request, Petitioners were frustrated by the DLNR's: (1) refusal to IMMEDIATELY reassign monitor duties to Daniel Ornellas with allowance for the additional staff time needed to

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effectively implement the provisions of the Order; (2) failure to timely fill the vacancy of the monitor position, despite Petitioners' submission of a name of a qualified replacement monitor; and (3) failure to resolve any funding issue, by seeking additional funding in its budget request to the 2008 Legislature to account for this additional required staff time.

2) The Monitor has failed to investigate and resolve disputes (Order, para. 7) or to determine that water released from Waioakamilo Stream "will meet the needs of the Na Moku members" (para. 3c)

It is critical to Petitioners that the monitor "investigate and resolve if possible all complaints regarding stream flows" pursuant to paragraph 6 of the Order. It is just as critical to Petitioners that the monitor verify and correct the Board's understanding of the facts of this case as contained in its Findings of Fact, pursuant to paragraph 7. Accordingly, Petitioners articulated their express objections to crucial factual errors in the Interim Order in an attempt to exercise their rights under these provisions. Petitioners articulated their specific objections in a letter to Mr. Alta on July 3, 2007, after expressing several oral complaints to the monitor. *Attached as Exh. "E."* Petitioners then followed up continuously and waited for prompt action on these expressed concerns, pursuant to the Order. *See, email string attached as Exh. "Q."* Over the past 9 months, neither the DLNR staff nor Mr. Alta reacted to any of these concerns, pursuant to paragraph 6 of the Order. Amongst their several complaints in that July 3, 2007 letter, Petitioners were especially concerned about obtaining redress for two crucial errors of the BLNR:

- (1) the failure in Conclusion of Law #9 to acknowledge the inadequacy of water available to Ms. Beatrice Kekahuna and her cousin Marjorie Walleff from Honopou Stream for taro they sought to grow on their taro lo'i properties in Honopou Valley (hereafter, "Honopou properties");¹⁴

¹⁴ Petitioner Kekahuna takes issue with the accuracy of this conclusion of law and requests that the monitor and/or his assistants conduct a site visit as soon as possible to her property to determine whether she in fact has adequate water from Honopou Stream to irrigate her lo'i. In its Conclusion of Law 10, the BLNR already concedes that as Ms. Kekahuna "would like to open up more taro lo'i in the future [she] may require additional water for these additional fields." The BLNR's acknowledgement that her desire to "open more taro lo'i" by law immediately triggers her appurtenant water rights as a kuleana owner. The BLNR has a duty to respect that constitutional right. It reserved that

- (2) the failure in Finding of Fact #11 to recognize the prior claim for water from Wailuanui Stream for Na Moku members who sought to grow taro in east Wailuanui Valley, which is only irrigable with water from that water source.¹⁵

a. The DLNR monitor has NOT provided Ms. Kekahuna and Ms. Walleff the relief contemplated in paragraph 3(c) of the Order.

Despite the terms of Paragraph 3(d), and despite Ms. Kekahuna's undisputed attempts to increase the amount of acreage that she desires to cultivate as taro lo'i, the DLNR monitor has NOT determined the additional amount of water A&B/EMI must decrease from its diversions of Honopou Stream to allow Kekahuna sufficient water to irrigate her additional taro lo'i, nor brought this unresolved issue to the BLNR since no agreement can be reached.

right in the last revocable permit it issued. See, Exhibit 3, Additional Condition No. 16 in the attached Revocable Permit for the Ke'anae area. In fact, that same respect for taro farmers' irrigation needs can be traced back through documents reaching back as far as 130 years ago, when the Kingdom issued the first permit to start the EMI ditch system. See, attached Exhibit 4, Lease from Royal Minister of Interior to Hamakua Ditch Co., and the accompanying text.

On direct examination at the contested case hearing, Mr. Edward Wendt, then President of Na Moku, was asked whether the exercise of traditions and customs passed on to him by his ancestors have been affected by low to no streamflow within the streams within the ahupua'a of Wailuanui and Ke'anae and Mr. Wendt answered in the affirmative. See, October 12, 2005 Transcript of Proceedings, attached hereto as Exhibit "I", at page 101, lines 11-16.

Mr. Wendt then testified that the diverted streams that service the lo'i of Na Moku members in the ahupua'a of Wailuanui include Wailuanui, Waioakamilo, and Hamau, which is also referred to as Kulani. Id. at lines 17-24.

Later on in his testimony, Mr. Wendt testified that Waikani [sic] waterfall is a part of Wailuanui stream. Id. at page 137, lines 19-21. Mr. Wendt also testified that certain lo'i in the higher elevations of Wailuanui Valley, like those farmed by Sam Akina, can only be serviced by water from Waikani [sic], which is a part of Wailuanui stream, that water from Waioakamilo Stream cannot be used by these lo'i because of their elevation. Some Na Moku members who farmed these lo'i were forced to abandon these lo'i because they could not get water from Waikane, which is Wailuanui Stream. Id. at page 140, line 20 to page 141, line 22.

During the testimony of Garret Hew on November 14, 2005, A&B so much as conceded that Na Moku was asserting a claim of insufficient water for taro growing from Wailuanui Stream. See, Transcript of November 14, 2005 Proceedings, attached hereto as Exhibit "2", at page 116, line 3 to page 117, line 6.

First, he has *not* sought to correct the erroneous BLNR statement that “[t]hese requests for increased stream flows for the most part were not supported by evidence introduced during the hearing.” This statement demanding evidence from Ms. Kekahuna and Ms. Walleit imposes a clearly erroneous legal burden on them. The Hawai‘i Supreme Court has on two occasions specifically reversed CWRM decisions placing the burden of proof on the Hawaiian practitioners, like Ms. Kekahuna and Ms. Walleit, who enjoy a constitutionally protected water right, by requiring from them evidence of harm to those rights. *Waiola*, 103 Hawai‘i at 442, 83 P.3d at 705; *KMI*, 116 P.3d at 499, 2007 Lexis at *82-83.

In this instance, the BLNR has already found, *erroneously*, that the credible evidence established that current streams flows should be sufficient to meet the existing needs of Ms. Kekahuna and Ms. Walleit for the irrigation and successful farming of wetland taro on their Honopou properties. Nevertheless, the BLNR was equivocal on this finding:

The Board wishes to emphasize that the findings made herein that Kekahuna and MT parties presently generally enjoy sufficient stream flow to meet their current needs with respect to taro cultivation are valid *only to the extent EMI’s flow measurements are accurate*. Such findings were necessary because no other evidence quantifying stream flows was offered. The evidence presented by Na Moku suggests that Na Moku’s members do not have sufficient flows for successful farming of wetland taro.

In making this decision, the Board is not making a determination regarding the amount of water necessary to successfully cultivate taro. That the amount of water currently in the streams is generally sufficient for the cultivation of taro for Kekahuna and MT parties or that the amount of water in the streams is insufficient for Na Moku’s members may or may not be the case when the merits of this matter are finally reached. ***For this reason, the Board accepts and recommends Na Moku’s suggestion that a monitor be appointed by the Board to oversee and verify all future flow measurements.*** In addition, based on the allegations that there is insufficient water flowing from Waiokamilo Stream through Lakini into Wailuanui, the current diversion will be decreased in order to provide more water to the lo‘i in lower Wailuanui valley, subject to adjustment based on further monitoring.

The Board also wishes to emphasize that ***regardless of whether current flows meet wetland taro requirements, they should also be sufficient to protect the gathering rights of Native Hawaiians.*** This latter issue could not be determined on this quantitative evidence.

March 23, 2007 Interim Order 39 (emphases added).

Accordingly, by the BLNR’s own terms, the role of the monitor is crucial to investigating any alleged errors in its findings and verifying and resolving any claims for additional water

needed to satisfy BOTH taro cultivation and native gathering rights. The inaction and delays related to implementing the Order relating to the appointment and effective functioning of the monitor violates the spirit and stated letter of the Order. The DLNR staff is required to support all means of encouraging the functioning of, and greater priority for action by, the field monitor, including filling this position and assuring he/she has all the required support of the DLNR to operate effectively. In addition, given the inexcusable delays in implementing this interim Order, the BLNR should provide enhanced scrutiny of the record of performance by the DLNR staff over the past year so its own order has meaning.

Ms. Kekahuna and Ms. Walleit have unequivocally contested the accuracy of the biased flow measurement EMI supervisor Garrett Hew presented. *See, Exh. “E”*. Moreover, the BLNR explicitly anticipated that Ms. Kekahuna would be asking for more water, should she open up more lo‘i, activity which would clearly require monitor action to resolve in her favor as a holder of a superior appurtenant water right relative to A&B/EMI.¹⁶

The scheme adopted by the Interim Order contemplates that the monitor promptly resolve these conflicts and claims. *Exh. “A”*, paragraphs 6 and 7. Despite this Board’s design, following the October 4, 2007 site visit to Honopou, Mr. Atta never communicated what, if anything, he had observed, investigated, or resolved to deal with Ms. Kekahuna’s claim for more water. *Id.*

Ms. Kekahuna and Ms. Walleit, now both in their 70’s, labored to keep their properties from going to weeds during the months they had anticipated action from the DLNR monitor. On at least two separate occasions two years apart in time, they clearly and unequivocally demonstrated by their labor their desire and ability to farm taro with the required release of water to both the BLNR Hearing Officer and the appointed field monitor. *Compare photographs marked Exhs. “G” and “H”, both taken on 10/10/05 during a site visit by the hearing officer, and Exh. “I”, 10/04/07 taken on 10/4/07 during a site visit by Mr. Atta.* The only factor preventing Ms. Kekahuna and Ms. Walleit, and their ohana, from actively cultivating their Honopou properties is the lack of water. When they planted taro utilizing the water they

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The BLNR concluded under Conclusion of Law #10:

10. Kekahuna would like to open more taro lo‘i in the future and may require additional water for these additional fields.

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currently have, they encountered severe stunting and disease caused by the lack of water. See, *Photograph of stunted taro grown on Honopou properties taken on 11/5/07, attached as Exh. "J"*. Not only is inexcusable delay occurring, for these kīpuna, they are literally running out of time to pass on their traditional knowledge to their progeny.

Accordingly, to maximize the effectiveness of the second visit, Petitioners specifically asked Mr. Atta to be prepared for his December 17, 2007 site visit by presenting a plan and timetable for action in advance of the site visit for what he intended to do with their claim for more water. See, *attached Exh. "M"*. Otherwise, they believed the planned site visit Mr. Atta proposed would be "a waste of time." *Id.* As they pointed out, by then, they had already expended time and energy to present their needs for water to grow taro to two former deputy directors of the CWRM as well as its staff over many years, to no avail. *Id.* They urged Mr. Atta to promptly act in his capacity as the field monitor to alleviate them from the financial burden of having to buy food to substitute for the crops they could not grow and the food they could not gather without sufficient stream flow in Honopou. *Id.* In the absence of prompt action on their requests for relief, they asked Mr. Atta to schedule a hearing before the BLNR to show how the Order was being ignored by him. *Id.* As Petitioners later reported to the DLNR:

We are particularly alarmed that you have allowed EMI to continue diverting from Honopou and Wailuanui Streams despite the clear harm to our downstream taro grower clients. Is there any justification for this incessant delay in providing the interim relief the BLNR ordered? Ms. Kekahuna suffers daily from her inability to grow kato for her table. Her very sustenance depends on your prompt and timely action to get EMI to release more water for her additional taro growing. We need IMMEDIATE relief for her.

Exh. "P".

Despite all of these attempts to clarify his role and to obtain useful information from him to effectively resolve the conflicts, Mr. Atta did nothing.

b. The DLNR monitor has NOT implemented paragraph 3(c) of the Order.

Paragraph 3(c) of the Interim Order is clear and unequivocal in requiring that the DLNR monitor or any DLNR staff make "appropriate investigations" to determine that the mandated release of water back into Waiokamilo Stream "will meet the needs of the Na Moku members while not exceeding current or foreseeable requirements of the Na Moku members."

Following the issuance of the Order, Na Moku's members who are attempting to cultivate taro on the eastern side of Wailuanui Valley contested the adequacy of the release of Waiokamilo Stream ordered by the BLNR, demanding that water from Wailuanui Stream also be released so that water can reach those sections of the Valley which cannot be irrigated by water from either Kulani or Waiokamilo Streams.¹⁷ *Id.*

Contrary to paragraph 3(c) of the Interim Order, neither the DLNR monitor nor any DLNR staff have made "appropriate investigations" to determine that the mandated release of water back into Waiokamilo Stream "will meet the needs of the Na Moku members while not exceeding current or foreseeable requirements of the Na Moku members." Na Moku complained to the deputy attorney general that this provision has been ignored. See, *Email from A. Murakami to L. Chow dated January 16, 2008, attached as Exhs. "E" and "P"*

3) The failure to recommend to the BLNR any action for "disputes which cannot be resolved by the monitor" (para. 6)

Despite the existence of serious disputes over how much water is required by Petitioners attempting to grow taro and continue traditional and customary gathering and fishing practices along the coast affected by the lack of stream flow, neither monitor has ever recommended any BLNR action to resolve any of those disputes. This inaction implicates the constitutionally protected rights under (a) Art. XI, § 7, requiring the protection of appurtenant water rights, and (b) Art. XII, § 7, requiring the BLNR to protect traditional and customary gathering from the stream and fishing rights dependent on free-flowing streams to the ocean.

Moreover, to resolve these claims, the monitor, and the BLNR, if necessary, must place the burden of justifying the diversion resulting in injury to those holding these rights squarely and solely on A&B/EMI. Accordingly, unless A&B/EMI can meet this burden, the BLNR is obligated to return water to the stream. *In Re Waiala O Molokai*, 103 Haw. 401, 429, 83 P.3d 664, 692 (2004) (holding that public trust doctrine "effectively prescribes a 'higher level of scrutiny' for private commercial uses . . . [and] that the burden ultimately lies with those seeking or approving such uses to justify them in light of the purposes protected by the trust").

Petitioners have more than satisfied the requirement to raise a *prima facie* case for the protection of constitutionally protected rights – appurtenant water rights (applicable to the

¹⁷ Na Moku contests Conclusion of Law # 18 of the Order. See, Exh. "E".

kuleana Na Moku members, Ms. Kekahuna, and Ms. Wallett own), rights exercised traditionally and customarily for religious, cultural and subsistence purposes, including the cultivation of taro, gathering of opae, limu, o'opu, and hihiwai from streams and fish, limu, crab, and other foods from the ocean. *Declaration of Bearrice Kekahuna, attached as Exh. "N"*; *Declaration of Edward Wendt, attached as Exh. "O"*. Moreover, in the absence of prompt action, they specifically asked Ms. Chow or Mr. Atta to schedule a hearing before the BLNR to show how the Interim Order was NOT being implemented. *Exh. "P"*.

Despite communications from undersigned counsel dated 7/3/07, 12/5/07, 12/17/07, and 1/16/08, there has been no action to resolve the disputes raised by Ms. Kekahuna and Ms. Wallett regarding the lack of irrigation water to lo'i in Honopou Valley, or by Na Moku regarding the lack of irrigation water to lo'i on the east side of Waiuanui Valley.

- 4) **The monitor failed to be "responsible for verifying if the Board's understanding of the facts in this case, as set forth in [its March 23, 2007 findings of fact] are correct" (para. 8)**

Despite Petitioners' numerous requests for correction of the BLNR findings of the fact, the monitor has never verified any contested finding, nor attempted to correct them, as indicated above. *See, Exh. "E"*.

- 5) **The monitor failed to periodically record the temperature of streams and make "recommendations for further decreases of diversions should it appear such action is necessary to control pythium rot." (para. 8)**

When asked what he had planned to do over the past two months to install temperature gauges and arranging for the release of more water into Honopou Stream to accommodate Ms. Kekahuna, he responded that he had not made any plans. *Declaration of Moses K.N. Haia, III*. In fact, no monitor has even installed any gauges in any streams pursuant to the Order. Petitioners also made clear that, despite the language in the Order, the proposed placement sites of temperature gauges in streams such as at Honopou will not provide the temperature of the water in the lo'i, the most important reading in determining whether flow is adequate. *Declaration of Alan T. Murakami*.

- 6) **The DLNR failed to coordinate with the Commission on Water Resources Management**

The BLNR directed the DLNR staff to perform two specific tasks to assure that the remedies for restoring stream flow to protect water rights under the Hawai'i Constitution, available through the Commission on Water Resources Management (CWRM), are meaningful. Under the terms of paragraph 1 of the Order, the BLNR ordered the DLNR staff to determine the status of the pending petitions filed by Petitioners for amendment of the interim instream flow standards (IFS) of 27 East Maui streams before the CWRM and "if necessary,"

- file an appropriate petition with the CWRM for determination of the petitions for amendment of the IFS for the diverted streams which are the subject of this action.
- take all administrative steps necessary to assist the CWRM in the amendment of the IFS, prepare an EA in accordance with HRS Chapter 343, and discharge its public trust and HRS Chapter 171 responsibilities.

Despite the terms of paragraphs 1 and 2, the DLNR staff has neither filed the appropriate petition for the CWRM to determine the IFS, nor taken any steps necessary to assist the CWRM in amending the IFS. In addition, the DLNR has neither prepared an environmental assessment as required under HRS chapter 343 to disclose the effects of continued diversions under the BLNR revocable permit or a 30-year lease (as also required by Judge Hifo's order), nor (2) discharged its public trust duties and HRS chapter 171 responsibilities.

Thus, Petitioners find themselves in only a marginally better position than they did prior to the issuance of the Interim Order, a year later. Nevertheless, the CWRM independently held a fact gathering public meeting on Maui regarding petitions to amend IFS without any direct involvement by DLNR staff responsible for the implementation of the Order on April 10, 2008. The CWRM has come to no determination on these petitions.

- 7) **Despite the terms of paragraph 5, the Department has failed to "immediately establish a program to monitor stream flows upstream and downstream of each diversion."**

Other than the USGS stream gauge in Waiokamilo immediately mauka of dam #3, the DLNR has not implemented paragraph 5 of the Interim Order by establishing a systematic method of measuring stream flows in any other stream. Accordingly, there is no hard data at these crucial points of concern on Honopou, Kulani, Waiuanui, or any stream other than

Waioakamilo. Even in the case of Waioakamilo Stream, there is no measurement of flows below dam #3 or any other point of diversion along that stream.

D. The BLNR should set a schedule for the resumption of Contested Case Hearings

The Interim Order contemplates a continuation of the contested case hearings, once interim relief is resolved. Without the immediate scheduling and resumption of the contested case hearing, Petitioners cannot resolve all outstanding claims and issues raised in the intervention before the BLNR on the revocable permits pending for the Hueilo, Honomannu, Ke'anae, and Nahiku license areas. Other than the time and energy required to assure implementation of the Order, there is no reason for withholding the resumption of the underlying contested case hearing. Petitioners have repeatedly asked for the resumption of these hearings, with no reply from the DLNR or Attorney General's office. See, *Exh. "P"*. The BLNR should order the resumption immediately, since we are now in the 7th year since the petition for intervention was filed, and many issues raised by the intervention remain unresolved.

E. The BLNR has a Public Trust duty to enforce its order, especially in the absence of CWRM regulatory authority in East Maui

Art. XI, § 1 of the Haw. Const. mandates that, "for the benefit of present and future generations, the State and its political subdivisions shall protect and conserve . . . all natural resources, including . . . water . . . and shall promote the development and utilization of these resources . . . in a manner consistent with their conservation." It further declares that "all public natural resources are held in trust for the benefit of the people." See, Appendix 1. These provisions reflect the "intent to incorporate the notion of the public trust into our constitution." *In re Water Use Permit Applications*, 94 Hawai'i 97, 131, 9 P.3d 405, 443 (2000) (hereinafter, "*Waiahole I'*").

Under Hawai'i State Constitution, Article XI, section 7, the state is obligated to, *inter alia*, "protect, control and regulate" . . . ground and surface water resources, watersheds, and natural stream environments," and assure "appurtenant rights, and existing correlative and riparian uses" of water. See, Appendix 1. Thus, Article XI, section 1 and article XI, section 7 adopt the public trust doctrine as a fundamental principle of constitutional law in Hawaii. *Id.* at 132, 9 P.3d at 444.

In addition, through the Hawai'i State Constitution, Article XII, section 7, the state has established a policy to reaffirm those rights traditionally and customarily exercised for cultural, subsistence and religious purposes. See, Appendix. To implement these provisions, the Legislature enacted HRS §§ 174C-2 and -101 to recognize and protect water rights associated with traditional and customary Hawaiian rights. *Id.* at 133, 9 P.3d at 445. See, Appendix.

Moreover, the Water Code does not supplant protections under the public trust doctrine. *Id.* at 130, 9 P.3d at 442. Under that doctrine, protecting and restoring stream flows in recognition of these rights are in the public interest. *Id.* at 155, 9 P.3d at 467. Thus, leaving stream flows in their natural state is a distinct "use" under this water resources trust. *Id.* at 136, 9 P.3d at 448. Furthermore, the Court has rejected any portrayal of retention of waters in their natural state as "waste." *Id.* at 137, 9 P.3d at 449, citing *Keppun v. Board of Water Supply*, 65 Haw. 531, 560 n.20, 656 P.2d 57, 76 n.20 (1982) (citing article XI, section 1 as an acknowledgment of the public interest in "a free-flowing stream for its own sake"). Similarly, it has upheld "the exercise of Native Hawaiian and traditional and customary rights as a public trust purpose." *Waiahole I*, 94 Haw. at 137, 9 P.3d at 449. The trust's protection of traditional and customary rights also extends to the exercise of appurtenant rights. *Id.*, note 34.

Furthermore, this Court has affirmed that the public trust over the state's water resources "effectively prescribes a 'higher level of scrutiny' for private commercial uses. . . ." which "[i]n practical terms . . . means that the burden ultimately lies with those seeking or approving such uses to justify them in light of the purposes protected by the trust." *Id.* at 142, 9 P.3d at 454 (emphasis added). In short, a diverter of natural stream flow has the burden of proving that the proposed water use would not abridge or deny traditional and customary native Hawaiian rights.

This burden is crucial. It clearly means that the trustee cannot rest on the failure of petitioners to produce enough evidence to support their claims to protect their rights under the public trust doctrine. *Waioala*, 103 Haw. at 442; 83 P.3d at 705 (holding that "the absence of evidence that the proposed use would affect native Hawaiians' rights was insufficient to meet the burden imposed upon [an applicant for a new water use permit] by the public trust doctrine, the Hawai'i Constitution, and the Code."). It must demand a sufficient showing by a diverter's use of water that could impact traditional and customary practices to demonstrate that there will be no harm to those practices with the proposed water use. *Id.*

In dealing with public trust assets such as water, the state's trust duties amount to much

more than simply acting as a "good business manager" of this crucial resource. *Waiola*, 103 Haw. at 421, 83 P.3d at 684. Rather, a court will take a "close look" at an agency's action to determine if it complies with the public trust doctrine, and not merely rubber stamp agency action. *Id.* at 422, 83 P.3d at 685. In particular, the Court has been very pointed in prescribing the duty of the CWRM to uphold:

The constitution designates the Commission as the primary guardian of public rights under the trust. Haw. Const. art. XI, section 7. As such, the Commission must not relegate itself to the role of a mere "umpire passively calling balls and strikes for adversaries appearing before it," but instead must take the initiative in considering, protecting, and advancing public rights in the resource at every stage of the planning and decisionmaking process. [citations omitted] Debates, in 2 Proceedings, at 857 (statement by Delegate Fukunaga) ("Thus, under [article XI, section 7], the State must take an active and affirmative role in water management."). ... The trust also requires planning and decisionmaking from a global, long-term perspective. [citation omitted] In sum, the state may compromise public rights in the resource pursuant only to a decision made with a level of openness, diligence, and foresight commensurate with the high priority these rights command under the laws of our state.

Waiahole I, 94 Haw. at 143, 9 P.3d at 455.

Moreover, even where there is uncertainty in amending IIFS and the need for more information, the precautionary principle requires interim action when necessary to protect the public interest:

"Where scientific evidence is preliminary and not yet conclusive regarding the management of fresh water resources which are part of the public trust, it is prudent to adopt 'precautionary principles' in protecting the resource. That is, where there are present or potential threats of serious damage, lack of full scientific certainty should not be the basis for postponing effective measures to prevent environmental degradation."

Id. at 154, 9 P.3d at 466.

These principles should provide for "reasonable 'margins of safety' for instream trust purposes when establishing instream flow standards." *Id.* at 156, 9 P.3d at 468. Thus, "uncertainty regarding the exact level of protection necessary justifies neither the least protection feasible nor the absence of protection." *Id.* at 155, 9 P.3d at 467. To adhere to its trust obligations, the trustee:

... may make reasonable precautionary presumptions or allowances in the public interest. The Commission may still act when public benefits and risks are not

capable of exact quantification. At all times, however, the Commission should not hide behind scientific uncertainty, but should confront it as systematically and judiciously as possible -- considering every offstream use in view of the cumulative potential harm to instream uses and values and the need for meaningful studies of stream flow requirements.

Id. at 159, 9 P.3d at 471. The water diverted would otherwise support the irrigation of taro lo'i and the traditions and customs of the Hawaiian families who would normally fish along its coastline and gather o'opu, opae, and hihiwai from those streams to supplement their diets. *See, Declaration of Beatrice Kekahuna attached as Exh. "N"; Declaration of Ed Wendi attached as Exh. "O".*

The BLNR should be deferring to the Petitioners' needs for stream water, and *timely* acting on their behalf, rather than indefinitely refusing to review the status quo diversions to support commercial sugar operations in Central Maui.¹⁸ The resulting denial of the exercise of constitutionally protected cultural rights is patently inexcusable. These are public trust purposes which the BLNR is under an obligation to timely respect and affirmatively protect with restored stream flows, especially where the A&B/ENMI diversions support *commercial* uses of water, which have a lower legal priority. *Waiahole I*, 94 Haw. at 142, 9 P.3d at 454 (holding that "the public trust, by nature and definition, establishes use consistent with trust purposes as the norm or 'default' condition, [and] effectively prescribes a 'higher level of scrutiny' for private commercial uses"). The CWRM is not even as active as the proverbial "umpire" in taking action on amending *interim* instream flow standards. *Waiahole I*, 94 Haw. at 143, 9 P.3d at 455. It is already armed with the scientific information which suffices to establish *permanent* instream flow standards. It has utterly failed to "take the initiative in considering, protecting, and advancing public rights in the [water] resource" in the subject East Maui streams as this Court has required. *Id.*

In this vacuum, it is incumbent for the BLNR to step in and act boldly and affirmatively. *In re Water Use Permits*, 94 Haw. 97, 142, 9 P.3d 409, 454 (2000) (holding that the public trust doctrine "effectively prescribes a 'higher level of scrutiny' for private commercial uses . . . [and]

¹⁸ In addition, this Court has previously rejected the viability of "any grant or assertion of vested rights to use water to the detriment of public trust purposes." *Waiahole I*, 94 Haw. at 141, 9 P.3d at 453. Accordingly, it reaffirmed the power of the state "to revisit prior diversions and allocations, even those made with due consideration of their effect on the public trust." *Id.*

that the burden ultimately lies with those seeking or approving such uses to justify them in light of the purposes protected by the trust." Art. XI, sec. 7, HRS sec. 174C-63 (emphasis added) provides:

Appurtenant rights are preserved. Nothing in this part shall be construed to deny the exercise of an appurtenant right by the holder thereof at any time. . . .

Petitioners have spent 6 years providing the CWRM documentation of Na Moku, Beatrice Kekahuna and Marjorie Wallett's appurtenant and traditional and customary water rights, to no avail, despite the statutory command that such rights be preserved.

Therefore, this BLNR should immediately order that DLNR staff:


1. issue a progress report of implementation of the March 23, 2007 Interim Order to the board within 21 days;
2. appoint a field monitor with direct accountability to the board for implementing the Interim Order within 21 days,
3. set the following deadlines for implementation, subject to review by the board, should circumstances require it:
 - a. within 21 days of the appointment of the field monitor, with the appropriate burden of proof on A&B/EMI, establish the amount of additional water needed to keep the temperature of irrigation water used by Beatrice Kekahuna and Marjorie Wallett to grow additional taro on their kalo lo'i in Honopou Valley below 77 degrees in order to avoid pythium rot;
 - b. within 21 days of the appointment of the field monitor, with the appropriate burden of proof on A&B/EMI, release all water from existing diversions into current EMI ditch systems back into Wailuanui Stream to keep the temperature of irrigation water used by Na Moku farmers to grow taro on their kalo lo'i in Wailuanui Valley below 77 degrees in order to avoid pythium rot;
 - c. within 60 days of the appointment of the field monitor, install gauges above and below all points of diversion pursuant to paragraph 5;
 - d. within 30 days of the appointment of the field monitor, install temperature gauges pursuant to paragraph , or at other locations within affected kalo

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- e. after the appointment of the field monitor, resolve controversies reported to the field monitor, or make recommendations to the board for such resolution within 14 days of any complaint filed;
4. present a budget allocating adequate resources to allow the field monitor to implement all terms of the Interim Order within 30 days, including any need for requests for funding;

In the alternative, after consultation and an opportunity to be heard, present a schedule of implementation of the Interim Order to the board within 30 days of its order.

DATED: Honolulu, Hawai'i, May 29, 2008.



ALAN T. MURAKAMI
MOSES K. N. HAIA III
Attorney for Petitioners
Na Moku Aupuni O Ko'olau Hui, et al

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EXHIBIT "A"

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of the Contested) DLNR File No. 01-05-WA
Case Hearing Regarding Water)
Licenses at Honomanu, Keanae,) FINDINGS OF FACT, CONCLUSIONS
Nahiku and Huelo, Maui,) OF LAW, AND DECISION AND ORDER

FINDINGS OF FACT, CONCLUSIONS OF LAW,
AND DECISION AND ORDER

The subject of this contested case is a long term

lease of water from the State for the areas of Honomanu, Keanae, Nahiku and Huelo in East Maui. The purpose of this hearing was to determine whether current diversions should be decreased to provide interim relief in the form of increased water in the streams for the protection of the constitutional or legally protected rights of the parties. This decision is not intended to be a foreshadowing of this Board's final decision in this case. Any relief granted hereunder is intended for interim relief only and is based solely on the evidence introduced in this hearing.

PROCEDURAL BACKGROUND

In a Prehearing Order Regarding Petitioners' Motions For Summary Relief (Filed Mar. 18, 2005) ("Summary Relief Order"), the Hearings Officer denied Petitioners' motions for summary relief to the extent they sought a declaratory ruling that the

decision of the Board of Land and Natural Resources ("Board") to put the interim disposition of water in the ditch system of Applicant East Maui Irrigation Company, Limited ("EMI") in "holdover" status pending the outcome of this contested case (the "Holdover Decision") was *per se* invalid. See Summary Relief Order at §§ A.2-3, C.7. The Summary Relief Order stated that "the BLNR, as trustee of the public trust, has authority 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[.]" and "the Holdover Decision was procedurally essential to the Board's proper discharge of its public trust responsibilities." Id. Given that the Holdover Decision was determined not *per se* illegal, the Hearings Officer ruled that an interim evidentiary hearing would be held upon the request of any party to determine if there was any factual or legal basis to support Petitioners' claims that interim releases of water were required in order for the Board to fulfill its public trust duties to protect "constitutionally or legally protected rights" pending the completion of an environmental assessment ("EA") and determination of amendments to interim instream flow standards ("IFS"). See id. at §§ A.4, G. All parties now concede that an EA (and potentially an environmental impact statement ("EIS")) must be prepared, amended IIFS must be determined and that this process is likely to take years.

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On March 14, 2005, Petitioner Na Moku Aupuni O Ko'olau Hui ("Na Moku") requested that the Hearings Officer set a conference to schedule an evidentiary hearing on its request for interim reductions in EMI's stream diversions. On March 15, 2005, Na Moku withdrew its March 14, 2005 request to schedule an evidentiary hearing on its request for interim relief. However, by letter of June 22, 2005, Na Moku renewed its request to schedule an evidentiary hearing on its request for interim relief. In accordance with Na Moku's letter of June 22, 2005, the Hearings Officer scheduled an evidentiary hearing concerning interim relief to determine the issue of "whether and to what extent current stream diversions should be reduced pending a final disposition of this proceeding in order to protect the constitutional or legally protected rights of the parties to interim relief." Minute Order No. 10 at 1.

In preparation for the evidentiary hearing, the Hearings Officer received submissions of written testimony and exhibits from Applicants Alexander and Baldwin, Inc. ("A&B") and EMI (collectively, "EMI"); Petitioners Na Moku, Beatrice Kekahuna ("Kekahuna"), and Maui Tomorrow ("MT") (collectively, "Petitioners"); and Intervenor Maui Pineapple Company, Limited ("MLP"), Maui County Department of Water Supply ("DWS" or "Maui County"), and Hawaii Farm Bureau Federation ("HFB"). The evidentiary hearing was held before the Hearings Officer on Maui

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on October 10-12 and November 14-15, 2005 (the "Evidentiary Hearing"). The Evidentiary Hearing included a site visit on October 10, 2005, to the properties of Kekahuna, Shupp, and Caveny, and EMI diversions on Honopou Stream, Puolua Stream, and Hanehoi Stream; and a site visit on October 12, 2005, to locations relating to Na Moku's claims, including the Lākini lo'i, the lookout on Hana Highway overlooking Wailuanui valley, Dams 1, 2, and 3, on Waiokamilo Stream, and Wailuanui valley. At the Evidentiary Hearing, EMI appeared by counsel David Schulmeister, Esq. and Elijah Yip, Esq.; Na Moku and Kekahuna appeared by counsel Alan Murakami and Moses K. N. Haia, III, Esq.; MT appeared by counsel Isaac D. Hall, Esq.; Maui County appeared by counsel Jane E. Lovell, Esq.; MLP appeared by counsel David Merchant, Esq.; and HPB appeared by counsel Sat Freedman, Esq.

Based upon the evidence, exhibits, oral testimony, and written submissions presented by the parties, the arguments and representations of counsel, and the entire record of this proceeding, the Board hereby makes and enters the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

A. Procedural Matters

1. At an early pre-hearing conference the parties agreed the streams in issue in the Evidentiary Hearing concerning

interim relief are Honopou, Puolua, and Hanehoi Streams in the Huelo license area, and Wailuanui, Waiokamilo, and Palauhulu Streams in Ke'anae. Minute Order No. 10 at 1.

2. On August 3, 2005, Na Moku submitted to EMI requests for production of documents relating to statements in the written testimonies of Carret Hew, G. Stephen Holaday, and Lee Jakeway filed in the Board as part of the Evidentiary Hearing. Letter from Alan Murakami to David Schulmeister and Randall K. Ishikawa dated 8/3/05.

3. In a letter dated August 8, 2005, EMI responded to Na Moku's discovery request by stating that EMI was not necessarily opposed to an agreed scope of discovery provided that it was reasonable and reciprocal. EMI proposed a meeting to discuss discovery. EMI attached to its August 8 letter interrogatories and requests for production of documents to Na Moku requesting specific information regarding which of its members are lacking in water, the locations that are lacking in water, the stream that each such member claims an entitlement to water from, and the locations of the 'auwai that each such member expects to use to transport any released water, among other matters. Letter from David Schulmeister to Alan T. Murakami and Moses K.N. Haia, III dated 8/8/05.

4. Na Moku objected to answering the interrogatories and request for production of documents submitted to it by EMI.

5. Na Moku filed Petitioners' Motion For Discovery on August 31, 2005. The Motion sought an order from the Hearings Officer that EMI provide the discovery requested by Na Moku in its August 8, 2005, letter.

6. On September 15, 2005, a pre-hearing conference was held before the Hearings Officer regarding, *inter alia*, Na Moku's Motion for Discovery. An agreement between EMI and Na Moku as to the latter's discovery requests rendered the motion moot. As to EMI's discovery requests, however, Na Moku objected to them at the pre-hearing conference. The Hearings Officer ordered Na Moku to provide responses to, *inter alia*, EMI's interrogatories.

7. At the September 15, 2005 pre-hearing conference, the Hearings Officer set the order in which the parties would present evidence at the Evidentiary Hearing. EMI offered to be the first to present evidence. However, Petitioners requested that they be allowed to present evidence first. The Hearings Officer granted Petitioners' request.

8. Na Moku responded to EMI's interrogatories by objecting that the requested information is irrelevant and that it is not Na Moku's burden to prove those matters. Exhibit A-41.

9. The preparation of an EA for EMI's application for a long-term lease from the Board has not been completed. The record contains no evidence that it has begun.

10. Some 27 applications for the determination of IIFS for the streams at issue in the Evidentiary Hearing are currently pending before the Commission on Water Resource Management ("CWRM").

11. No Petitioner asserted a claim of insufficient water for taro growing purposes from Wailuanui and Palauhulu Streams.

12. Any finding of fact improperly designated as a conclusion of law should be deemed or construed as a conclusion of law.

B. The EMI Ditch System

13. EMI, a subsidiary of A&B, operates a system of diversions, intakes, ditches and tunnels that collect and transport water from the Huelo, Honomanu, Ke'anae, and Nahiku license areas in East Maui to sugarcane fields in Central Maui owned by Hawaiian Commercial and Sugar Company ("HC&S"), as well as to MLP for the irrigation of pineapple and Maui County for the domestic water needs of upcountry Maui and the irrigation needs of small farms in Kula. Declaration of Garret Hew dated July 29, 2005 ("Hew Decl.") at ¶¶ 1, 3; Exhibit A-1.

14. The Lowrie Ditch in the EMI system was completed in 1900. Exhibit MT-13 at 115.

15. The Koolau Ditch was completed in 1904. Exhibit MT-13 at 116.
16. The New Haiku Ditch was completed in 1914. Transcript of Evidentiary Hearing ("Tr.") 11/14/05 at 77:19-20.
17. The Kauhikoa Ditch was completed in 1915. Tr. 11/14/05 at 77:21.
18. The Wailoa Ditch was completed in 1923. Tr. 11/14/05 at 77:21-23.
19. Since completion of Wailoa Ditch in 1923, the EMI system has been operated in essentially the same way, and there have been no major changes to the system. Tr. 11/14/05 at 78:25-79:6.
20. The Huelo license area is 8,752.690 acres and is covered by Revocable Permit No. S-7264. Hew Decl. at ¶ 4; Exhibit A-2.
21. The Honomanu license area is 3,381 acres and is covered by Revocable Permit No. S-7263. Hew Decl. at ¶ 5; Exhibit A-3.
22. The Ke'anae license area is 10,768 acres and is covered by Revocable Permit No. S-7265. Hew Decl. at ¶ 6; Exhibit A-4.
23. The Nahiku license area is 10,111.220 acres and is covered by Revocable Permit No. S-7266. Hew Decl. at ¶ 7; Exhibit A-5.
24. In the aggregate, on an annual basis, the water collected and transported by EMI arising on the land covered by these four licenses averages 70 % of the total water collected and transported by EMI, although this percentage can vary considerably during the course of any given year. Hew Decl. at ¶ 8; Tr. 11/15/05 at 97:23-98:7.
25. The delivery capacity of the EMI system is 450 million gallons per day ("mgd") and its average delivery is 165 mgd. Hew Decl. at ¶ 10.
- C. Water Needs of EMI and HC&S
26. HC&S is the larger of Hawaii's two remaining sugar plantations, growing 77% of the state's 2004 raw cane sugar crop, generating gross revenues in the State of Hawaii of \$112,000,000 and an operating profit of \$4,800,000. HC&S generally employs approximately 800 full-time workers on Maui, and EMI employs another 17 workers. Declaration of G. Stephen Holaday ("Holaday Decl.") at ¶¶ 3, 6.
27. HC&S' plantation consists of approximately 43,300 acres of land. HC&S cultivates sugar on approximately 37,000 acres. Of these 37,000 acres, approximately 30,000 acres are irrigated by EMI delivered water. Of these, approximately 5,000 acres are irrigated solely by EMI water and approximately 25,000 acres are irrigated with a combination of EMI water and groundwater pumped by HC&S when EMI ditch flows are inadequate

to meet the irrigation needs of the fields. Hew Decl. at ¶ 13; Holaday Decl. at ¶ 3; Declaration of Lee Jakeway ("Jakeway Decl.") at ¶ 3.

28. Most of the water delivered to HC&S by EMI is used for irrigation of the approximately 30,000 acres of sugar fields that can receive EMI water but some is used for factory purposes. The average aggregate amount of EMI water that is used for factory purposes ranges from 3 to 8 mgd. Jakeway Decl. at ¶¶ 4-5.

29. The irrigation needs of the approximately 30,000 acres of HC&S' sugar fields that receive EMI water is determined by the daily evapotranspiration rate, which is defined as the loss of water from the soil both by evaporation and by transpiration from the plants growing thereon, and varies during the year depending upon climatic conditions, solar insolation, temperatures, humidity, and wind speed. In order to maintain sugar yields, the sum of available rainfall plus irrigation water applied to the fields must approach this figure as much of the time as possible. Jakeway Decl. at ¶ 6.

30. The amount of irrigation water that is needed for the approximately 30,000 acres that receive EMI water varies with the weather but averages from a low of 134 mgd during the winter months to a high of 268 mgd during the peak usage months from May to October. For operating years 2002-2004, the average

breakdown was 71% surface water and 29% pump water. Jakeway Decl. at ¶ 9.

31. HC&S conserves water by using a "drip" irrigation system that distributes water to the roots through small holes in plastic tubes. All but a small area of the cultivated cane land farmed by HC&S is drip irrigated. Holaday Decl. at ¶ 4; Jakeway Decl. at ¶ 11.

32. Because HC&S does not have the capacity to irrigate all of its fields simultaneously, the irrigation water that is available is applied in "rounds" to different fields in accordance with priorities that are assigned to them by the farm managers. Jakeway Decl. at ¶ 12.

33. HC&S meets its power needs principally by burning bagasse from its sugar cane grinding operations and with hydro power generated from turbines that run on EMI delivered water. HC&S is also under contract with Maui Electric Company ("MECO") to supply, at specified rates, 12 megawatts (MW) of power from 7:00 a.m. to 9:00 p.m. daily except Sunday and 8 MW at all other times, subject to events of force majeure. The contract provides for monetary penalties in the event these requirements are not met. The 30 MW total capacity of HC&S' steam-powered system combined with HC&S' internal power consumption and obligations to supply power to MECO is a limiting condition on HC&S' ability to pump groundwater during dry periods when the

hydro units may not be operating. Holaday Decl. at ¶ 6; Jakeway Decl. at ¶ 15.

34. 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 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, MPC or HC&S. All the water delivered to HC&S is used by HC&S for irrigation and factory operations. EMI and HC&S does not discharge water, once taken into the system, into the ocean. Hew Decl. at ¶ 14.

35. 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 consumes electric power. To accomplish this, HC&S attempts to divert the maximum possible amount of water is taken into the HC&S system at the Wailoa ditch, 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. Hew Decl. at ¶ 15.

36. Surface water flows from East Maui can fluctuate from day to day and at times cannot be relied upon at times to meet what HC&S asserts are its irrigation requirements. Hew Decl. at ¶ 16.

37. If the water currently collected by EMI from State lands were to become wholly unavailable to EMI, it would not be economic for HC&S to continue to cultivate on Maui. In turn, it would be uneconomic to operate EMI in the manner in which it has historically been operated inasmuch as the economic value to A&B of operating EMI is derived from its contribution to the profitability of HC&S' sugar cultivation. It would also be uneconomic to renew HC&S' contracts with MECO because the prime economic justification for those contracts is the cost effective generation of power from renewable energy made possible by the bagasse and hydro power that are byproducts of HC&S' sugar operation. Holaday Decl. at ¶ 7. It is obvious, given the fact that most of the diverted water goes to the irrigation of sugar, that relatively small reductions in sugar acreage could make available considerable water for downstream users. The parties have offered no evidence of the effects of relatively small reductions in sugar cultivation.

D. Maui County's Water System and Water Needs

38. The County of Maui Department of Water Supply ("DWS") consists of five separate water systems. Written Testimony of

County of Maui Department of Water Supply ("DWS Written Testimony") at ¶¶ 1-2.

a. The largest surface water treatment facility ("WTF") on Maui is the Kamole Weir WTF in Halimaile, which relies on flows from the Walloa Ditch. Treated water from that facility goes to 6,440 water service connections and can supply water to almost the entire Upcountry region (9,523 water service connections) if necessary. Kamole Weir WTF supplements the water supplied to this area by the Haiku and Kuapakalua wells and is the primary source in the event of pump failure. The Kamole Weir WTF is also the primary source of water for nearly all of Upcountry Maui during times of drought. Kamole Weir WTF's average daily production is 2.5 mgd. The facility can process approximately 8 mgd at maximum capacity. DWS plans to add 2.3 mgd capacity to the Kamole WTF in 2015. DWS Written Testimony at ¶ 3.

b. Upcountry Maui, the second largest water system in Maui, relies on water from East Maui streams and ditches for its public water supply. The Upcountry system includes the communities of Kula, Pukalani, Makawao, and Haiku. The population served by this system consists of approximately 30,891 people. The Upcountry system serves Kamehameha Schools Maui campus, Hawaiian Homelands at Waiohuli/Keokea, as well as many businesses, churches, health care and government

facilities. Treated surface water is the primary source of water for Upcountry Maui. For places in Upcountry Maui that are primarily served by well water, the surface water system is the backup in the event the well should go out of service. DWS Written Testimony at ¶ 2.

c. The water source for the Piiholo WTF is the Waikamoi Forest, delivered through EMI's Piiholo intake system. This WTF, located in the Makawao Forest Reserve adjacent to and east of the 50 million gallon Piiholo Reservoir, serves the Lower Kula Service Area. Piiholo WTF's average daily production is 3.0 mgd. DWS Written Testimony at ¶ 4.

d. The Olinda/Upper Kula WTF also relies on water from the Waikamoi Forest, delivered through the Waikamoi Flume intake system. Water treated in this facility is stored in the 30 million gallon Waikamoi Reservoirs and the 100 million gallon Kahakapao Reservoirs. The area served by this treatment facility is Upper Kula, Ulupalakua, and Kanaio. These reservoirs will also supply the non-potable agricultural line that will provide untreated surface water to farmers in Upper Kula, which is currently under construction. The average daily production at the Olinda/Upper Kula WTF is presently 1.3 mgd. This treatment plant is slated to add 0.7 mgd capacity in 2006. DWS Written Testimony at ¶ 5.

39. EMI supplies an average of about 8.2 mgd to the DWS (including water supplied directly to the Kula Agricultural Park). Hew Decl. at ¶ 10.

40. Maui County's access points to the EMI system for water that it takes, treats and delivers as potable water to its customers in Makawao, Kula and Nahiku are at the Waikamoi upper flume (near the Olinda WTF), the Waikamoi lower flume (near the Piiholo WTF) and the western end of the Wailoa Ditch (near the Kamole WTF). In addition, non-potable water is taken by DWS from HC&S' Hamakua Ditch for delivery to the Kula Agricultural Park. Hew Decl. at ¶ 12; Tr. 11/15/05 at 103:12-23, 106:23-107:3.

41. EMI, Maui County, and HC&S entered into an agreement dated December 31, 1973 (the "1973 Agreement") whereby EMI agreed to collect and deliver water to Maui County. The term of the 1973 Agreement was 20 years. Exhibit F-1.

a. The 1973 Agreement provided that EMI would collect and deliver up to 6,000 gallons per day ("gpd") to serve the community of Nahiku and collect and deliver water to the Waikamoi area. Water collected by EMI within the Waikamoi area would be discharged into the Waikamoi, Olinda and Piiholo Reservoirs. DWS Written Testimony at ¶ 6; Exhibit F-1.

b. Under the 1973 Agreement, EMI agreed to make available to Maui County up to 12 million gallons of water it

collected from the Wailoa Ditch per 24-hour period. Maui County had the option of receiving an additional 4 million gallons of water from this source after giving one year's written notice to EMI. DWS Written Testimony at ¶ 7; Exhibit F-1.

42. The 1973 Agreement expired in 1993, but was extended on several occasions. The last extension expired on April 30, 2000. Since that time, EMI has been delivering water to the County pursuant to a document entitled "Memorandum of Understanding Concerning Settlement of Water and Related Issues" ("MOU") executed on April 13, 2000. Hew Decl. at ¶ 11; DWS Written Testimony at ¶ 9; Exhibits F-2 to F-9.

43. That MOU provides that Maui County may receive 12 mgd from the Wailoa Ditch, with an option of an additional 4 mgd, as in the 1973 agreement. However, it provides that during periods of low flow, Maui County will have a minimum allotment of 8.2 mgd. The MOU also provides that HC&S will have a minimum flow of 8.2 mgd, or 9.4 mgd if fire flow should be required. If these minimum amounts cannot be delivered, then Maui County and HC&S are to receive prorated shares. DWS Written Testimony at ¶ 9; Exhibit F-9.

44. Maui County depends heavily on water received through EMI's ditch system. Upcountry Maui has a high demand for water. If Upcountry Maui's main source of water supply were curtailed, the deficit could not be made up by other portions of DWS's

water system because the Upcountry system is separate and distinct from the water systems serving other regions of Maui. Cutting off Upcountry Maui's main public water supply completely would result in a public health crisis and economic catastrophe. Even relatively small outbacks in the amount of water delivered to the County for use in Upcountry Maui would severely impact homes, businesses, schools, churches, farms, health care facilities, and others who rely on this water supply for their basic needs. DWS Written Testimony at ¶ 10.

45. The community of Nahiku is also dependent on EMI ditch water for its public water supply. EMI collects and delivers up to 20,000 gallons of water per 24-hour period to serve the Nahiku community. DWS Written Testimony at ¶ 11.

E. MLP's Water Needs

46. MLP is America's largest grower, processor and shipper of Hawaiian pineapple. MLP currently cultivates approximately 6,000 acres of pineapple on Maui, over 2,800 of which are in East Maui in proximity to the EMI system. MLP has entered into negotiations for long-term leases of approximately 400 additional acres of agricultural lands in the Haliimaile, East Maui area, which will be converted to use for pineapple cultivation. Hew Decl. at ¶ 12; Nohara Testimony at ¶¶ 4, 5.

47. Taking into consideration the water needs of pineapple, the number of MLP's pineapple fields that lie fallow

at any given time, MLP's conservation practices, and rainfall, MLP currently requires approximately 3.5 mgd of irrigation water from the EMI system for its East Maui fields. From 2004 through 2009, MLP estimates that it will require 4.5 mgd of water in East Maui. From 2009 to 2016, MLP estimates that it will require approximately 4.4 mgd of water in East Maui. Nohara Testimony at ¶¶ 8-13.

48. Under the License and Water Transmission Agreement effective January 1, 1990 and a series of modifications and extensions to that agreement (collectively, "MLP/EMI Agreement"), EMI transports and MLP withdraws two "classes" of water from the EMI system. Nohara Testimony at ¶ 16; Exhibits E-2 to E-6.

a. The first class is water pumped into the EMI system by MLP from water sources outside of the watersheds of Hueilo/Ke'anae Stream ("MLP Base Water"). This water represents the majority of MLP's usage. Nohara Testimony at ¶¶ 17, 19-23; Exhibit E-7.

b. The second class is water that MLP is contractually permitted to withdraw, for a fee, when flow in the EMI system exceeds 100 mgd ("MLP High-Flow Water"). MLP High-Flow water is collected by EMI from the license areas in question in this contested case. Because of the fee structure for transporting such water, MLP's use of MLP High-Flow Water

has been limited exclusively to periods when the flow in the EMI system exceeds 200 mgd, which generally correlates to periods of wet weather when EMI's diversions likely are not as problematic to other users of the diverted streams. Nohara Testimony at ¶¶ 17, 24-26.

49. A reduction in the amount of water that EMI may divert from the Huelo/Ke'anae Streams would negatively impact MLP's pineapple business by: (a) lowering overall EMI system flow, which would reduce the instances when EMI system flows are above 200 mgd, thereby increasing the cost of transporting MLP Base Water; (b) threatening the economic viability of the EMI system, which, if abandoned by EMI, would cease the delivery of MLP Base Water and/or MLP High-Flow Water to MLP, and thus deprive MLP of the only feasible source of water for its East Maui pineapple fields. Nohara Testimony at ¶¶ 27-32.

F. HFB's Water Needs

50. HFB is a statewide organization of approximately 2,200 member families, in ten bureaus in every county of the state, including the island of Maui. Maui County Farm Bureau's members include the sugarcane and pineapple plantations along with farmers and ranchers on the island. Among HFB's purposes is to advocate for the adoption of State and County governmental policies that will give farmers manageable water rate price structures and assure them of reliable water sources and

adequate supply for their farms. Direct Testimony of Warren Watanabe ("Watanabe Testimony") at ¶¶ 2, 4.

51. The Farms are dependent on water from East Maui. Water is critical to the success of competitive and diverse agriculture. Watanabe Testimony at ¶¶ 7-9, 13; Tr. 11/14/05 139:19-25.

52. Presently, farmers in Upcountry Maui are billed for their water usage through Maui County. Watanabe Testimony at ¶ 15.

G. Water Requirements For Taro Cultivation

53. Taro has been successfully grown with the application of a gross amount of water ranging from 15,000-40,000 gad. Exhibit A-8 (Leslie J. Watson, The Legal Importance of the Water Requirements of Taro Colocasia Esculenta in Hawaii, Proceedings of the Second International Symposium on Tropical Root and Tuber Crops at 150 (1970)).

54. A&B/EMI presented evidence of controlled and published studies that suggest that water flow of 50,000 gad is adequate to supply a taro farmer with optimal yield for taro plus flexibility to manage the irrigation of his or her taro fields based on controlled and published studies done by Dr. de la Pena. Tr. 10/12/05 at 87:15-88:13.

55. The consumptive use of water is defined as the amount of water that is evaporated and transpired by the plant, and is

measured by calculating the difference between the inflow and outflow of water. Tr. 10/12/05 at 42:3-14, 45:10-13.

56. In his study, De la Pena did not, in fact, measure water outflow. Tr. 10/12/05, 36:2 to 36:24. De la Pena, in his study, assumed the consumptive water use of taro to be 5,000 to 10,000 gad to arrive at the further assumption of an outflow rate of 20,000 to 25,000 gallons and has no evidence to confirm this outflow rate. Tr. 10/12/05, 37:5 to 37:22.

57. Apart from the gross amount of water required to cultivate taro, water temperature is important because of pythium rot that can damage the taro. Pythium rot can be controlled, however, provided that an adequate amount of water is flowed through a lo'i to keep the soil temperature below 85°F because flowing water insulates the soil from heat, delivers oxygen to the taro plant, and prevents pythium rot from forming. de la Peña Decl. ¶ 6; Tr. 10/12/05 at 20:18-21:25, 22:10-23:8, 52:14-53:20, 66:7-68:7.

58. In the De la Pena and Melchor study, there is no discussion of water temperature and no collection of data of either the initial starting temperature of the incoming water and the temperature of the outflow. Tr. 10/12/05, 51:16 to 52:13.

59. The Board does not find the evidence presented by Dr. De la Pena to be dispositive on the issue of water necessary to grow healthy wetland taro.

60. Mr. Paul Reppun testified that in his expert opinion he believed 100,000 to 300,000 gad is the amount of water needed to grow wetland taro. Direct Testimony of Paul Reppun; Tr. 10/11/05, 131 to 180.

61. Extremely high flow requirements are from taro patches lower in the valley, where most of the water used by farmers would already have been used higher up in the valley. Direct Testimony of Paul Reppun; Tr. 10/11/05, 131 to 180.

62. No evidence was presented regarding significant use of the water for farming prior to its use by the Na Moku members in Wailuanui Valley or by Beatrice Kekahuna.

63. The Board finds that insufficient evidence was presented upon which it can determine the water requirements of the taro farmers and that it must on more informal evidence to determine the amount of water required by the taro farmers.

H. Water Needs of Beatrice Pualani Kepani Kekahuna ("Kekahuna")

64. Petitioner Kekahuna's lo'i are located on TMK No. (2) 2-9-01-14 and -16. Petitioners' Direct Testimony of Beatrice Pualani Kepani Kekahuna ("Kekahuna Direct Testimony") at 2;

Declaration of Garret Hew dated 8/22/05 ("Hew Rebuttal Decl.") at ¶ 5.

65. The 'auwai on Kekahuna's property takes water from Honopou Stream. Kekahuna Direct Testimony at 2.

66. At the time of the site visit, Kekahuna did not have any taro planted but efforts were under way to clear an area of approximately 1 acre to be planted. Hew Rebuttal Decl. at ¶ 9; Exhibit A-10; Exhibit B-9.

67. On March 9, 2004, EMI installed a 4" pipe in addition to two already existing 4" pipes bypassing Haiku Ditch on Honopou Stream above Kekahuna's 'auwai. Hew Rebuttal Decl. at ¶ 12; Exhibit A-30 (attached email of 2/26/04 at 4).

68. The three 4" pipes bypassing Haiku Ditch on Honopou Stream, including the additional 4" pipe installed on March 9, 2004, allow water to flow over the Haiku Ditch even during times of low flow. Tr. 11/14/05 at 84:5-23.

69. On March 11, 2004, the flow rate of water coming through the three 4" pipes at Haiku Ditch on Honopou Stream was measured at 361,224 gpd; the amount of water flowing through the additional 4" pipe was measured at approximately 112,000 gpd. Hew Rebuttal Decl. at ¶ 13; Exhibits A-11 and A-12.

70. Between March 15, 2004 and May 20, 2005, the flow rate at Kekahuna's 'auwai was measured at least on a weekly basis by EMI, and it invariably exceeded 235,000 gpd with the exception

of September 10, 2004, when the flow rate was measured at 219,000 gpd. The flow rate measurements exceeded 235,000 gpd even during times of low rainfall. The temperature of the water measured over the 14-month period never rose above 25° C (77° F), and has been as low as 18° C (64.4° F). Hew Rebuttal Decl. at ¶¶ 15, 18; Exhibit A-13.

71. The flow rate of 235,000 gpd at Kekahuna's 'auwai can supply Kekahuna's one acre of lo'i with 235,000 gad. The amount of available water thus exceeds the amount Kekahuna needs to irrigate all of the lo'i she presently has plans to cultivate based on the water requirement of 50,000 gad.

72. A gate is installed at the entrance to Kekahuna's 'auwai to enable control of the amount of flow entering the 'auwai. The gate normally is left partially closed. If 235,000 gpd or more were allowed to enter Kekahuna's 'auwai unrestricted by the gate, the 'auwai would not have the capacity to carry such flow, and water would overrun the banks of the 'auwai and flood portions of Kekahuna's property. Hew Rebuttal Decl. at ¶ 16; Vaught Rebuttal Decl. at ¶ 3.

I. Water Needs of Na Moku's Members

73. Na Moku is a Hawaii non-profit corporation. Exhibit B-1.

that are highlighted in yellow (TMK Nos. (2) 1-1-4:24, 31, 44).
Tr. 10/12/05 at 176:20-177:25. Wendt did not claim that the
Lakini taro patches need more water, but testified that there
was insufficient water in Waiokamilo Stream to reopen and plant
more areas below the highway that historically were cultivated
by Na Moku members and their ancestors.

78. A system of irrigation diversion structures and
ditches located in and around Waiokamilo, Kualani and Wailuanui
Streams supplies irrigation water to the Ke'anae-Wailuanui area.
The system is located completely below EMI's ditch system and is
not controlled by EMI. Hew Rebuttal Decl. at ¶ 27; Exhibit A-
25.

79. Much of the water used to irrigate taro in the
Ke'anae-Wailuanui area originates in Akeke Spring located below
EMI's lowest diversion on Waiokamilo Stream and above Dam 3, the
uppermost diversion structure in the taro irrigation system.
Dam 3 directs the flow of Waiokamilo Stream to the east around a
porous pool that would otherwise receive the bulk of the stream
flow and would reduce downstream flow. Below Dam 3 is Dam 2,
which diverts a portion of the stream flow via an 'auwai to
Kualani Stream, from where it ultimately flows to Dam 1, into
the 'auwai supplying the Lakini and Wailuanui taro lo'i. Hew
Rebuttal Decl. at ¶¶ 28, 29; Tr. 11/14/05 at 99:2-100:19;
Exhibits A-25 and A-29.

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74. Na Moku's membership includes individual taro farmers
in Wailuanui valley who seek interim relief from the Board in
the instant proceeding.

75. Native Hawaiian Legal Corporation ("NHLCC") represents
Na Moku.

76. Na Moku claims to be authorized to request interim
relief on behalf of its members and proffered documents
purportedly executed by a number of its members for *in camera*
review. After the Hearings Officer determined that copies would
have to be made available for review and cross examination by
the other parties prior to being received in evidence, Na Moku
declined to offer them into evidence. They were accordingly not
received into evidence in this proceeding, but were marked and
filed under seal. The documents are identical Special Limited
powers of Attorney executed by various landowners in Wailuanui,
East Maui. They give the Native Hawaiian Legal Corporation
power to act on behalf of the signatories in this proceeding but
contain no other relevant information.

77. The only person actually cultivating taro in Wailuanui
valley who testified was Na Moku's president, Edward Wendt
("Wendt"). Wendt does not own any land in Wailuanui valley, but
testified that he has permission to cultivate taro in a portion
of the Lakini taro patches which are located above the Hana
Highway, and on the lots identified by Wendt on Exhibit A-45-I

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80. The vast majority of the lo'i in Wailuanui valley take water from Waiokamilo Stream either directly or indirectly, after it has been diverted by Dam 2 to Kualani Stream. Tr. 10/12/05 at 192:1-4; 139:8-140:19.

81. EMI does not divert Kualani Stream. Tr. 11/14/05 at 101:9-12.

82. The Wailuanui lo'i that, according to Wendt, Na Moku desires to open are serviced by water diverted from Kualani Stream that flows through the Lakini patches and then under the Hana Highway into a concrete diversion box that diverts the water into an 'auwai that carries the water to the central portion of Wailuanui valley. These lo'i are not served by the uppermost 'auwai, which also branches out from the concrete diversion box below the highway, but is currently overgrown with vegetation and closed. Tr. 10/12/05 at 186:18-24, 187:14-188:9; Tr. 11/15/05 at 69:7-70:2.

83. On July 26, 2005, EMI measured the flow rate of Waiokamilo Stream at between 3,570,000 and 3,850,000 gpd at the gauging station immediately mauka of Dam 2. The flow rates of Waiokamilo Stream recorded on July 26, 2005 are comparable to the flow rates recorded by EMI in 1986. A conservative estimate of the water available year round in Waiokamilo Stream above Dam 2, including during times of low rainfall, is 3,000,000 gpd. Hew Rebuttal Decl. at ¶ 39; Exhibit A-37.

84. According to evidence proffered by EMI, there are approximately 17 acres of lo'i in Wailuanui valley, including the Lakini taro patches above the Hana Highway, currently in taro cultivation that utilize water from Waiokamilo Stream. Tr. 11/15/05 at 59:19-60:21, 61:17-62:15, 64:8-19; Exhibits A-52, A-53, A-54. Na Moku did not challenge this evidence or offer any evidence of its own on this issue. Accordingly, EMI's proffered evidence of the area currently in cultivation is accepted for purposes of this hearing.

85. Even after the Koolau Ditch was completed in 1904 and well into the 1930's, there was much more taro cultivation in the Wailuanui-Ke'anae area than there is today. Petitioners' Direct Expert Testimony of Davianna Pomaikai McGregor, Ph.D. ("McGregor Direct Testimony") at 9; Tr. 10/11/05 at 112:23-113:8, 118:20-119:9; Exhibit B-123 at Figure 16.

86. Approximately 30 to 50 acres of lo'i were also cultivated in the 'ili of Kupa'u up until the 1950's. The 'ili of Kupa'u is above Lakini and below Akeke Springs and shares the same stream source as Wailuanui valley, which is Waiokamilo Stream. Exhibit B-123 at 64.

87. Accordingly, Waiokamilo Stream apparently provided sufficient water to sustain 50-100 acres of taro in Wailuanui-Ke'anae for many years after EMI began diverting Waiokamilo

Stream in 1904. McGregor Direct Testimony at 9; Tr. 10/11/05 at 112:23-113:8, 118:20-119:9; Exhibit B-123 at 64 and Figure 16.

88. Beginning in the 1880's and continuing through the 1920's, many taro patches in Wailuanui below the Hana Highway were converted into rice paddies. By 1895, there was a sizable area in Wailuanui devoted to rice cultivation. The conversion of taro lands into rice preceded the completion of the Koolau Ditch, which diverts Waioakamilo Stream, in 1904, and thus does not appear to have been caused by the diversion of water into the Koolau Ditch. Tr. 10/11/05 at 77:20-78:10, 99:5-100:4, 102:21-104:3; Exhibit B-123 at 112 and Figure 9.

89. The conversion of taro lands into rice is also attributable to socioeconomic factors such as the extraction of young men from the Ke'anae-Wailuanui area due to World War II; the decline in available labor; the progressive effect of taking taro fields that are configured in an interlinking fashion out of service; and a decline in the market for taro. Tr. 10/11/05 at 105:18-106:7, 121:15-122:20; Exhibit B-123 at 112-113.

90. Contrary to the position advanced by Na Moku, the historical evidence indicates that the decline in taro production in Wailuanui valley over the last century is not attributable to any shortage of water caused by the diversion of water by EMI. Tr. 10/11/05 at 124:2-4.

91. Through the testimony of NHLC paralegal Teri Gomes ("Gomes"), Na Moku sought to establish that there are a number of property owners in Wailuanui valley that have appurtenant rights to water based upon taro cultivation at the time of the Mahele. However, none of these owners came forward to testify.

92. Based on title research and inferences that she drew, Gomes estimated that approximately 51 acres of Wailuanui valley were in taro cultivation at the time of the Mahele. Gomes Direct Testimony at 5. No credible evidence was offered, however, to the effect that there is a present desire on the part of the owners of these parcels or their tenants or licensees to resume taro cultivation on all 51 of these acres.

93. Gomes did not identify which of these 51 acres historically took water from Waioakamilo Stream, rather than Wailuanui Stream.

94. Even if it were to be assumed that all 51 acres identified by Gomes had appurtenant rights to water from Waioakamilo Stream, at the 50,000 gpd water requirement for taro, this would require 2,550,000 gpd to be available in Waioakamilo Stream.

95. The minimum flow rate in Waioakamilo Stream, notwithstanding EMI's diversions of surface water into the Koolau Ditch, is 3,000,000 gpd.

96. There should be sufficient water available in Waioakamilo Stream below EMI's diversions to support the 17 acres of lo'i in Wailuanui currently in cultivation that depend on water from Waioakamilo Stream.

97. The observed result is that the flow through of water from Waioakamilo Stream through Lakini is not sufficient to regularly and dependably irrigate all the fields that Na Moku members and their ancestors were able to irrigate below the Hana Highway prior to the A&E/EMI diversions which dried up the Hamau/Kulani water sources. Tr. 11/15/05, 194:2 to 195:9. This diminished water supply can only provide a portion of the lo'i with irrigation water from the two points of overflow below Lakini that currently flow under the Hana Highway, forcing farmers to sacrifice some lo'i so others can obtain sufficient irrigation water flow to grow their taro. Id. at 192:17-20.

J. Water Needs of Ernest Shupp ("Shupp")

98. Petitioner Shupp is a tenant on property owned by George Keala, Mary Keala, and Elizabeth Lapenia, designated as TMK No. (2) 2-9-08:14 (the "Shupp Property"). The parcel is approximately one acre in size. Shupp has from time to time cultivated taro on the Shupp Property pursuant to a caretaker agreement with the landowners. Intervenor's Direct Written Testimony of Ernest Shupp ("Shupp Direct Testimony") at 1-2; Exhibit MT-20.

99. Shupp alleges that he has grown, or intends to grow, taro on the Shupp Property. Shupp Direct Testimony at 2-4.

100. On the date of the Site Visit to the Shupp Property, no taro was planted and the diversion structure at the entrance to his 'auwai was in disrepair.

101. Shupp has not actively cultivated taro since 2003. Tr. 10/10/05 at 56:18-20.

102. The 'auwai on the Shupp Property takes water from Puolua Stream. Shupp Direct Testimony at 3.

103. The entrance to the 'auwai on the Shupp Property from Puolua Stream is approximately 60 feet from two pipes that pass water over Haiku Ditch at Puolua Stream. Tr. 10/10/05 at 43:18-43:1.

104. Further upstream, at the Lowrie Ditch diversion of Puolua Stream, there are two approximately 4.5" pipes connected by a "Y" junction to an 8" pipe that pass water over the diversion and into the stream. Tr. 10/10/05 at 15:1-6; Tr. 11/15/05 at 122:12-21; Exhibit A-30 (attached email of 2/26/04 at 2).

105. On March 26, 2004, EMI replaced the 8" pipe at the "Y" junction at the Lowrie Ditch diversion of Puolua Stream to allow water to pass over the Lowrie Ditch and into the stream. The repair allows approximately 100,000 gpd to flow past the diversions so as to be available to flow into Shupp's 'auwai.

Declaration of Gazret Hew dated 12/9/04 at ¶ 3 (submitted in support of Alexander & Baldwin, Inc.'s and East Maui Irrigation Company, Ltd.'s Memorandum in Opposition to Maui Tomorrow's Motions For Summary Relief Filed on November 17, 2004, AND Na Moku Aupuni O Ko'olau Hui, Beatrice Kekahuna and Marjorie Wallett's Various Motions For Declaratory Order Filed on November 17, 2004) ("Hew Decl. of 12/9/04"); Tr. 11/15/05 at 122:12-21; Exhibit A-30 (attached email of 2/26/04 at 2).

106. Regular clearing of debris from the pipe passing water over the Lowrie Ditch at Puolua Stream is important to maintaining regular flow in the stream. If the pipe is not periodically cleaned out, it can become blocked with debris and prevent water from crossing over the Lowrie Ditch and into Puolua Stream. Tr. 11/14/05 at 86:24-14, 87:15-18.

107. The flow rate of Puolua Stream just below the Haiku Ditch was measured at 262,000 gpd during a site visit to Shupp's property conducted on March 11, 2004. Hew Rebuttal Decl. at ¶ 51; Exhibit A-12.

108. The flow rate of 262,000 gpd at Puolua Stream can supply Shupp with 262,000 gad for Shupp's lo'i. The amount of available water thus exceeds the amount Shupp needs to irrigate all of his lo'i based on the water requirement of 50,000 gad.

109. Inasmuch as Shupp has neither reconstructed the diversion structure at the entrance to his 'auwai nor attempted

to cultivate taro in his lo'i following EMI's March 26, 2004 repair of the pipe that passes water over the Lowrie Ditch at Puolua Stream, his testimony that there is presently insufficient water in Puolua Stream to irrigate his lo'i is not credible.

X. Water Needs of Neola Caveny ("Caveny")

110. Petitioner Caveny is the owner of Lot 1 of TMK No. (2) 2-9-11:14 (the "Caveny Property"). Intervenor's Direct Written Testimony of Neola Caveny ("Caveny Written Testimony") at 1; Exhibit MT-14.

111. Caveny acquired the Caveny Property in April or May of 2001 after having previously become familiar with the area, and having observed that Hanehoi Stream where it abuts the property was generally dry except when it rains. Tr. 10/11/05 at 22-25.

112. Caveny testified that she installed a water catchment system after she acquired the property. Caveny Written Testimony at 4-5. She submitted no evidence that she has ever used water from Hanehoi stream.

113. Caveny operates a commercial farm raising flowers on her property. Caveny Written Testimony at 5; Tr. 10/11/05 at 10:12-14; Exhibit MT-18.

114. Caveny requests that a minimum flow of 750,000 gpd be restored to Hanehoi Stream near her property. Tr. 10/11/05 at 18:11-23.

115. Caveny admits that she does not need 750,000 gpd for farming purposes. The objective of her request is to restore what she contends to be the natural flow of Hanehoi Stream. Tr. 10/11/05 at 50:3-13.

II. DISCUSSION

The Circuit Court has stated that a determination of how much water is in "excess" of what is needed for instream and legally protected offstream uses before the State can lease the excess water. Under the court's determination, the Board may not enter into a long term lease, and indeed this proceeding may not go forward on the merits, until the interim instream flow standard ("IIFS") have been amended for streams in East Maui, an environmental assessment (and potentially an environmental impact statement) has been prepared, there has been full compliance with HRS Section 171-58, and the public and private interests have been determined. Only then would it be appropriate for the Board to balance all interests pursuant to its public trust obligations and make a decision regarding any long term lease of water.

The Na Moku's parties' frustration with the CWRM's failure to act on its 27 petitions to amend IIFS may be understandable. The Circuit Court's October 10, 2003 Order in this proceeding, although acknowledging that the Board is not required to conduct a parallel investigation to that of the

CWRM, holds that if there is no CWRM determination then the Board must proceed on its own or, if it lacks the requisite expertise, wait on CWRM or make its own application to the CWRM. There is no certainty, however, that an application by the Board will necessarily result in the required determination of IIFS.

The parties apparently recognize that obtaining the information necessary for the Board to make any decision on the long term disposition of the water requires the participation of various agencies and experts, the collection and analysis of data, and considerable time. It is in this context, that the Hearing Officer issued Minute Order No. 10 in order to give the parties an interim opportunity to address the issue of whether "current stream diversions should be reduced pending a final disposition of this proceeding." In short, the parties were afforded an opportunity to address what, if any, specific flow changes should be made in order to afford the parties interim relief, if necessary, pending a final determination of the public interest and the various parties' rights.

Na Moku and MT complain that the requirement (for purposes of this interim hearing only), that they identify their interest and with some reasonable specificity the amount of water claimed "stands the burden of proof on its head." They 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 Na 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" (Na Moku Proposed Findings of Fact and Conclusions of Law at p. 24).

MT is somewhat more definitive. Its counsel, for example, asks for the immediate release of five million gad presently diverted from Wailuanui and Waioakamilo Streams, that sufficient releases be made with regard to Honopou Stream to "meet the irrigation water needs of the Honopou taro lo'i of Mrs. Kekahuna and her family without requiring Mrs. Kekahuna and her family to divert more than half of Honopou Stream flow at that point." A similar request is made on behalf of Ms. Caveny notwithstanding her testimony that she desires the return of the natural flow of the stream. In the latter case the amount is somehow quantified by Ms. Caveny's counsel at 750,000 gallons per day. (MT's Proposed Findings of Fact, Conclusions of Law and Order at pp. 45-47) These requests for increased stream flows for the most part were not supported by evidence introduced during the hearing.

Factually, the credible evidence establishes that current streams flows should be sufficient to meet the existing needs of Kekahuna and MT parties for the irrigation and successful farming of wetland taro. The Board wishes to emphasize that the findings made herein that Kekahuna and MT parties presently generally enjoy sufficient stream flow to meet their current needs with respect to taro cultivation are valid only to the extent EMT's flow measurements are accurate. Such findings were necessary because no other evidence quantifying stream flows was offered. The evidence presented by Na Moku suggests that Na Moku's members do not have sufficient flows for successful farming of wetland taro.

In making this decision, the Board is not making a determination regarding the amount of water necessary to successfully cultivate taro. That the amount of water currently in the streams is generally sufficient for the cultivation of taro for Kekahuna and MT parties or that the amount of water in the streams is insufficient for Na Moku's members may or may not be the case when the merits of this matter are finally reached. For this reason, the Board accepts and recommends Na Moku's suggestion that a monitor be appointed by the Board to oversee and verify all future flow measurements. In addition, based on the allegations that there is insufficient water flowing from Waioakamilo Stream through Lakini into Wailuanui, the current

diversion will be decreased in order to provide more water to the lo'i in lower Waialuanui valley, subject to adjustment based on further monitoring.

The Board also wishes to emphasize that regardless of whether current flows meet wetland taro requirements, they should also be sufficient to protect the gathering rights of Native Hawaiians. This latter issue could not be determined on this record because of a lack of quantitative evidence.

III. CONCLUSIONS OF LAW

A. The Parties' Burdens

1. For purposes of this interim proceeding, each party who claims an interest in the water resources at issue bears the burden of coming forward to make a prima facie showing identifying the claimed interest and, with reasonable specificity, the quantity of water required to satisfy that interest. Any party who wishes to rebut the showing of any other party will then have the opportunity to do so. The Board then has the duty, based on its factual findings and consideration of the public interest, to ensure that any disposition of the State water resources at issue herein duly protects any water needs and interests that fall within a purpose of the public trust. Minute Order No. 10 at 1. The ultimate burden of persuasion, however, rests on the State and

A&B/EMI to show that the continued diversion will not harm previously established rights.

B. Public Trust Duties and Purposes

2. As a trustee of the public trust in water, the State must balance public and private water uses on a case-by-case basis. In re Water Use Permit Applications, 94 Hawaii 97, 142, 9 P.3d 409, 454 (2000) ("Waiāhole").
3. The State has a public trust duty to "duly consider the significant public interest in continuing reasonable and beneficial existing offstream uses." Waiāhole, at 150, 9 P.3d at 462.
4. Water served to the public for domestic uses is not only consistent with, but is the highest and best use of public resources. Waiāhole, 94 Haw. at 137, 9 P.3d at 449.
5. The use of water for private commercial gain is not a purpose of the public trust in water. Waiāhole, 94 Haw. at 138, 9 P.3d at 450.
6. Public trust principles require that adequate provision be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation,

public water supply, agriculture, and navigation. Waiāhole, 94 Haw. at 145, 9 P.3d at 457.

7. The precautionary principle provides that the lack of full scientific certainty does not extinguish the presumption in favor of public trust purposes or vitiate the State's duty to protect such purposes wherever feasible. Waiāhole, 94 Haw. at 155, 9 P.3d at 467.

C. Immediate Cessation of Diversions

8. The immediate cessation of EMI's diversions would be contrary to the public interest inasmuch as:

a. It would greatly diminish or cut off Maui County 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.

D. Kekahuna

9. Since the evidence presented at the Evidentiary Hearing establishes that Kekahuna has adequate water available to her in Honopou Stream for her taro growing needs, the public trust does not require an interim release of more water into Honopou Stream to satisfy Kekahuna's current taro growing needs.

10. Kekahuna would like to open more taro lo'i in the future and may require additional water for these additional fields.

E. Na Moku

11. In accordance with the burden of each party to come forward to make a prima facie showing identifying the party's claimed interest and, with reasonable specificity, the quantity of water required to satisfy that interest, Na Moku was required, at minimum, to identify who among its membership is requesting an interim release of water and the amount of land in Wailuani currently or imminently used for taro cultivation by such members. Minute Order No. 10 at 1.

12. Na Moku has consistently maintained that neither it nor its members have the burden of proving anything in this contested case. Even if this were assumed, *arguendo*, to be correct, this did not justify Na Moku's refusal to divulge, in response to discovery requested by EMI, facts concerning its request for interim relief within its knowledge and control or the knowledge and control of its members.

13. What evidence was presented at the Evidentiary Hearing suggests that taro farmers in the lower Wailuanui valley have inadequate water in the lower valley that is available to them for their present taro growing needs. The precautionary principle requires an interim release of water into Waiokamilo Stream, subject to adjustment based on further monitoring.

F. SHUPP

14. Since the evidence presented at the Evidentiary Hearing establishes that Shupp has adequate water available to him in Puolua Stream for his taro growing needs, the public trust does not require an interim release of more water into Puolua Stream to satisfy Shupp's taro growing needs.

G. CAVENY

15. Under Hawaii law, a riparian owner is not assured the natural flow of the stream abutting his or her property without substantial diminution and in its natural shape and size. Instead, under the "reasonable use" theory of riparian rights

adopted by the Hawaii Supreme Court, a riparian owner may maintain an action for a diversion which diminishes the quantity or flow of a natural watercourse by demonstrating actual harm to his or her reasonable use of those waters. Reppun v. Board of Water Supply, 65 Haw. 531, 553, 656 P.2d 57, 72.

16. Caveny did not establish a "reasonable use" of water from Hanehoi Stream with any degree of specificity.

17. To the extent Caveny seeks the restoration of natural streamflow in Hanehoi Stream, she has not established any basis for interim releases in advance of the completion of the pending EA and IIFS determinations.

H. Miscellaneous

18. Petitioners had the opportunity to but did not request an interim release of water into Wailuanui and Palauhulu Streams. Therefore, no basis has been established for concluding that it would be a breach of the Board's public trust duties not to order an interim release of more water into those streams.

19. Any conclusion of law improperly designated as a finding of fact should be deemed or construed as a finding of fact.

IV. ORDER

The Board will take the following actions to move this matter toward a conclusion. These recommendations are:

1. That the Board determine the status of pending petitions at the CWRM and if necessary file an appropriate petition with the CWRM for determination of the petitions for amendment of the IIFS for the diverted streams which are the subject of this action.
2. That if necessary the Board direct the Department of Land and Natural Resources to itself take all administrative steps necessary to assist the CWRM in the amendment of the IIFS, prepare an EA in accordance with HRS Chapter 343, and discharge its public trust and HRS Chapter 171 responsibilities.
3. That A&B/EMI be immediately ordered to:
 - a. Establish monthly inspections of all its diversions for the purpose of ensuring that by-pass facilities are clear of debris and otherwise are in good working order.
 - b. Establish a program to promptly effect any repairs to such by-pass facilities which may appear necessary.
 - c. In recognition of the precautionary principle and the need to take proactive measures to protect public trust purposes, A&B/EMI shall decrease current diversions on Waiokamilo Stream such that the water flow can be measured below Dam #3 at the rate of 6,000,000 gpd based on a monthly moving average on an annual basis. The DLNR monitor will make appropriate investigations to determine that this amount will meet the needs of the Na Moku members while not exceeding

current or foreseeable requirements of the Na Moku members. A&B/EMI may request through the DLNR monitor to adjust this amount if it can show that it cannot meet the required amount of flow below Dam #3 without A&B/EMI having to increase diversions from alternate sources.


- d. In the event Kekahuna increases the amount of acreage that she has in cultivation as taro lo'i, A&B/EMI may be required to decrease diversions to allow Kekahuna sufficient water to irrigate her additional taro lo'i. The amount of water to be left in the stream for use by Kekahuna will be set either by the parties with or without the assistance of the DLNR monitor or by the Board if no agreement can be reached.
4. All parties shall be responsible for keeping in good condition and repair its own system used to transport water from its stream diversion to its end use. Measurements to determine the sufficiency of water shall be made at the point of stream diversion and not at the point of end use.
5. That the Board direct the Department to immediately establish a program to monitor stream flows upstream and downstream of each diversion.
6. That the Board direct the Department to appoint an appropriate monitor, presumably but not necessarily an official of the Department, to ensure compliance with its order and to investigate and resolve if possible all complaints regarding

stream flows by any of the parties to this proceeding. In this regard it is recommended that the monitor appointed pursuant to this sub paragraph be available in the field upon written notice to all affected parties. The monitor will make recommendations to the Board for action by the Board for disputes which cannot be resolved by the monitor.

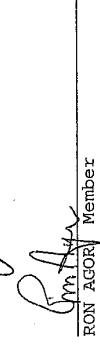
7. The monitor will also be responsible for verifying if the Board's understanding of the facts in this case, as set forth above, are correct.

8. That the monitor appointed pursuant to subparagraph (d) above periodically record the temperature of the streams in question and make recommendations for further decreases of diversions should it appear such action is necessary to control Pythium rot.

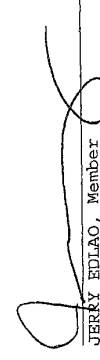
DATED: Honolulu, Hawaii, March 23, 2007

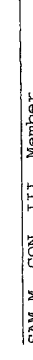

PETER T. YOUNG, Chairperson



TIMOTHY JOHNS, Member


RON AGOR, Member


TARYN R. SCHUMAN, Member


JERRY EDLAO, Member


SAM M. GON, III, Member


ROBERT PUCHECO, Member

In the Matter of the Contested Case Hearing Regarding Water Licenses at Honomalu, Keanae, Mahiku and Huelo, Maui, DLNR File No. 01-05-MA, FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of a Contested Case Regarding Water Licenses At Honomann, Keanae, Nahaiku And Huelo, Maui) DLNR File No. MA-01-05

CERTIFICATE OF SERVICE

The undersigned hereby certifies that copies of the FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER were duly served on the following parties, via first class U.S. mail, postage prepaid on this 23rd day of March 2007:

- Isaac D. Hall, Esq. 2087 Wells Street Wailuku, HI 96793
Alan T. Murakami, Esq. Moses K.N. Hana, III, Esq. Native Hawaiian Legal Corporation 1164 Bishop Street, Suite 1205 Honolulu, HI 96813
Robert H. Thomas, Esq. Damon Key Leong Kupchak Hastert 1001 Bishop Street Paiahi Tower, Suite 1600 Honolulu, HI 96813
Jane E. Lovell, Esq. Deputy Corporation Counsel County of Maui 200 South High Street Wailuku, HI 96793
David Schulmeister, Esq. Elijah Yip, Esq. 1000 Bishop Street, Suite 1200 Honolulu, HI 96813-4216
David Merchant, Esq. Richard Kiefer Attorney at Law LLC 444 Hana Highway, Suite 204 Kahului, HI 96732

DATED: Honolulu, Hawaii, March 23, 2007

Dawn Hegger Dawn Hegger Department of Land & Natural Resources State of Hawaii

EXHIBIT "B"

2007 04 30 RE EMI monitor

Can we agree on a date for any such call - I propose anytime next week, except for Tuesday afternoon. In Jane's absence, I would appreciate you coordinating the time, date and place of meeting.

Maha'lo,
Alan

From: Linda.L.Chow@hawaii.gov [mailto:Linda.L.Chow@hawaii.gov]
Sent: Friday, April 20, 2007 6:53 AM
To: davemercant@hawaii.rr.com; David SchuImeister; Jane Lovell; Elijah Viki; rdhali@maui.net; Alan Murakami; Moses K Haia; RHT@hawaiiattorney.com; skf@hawaiiattorney.com
Subject: EMI monitor

Counsel:

DLNR has appointed Daniel Ornellas as the monitor for the EMI matter. Do you want to schedule a telephone conference next week? I am available any time next week except wed. between 10 and 11:30. I am checking on Daniel's availability also and will let you know.

Also, do we have any indication yet of the parties' intended discussion points for this telephone conference? It would be helpful so we can have any necessary information available at the time of the telephone conference.

Linda L.W. Chow
Deputy Attorney General
Land Transportation Division

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Page 3

29.8-89

EXHIBIT "B"

29.8-90

EXHIBIT "C"

2007 06 19 RE Notification re need for access to RP S-7265 TMK (2) 1-1-002002 por.
We hope this is a workable process for you as that is our intent to make this as
easy on all of the parties as is reasonably possible. We stand ready to assist you
in any site visits, information gathering you need. Please understand, however, that
risk management is a serious concern and significant cost item to our organization
that we must insist on these restrictions. Please do not hesitate to call me at
(808) 579-9516 should you wish to discuss.

Garret Hew

From: Daniel.L.Ornellas@hawaii.gov [mailto:Daniel.L.Ornellas@hawaii.gov]
Sent: Friday, June 15, 2007 3:26 PM
To: Hew Garret at HCS; Vaught, Mark at HCS
Cc: Russell, Y.Tsujii@hawaii.gov; Linda.L.Chow@hawaii.gov; Morris.M.Atta@hawaii.gov;
mohai@nhi.chi.org
Subject: Notification regarding need for access to RP S-7265, TMK (2) 1-1-002:002
por.

Aloha Mr. Hew,

This memo serves as the State's written notification to you in regards to the need
to access the subject premises on Friday, June 22, 2007 beginning at about 9:30 a.m.
till late afternoon (about 3:00 P.m.).

A verbal request from the Native Hawaiian Legal Corporation and its client (Na Moku)
was received by the State on Thursday, June 14, 2007 at 4:30 p.m. They have
requested for the opportunity to observe the actions (i.e. closure of stream
diversions) that EMI has taken to contribute to the return of water flow at
Waiokamilo stream that was implemented by EMI staff on June 7 and 8, 2007.

At the same time, the State will be working with USGS to conduct further
investigations and measurements along Waiokamilo stream on that day.

I anticipate the need to transport individuals along the access road by motor
vehicle in order to achieve the efficient observation of all diversions in a
reasonable amount of time.

In the past there was concern from you about non-EMI vehicles being used on State
lands. Please be aware that Provision #6 of the subject Revocable Permit states the
following: "The Board reserves the right for its agents, or representatives to
enter or cross any portion of the Premises at any time in the performance of its
duties. It is my understanding that there is no limitation in regards to the mode
of transportation. As a result, the State would like to ensure reasonable access
via motorized vehicle upon established road networks."

Please note that the State wishes to continue a cooperative working relationship
with EMI in order to ensure the safety of all individuals that will be accessing the
area and to minimize any adverse impacts that our access to the area may have upon
your staff. Therefore, please contact me at 984-8103, at your earliest convenience,
to confirm this written request and to sort out any logistics that may be needed in
regards to the proposed site visit.

Mahalo for your attention to this matter,
Daniel Ornellas

Page 3

29.8-91

EXHIBIT "C"

2007 06 19 RE Notification re need for access to RP S-7265 TMK (2) 1-1-002002 por.
DLNR - District Land Agent
(Stream Monitor)

Page 4

29.8-92

EXHIBIT "D"

LINDA CHOW
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 631
HONOLULU, HAWAII 96809

June 21, 2007

ALLAN A. SMITH
BOARD OF LAND AND NATURAL RESOURCES
COMMISSIONER OF WATER RESOURCES MANAGEMENT
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: ASMITH@DLNR.HAWAII.GOV

KEN C. KAWAHARA
DEPUTY COMMISSIONER OF WATER
RESOURCES MANAGEMENT
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: KCKAWAH@DLNR.HAWAII.GOV

ADRIAN R. BRESNAN
DEPUTY COMMISSIONER OF LAND AND NATURAL RESOURCES
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: ARBRESN@DLNR.HAWAII.GOV

CONSERVATION AND LAND MANAGEMENT
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: CONSERV@DLNR.HAWAII.GOV

WATER RESOURCES
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: WATER@DLNR.HAWAII.GOV

REGULATORY AND COMPLIANCE
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: REG@DLNR.HAWAII.GOV

PLANNING AND DEVELOPMENT
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: PLAN@DLNR.HAWAII.GOV

LAND
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: LAND@DLNR.HAWAII.GOV

MULTI-PHASE
P.O. BOX 631
HONOLULU, HI 96809
PHONE: 735-2500
FAX: 735-2501
E-MAIL: MULTI@DLNR.HAWAII.GOV

Linda Chow
Deputy Attorney General
Department of the Attorney General
Land/Transportation Division
Kekuanoa'a Building, Room 300
465 South King Street
Honolulu, Hawaii 96813

Mr. Isaac Hall, Esq.
2087 Wells Street
Wailuku, Hawaii 96793

David Schulmeister, Esq.
Elijah Yip, Esq.
1000 Bishop Street, Suite 1200
Honolulu, HI 96813-4216

Robert H. Thomas, Esq.
Damon Key Leong Kupchak Hastert
1001 Bishop Street
Pauahi Tower, Suite 1600
Honolulu, HI 96813

Jane E. Lovell, Esq.
Deputy Corporation Counsel
County of Maui
200 South High Street
Wailuku, HI 96793

Mr. Alan T. Murakami, Esq.
Moses K. N. Hala, III, Esq.
Native Hawaiian Legal Corporation
1164 Bishop Street, Suite 1205
Honolulu, Hawaii 96813

David Merchant, Esq.
Richard Kiefer Attorney at Law LLC
444 Hana Highway, Suite 204
Kahului, HI 96732

29.8-93

29.8-94

EXHIBIT "D"

Dear Ms. Chow, et al.:

Subject: In the Matter of the Contested Case Hearing Regarding Water Licenses at Honomanu, Keanae, Nahiku and Huelo, Maui,
DLNR File No. 01-05-MA

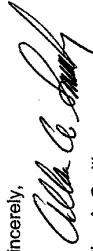
Effective immediately, DLNR is naming Morris Atta as the "monitor" as described in that certain Interim Order dated March 23, 2007. Assisting Morris will be Daniel Omellas and Larry Pacheco as the Maui District Field Representatives. Based on availability, Daniel and/or Larry will go out in the field and assist Morris by, among other things, (1) assisting the Department in obtaining access to the site and the necessary rights of entries; (2) working with the United States Geologic Survey ("USGS") personnel to install and maintain a stream gauging station and any other equipment deemed necessary or appropriate by the Monitor; (3) working with the USGS personnel to retrieve and report pertinent data; (4) gathering, receiving and transmitting any other pertinent information to the Monitor; and (5) other duties and assignments as requested by the Monitor.

Please direct any concerns, requests or inquiries regarding the implementation of the Interim Order to the Monitor at the following:

Morris Atta
Special Projects Coordinator
Land Division
Department of Land and Natural Resources
1151 Punchbowl St., Room 220
Honolulu, Hawaii 96813
Phone: (808) 587-0410; Fax: (808) 587-0455
Email: Morris.M.Atta@hawaii.gov

Should you have any questions, please feel free to contact Morris Atta at the Land Division, at 587-0410.

Sincerely,



Allan A. Smith
Interim Chairperson

cc.: Russell Tsuji
Morris Atta
Daniel Omellas
Larry Pacheco
Dawn Hegger

29.8-95

29.8-96

EXHIBIT 'E'



NATIVE HAWAIIAN LEGAL CORPORATION
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July 3, 2007

Morris Atta
Special Projects Coordinator
Land Division
Department of Land and Natural Resources
1151 Punchbowl Street, Room 220
Honolulu, Hawaii 96813

Subject: In the Matter of the Contested Case Hearing Regarding Water Licenses at Honomann, Keanae, Nahiku and Huelo, Maui, DLNR File No. 01-05-MA

Dear Mr. Atta:

As you know, Interim BLNR Chairperson Allan Smith's June 21, 2007 letter substitutes you for Mr. Daniel Omellas as the monitor in this matter and instructs the parties to "direct any concerns, requests or inquiries regarding implementation of the Interim Order to" you. Therefore, on behalf of our clients, Na Moku Aupuni O Ko'olau Hui ("Na Moku"), Beatrice Kekahuna and Marjorie Wallett, we request that you promptly address the following concerns.

1. Despite the fact that the BLNR's Interim Order requires that EMI decrease its current diversions on Waioakamilo Stream to provide 6 mgd of streamflow below Dam 3 and EMI's claim that it has removed all of its diversions from Waioakamilo Stream, recent streamflow measurements taken by the USGS confirm that streamflow between Dam 3 and Dam 2 is approximately 1.5 mgd. This amount is clearly inadequate for our clients' taro lo'i in Waiauani Valley. The situation is urgent, as some taro lo'i in the valley already in cultivation are in danger of being lost due to this chronic lack of water.

2. Finding of Fact 83 of the Interim Order provides:

On July 26, 2005, EMI measured the flow rate of Waioakamilo Stream between 3, 570,000 and 3,850,000 gpd at the gauging station immediately mauka of Dam 2. The flow rates of Waioakamilo Stream recorded on July 26, 2005 are comparable to the flow rates recorded by EMI in 1986. A conservative estimate of the water available year round in Waioakamilo Stream above Dam 2, including during times of low rainfall, is 3,000,000 gpd. Hew Rebuttal Decl. at 39; Exhibit a-37.

Services made possible with major funding from the Office of Hawaiian Affairs.

Maui, upright, straight, steady, tall and straight as a tree without branches, sharp peaks as mountains. Fig., righteous, correct.

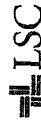


EXHIBIT "E"

Morris Atta
RE: DLNR File No. 01-05-MA
July 3, 2007
Page 2 of 5

Finding of Fact 83 is erroneous for a number of reasons. First, both the USGS and our clients have reason to believe that the July 26, 2005 EMI measurement as well as the flow rates recorded in 1986 were of Akeke Spring which is located above Dam 3. This point is highlighted by the fact that USGS has recently collected stream flow data on three separate occasions immediately above Waioakamilo Stream's Dam 2. All three of USGS's stream flow data collections confirm that the stream flow just above Dam 2 is approximately 1,500,000 gpd, or one half of the 3,000,000 gpd Finding of Fact 83 asserts. According to the USGS, this data strongly suggests that Waioakamilo Stream between Akeke Spring and Dam 3 is a losing stretch. In other words, assuming without conceding the accuracy of EMI's July 26, 2005 flow measurement, at least half of Akeke Spring's contribution to Waioakamilo Stream is lost before it reaches Dam 2. Finding of Fact 83 should be deleted from the Interim Order or revised accordingly to more accurately reflect the above.

2. Finding of Fact 11 contends "[t]he Petitioner asserted a claim of insufficient water for taro growing purposes from Waiauani and Palauhulu Streams."

On direct examination at the contested case hearing, Mr. Edward Wendt, then President of Na Moku, was asked whether the exercise of traditions and customs passed on to him by his ancestors have been affected by low to no streamflow within the streams within the ahupua'a of Waiauani and Keanae and Mr. Wendt answered in the affirmative. See, October 12, 2005 Transcript of Proceedings, attached hereto as Exhibit "1", at page 101, lines 11-16.

Mr. Wendt then testified that the diverted streams that service the lo'i of Na Moku members in the ahupua'a of Waiauani include Waiauani, Waioakamilo, and Hamau, which is also referred to as Kulani. *Id.* at lines 17-24.

Later on in his testimony, Mr. Wendt testified that Waikani [sic] waterfall is a part of Waiauani stream. *Id.* at page 137, lines 19-21. Mr. Wendt also testified that certain lo'i in the higher elevations of Waiauani Valley, like those farmed by Sam Akina, can only be serviced by water from Waikani [sic], which is a part of Waiauani stream, that water from Waioakamilo Stream cannot be used by these lo'i because of their elevation. Some Na Moku members who farmed these lo'i were forced to abandon these lo'i because they could not get water from Waikane, which is Waiauani Stream. *Id.* at page 140, line 20 to page 141, line 22.

During the testimony of Garret Hew on November 14, 2005, A&B so much as conceded that Na Moku was asserting a claim of insufficient water for taro growing from Waiauani Stream. See, Transcript of November 14, 2005 Proceedings, attached hereto as Exhibit "2", at page 116, line 3 to page 117, line 6.

Given this testimony, Finding of Fact 11 is erroneous in its contention that Na Moku did not assert a claim of insufficient water for taro growing from Waihuaniui Stream.

3. Finding of Fact 81 contends that EMI does not divert water from Kulani, also known as Hamau, stream. Given recent admissions by Mr. Garrett Hew, at least one of which was made in the presence of Dan Ornellas, during the initial site visit to the diversions in the vicinity of Kikokiko, this finding of fact is clearly erroneous. Mr. Hew admitted that EMI diverts water from Kulani Stream. In the photograph below, a color copy of which I will separately email you, you were present to observe the diversion site in what Mr. Hew acknowledged was Kulani Stream during our May 14, 2007 site visit.

Members of Na Moku are also concerned that the cement work done by EMI to this diversion is incomplete and can also be easily undone. More specifically, on the most recent site visit to this area, members of Na Moku observed that part of the cement work still allowed water to flow through while another portion of the cement work was so thin as to be easily removed. As such, they request that you and/or your assistants visit this specific area as soon as possible to review this work to determine whether additional work is required.



29.8-99

4. A number of releases in the Kikokiko area are from PVC pipes that once redirected flow from tributaries, seeps, ponds, etc. These PVC pipes are still in place and could be used again to redirect flow. Na Moku requests that these pipes be permanently dismantled and removed.

5. Na Moku requests that the monitor promptly investigate the upper reaches of Waiokamilo Stream to determine whether EMI diverts Waiokamilo at points above Kikokiko. For example, are there any diversion points in, at and/or around the area known as Haoli Waihue. In particular, USGS scientist Rick Fontaine suggests reconnoitering the area above Kikokiko between Waiokamilo Stream and Kano Stream.

6. Na Moku also requests that the monitor also promptly investigate to determine whether Akeke Spring has been altered in any way to diminish its contribution to the streamflow of Waiokamilo Stream. For example, is water from Akeke Spring redirected to flow to the ditch system via Pi'ina 'a Stream? While I understand that any such diversion would not directly contribute to the EMI ditch system, such a diversion could explain the lower flow in the reaches of the Waiokamilo Stream below Akeke. Pi'ina 'a Stream should independently serve Keanae peninsula taro lo'i, and any shortages need to be addressed by reducing EMI diversions of that stream. It should not be artificially augmented by this Akeke diversion at the expense of Waihuaniui taro farmers.

7. Conclusion of Law 9 provides that "[s]ince the evidence presented ... establishes that [Petitioner Beatrice] Kekahuna has adequate water available to her in Honopou Stream for her taro growing needs, the public trust does not require an interim release of more water into Honopou Stream to satisfy Kekahuna's current taro growing needs." Petitioner Kekahuna takes issue with the accuracy of this conclusion of law and requests that the monitor and/or his assistants conduct a site visit as soon as possible to her property to determine whether she in fact has adequate water from Honopou Stream to irrigate her lo'i. In its Conclusion of Law 10, the BLNR already concedes that as Ms. Kekahuna "would like to open up more taro lo'i in the future [she] may require additional water for these additional fields." The BLNR's acknowledgement that her desire to "open more taro lo'i" by law immediately triggers her appurtenant water rights as a kulana owner. The BLNR has a duty to respect that constitutional right. It reserved that right in the last revocable permit it issued. See, Exhibit 3, Additional Condition No. 16 in the attached Revocable Permit for the Keanae area. In fact, that same respect for taro farmers' irrigation needs can be traced back through documents reaching back as far as 130 years ago, when the Kingdom issued the first permit to start the EMI ditch system. See, attached Exhibit 4, Lease from Royal Minister of Interior to Hamakua Ditch Co., and the accompanying text.

29.8-100

Morris Atia
RE: DLNR File No. 01-05-MA
July 3, 2007
Page 5 of 5

Should you require additional information or have any questions concerning the above, please contact the undersigned at (808) 521-2302. As the representative of the Board of Land and Natural Resources and acting as the trustee of public trust resources, we anticipate your prompt and appropriate reaction to the above concerns.

Sincerely,



Moses K. N. Haia III

Enclosures: Exhibits 1 - 4.

Cc: Na Moku Aupuni O Ko'olanui Hui
Beatrice Kekahuna
Marjorie Wallert
Daniel Ornellas
Linda Chow
Russell Tsuji
David Schulmeister
Robert Thomas
Jane Lovell
David Merchant
(all with enclosures)

EXHIBIT 'F'

29.8-101

29.8-102

Alan Murakami

From: Alan Murakami
Sent: Wednesday, December 05, 2007 2:04 PM
To: '(morris.m.atta@hawaii.gov)'
Cc: 'Linda.L.Chow@hawaii.gov'; 'Moses K Hala'; '(emiout@earthlink.net)'; 'Lynn Scott (aloha@hawaii.net)'
Subject: Implementation of Interim Order

Morris and Linda

I note that it has been 8 months since the issuance of the BLNR Interim Order, which was to provide immediate relief to my clients pending a final disposition of the contested case hearing.

As you know, the first few months of the implementation showed promise of actual relief to my clients, with Daniel Ornelas being easily accessible to my clients in the field as the monitor under the order. Daniel was able to provide relatively swift responses to our clients' concerns and appeared positioned on Maui to be able to do a lot of things necessary to life up to the spirit and letter of the order.

However, when you were substituted for Daniel on June 21, 2007, we immediately expressed concern for the change, given your residence on this island and inaccessibility to our clients. When we met a couple of months ago to go over those concerns, my clients were already experiencing delays in getting action and responses to our concerns as expressed in our July 3, 2007 letter to you. We remained hopeful after our last meeting that you would abide by your assurances that we could implement a regular schedule of contact with you on a monthly basis, interspersed with biweekly contact with DLNR Maui field personnel to supplement these contacts.

However, we have since learned that you are withdrawing that assurance to make regular contact with our clients in East Maui. Linda Chow advised me that you and her are consulting to come up with an alternative schedule you will follow instead. While she assured me last week that I would hear from you shortly, I have not learned of any such schedule and have left a message on your phone. We have neither received a letter from you in response to our July 3, 2007 letter, nor have had the regular contact in the field we envisioned after our last meeting. I am unclear what the rationale is for this abandonment of the plan to which I thought we all agreed during that meeting. Please advise.

In short, the effect of 8 months of implementation of the March 2007 order is the release of water into one stream. The water release into Waiaikamilo is insufficient to meet the water needs of our clients, as detailed in our July 3 letter. This delay on implementing the order is amounting to a breach of the order, for which we will seek to remedy unless action is immediately forthcoming. I would appreciate being briefed on how you intend to implement the order as well as make yourself available to our clients in the field as the order contemplates. In addition, I ask for when you expect to respond to our July 3 letter, now that 4 months have gone by with no action.

I ask you or Linda to schedule this item for discussion before the Board of Land and Natural Resources immediately so we can reconcile our problems with its implementation as soon as possible.

Sincerely,

Alan T. Murakami, Esq.
Native Hawaiian Legal Corporation
1164 Bishop Street
Suite 1205
Honolulu, HI 96813

Tel: 808-521-2302
Fax: 808-537-4268

29.8-103

4/3/2008

EXHIBIT "F"

EXHIBIT "G" AND EXHIBIT "H"

29.8-104



Exhibit "C" - With Hearing Officer McConnell (10/10/2005) overseeing planting without sufficient irrigation water

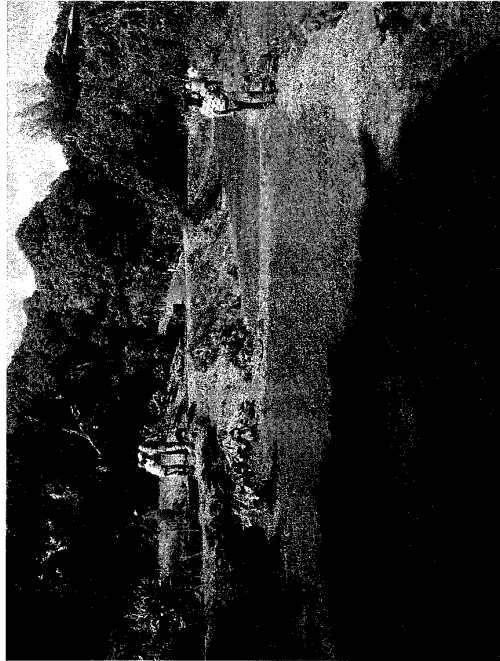


Exhibit "H" - Compare planting without sufficient water (10/10/05)
29.8-105

EXHIBIT "I"

AND

EXHIBIT "J"



Exhibit "I" - Compare: lo'i ready for planting without sufficient water (10/04/07)

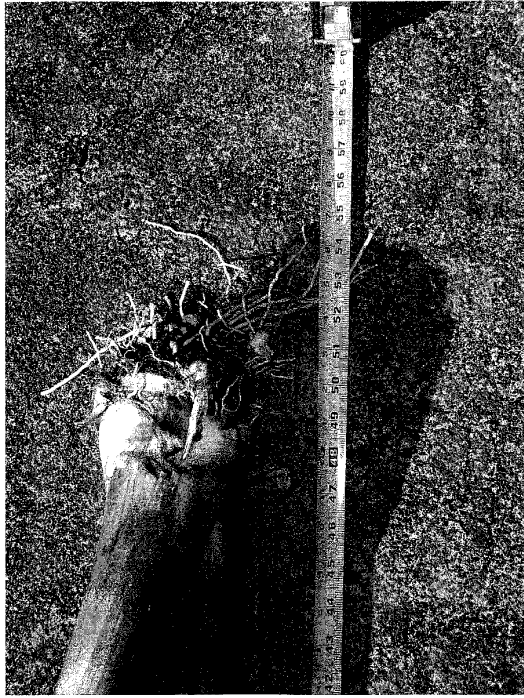


Exhibit "J" - Results of planting taro without sufficient irrigation water (11/5/07)

EXHIBIT "K"

AND

EXHIBIT "L"



Exhibit "K" – East Maui Irrigation Company Dam on Honopou Stream, with 3 pipes in background allowing water to flow past dam and rest to flow in Haiku Ditch at right.



Exhibit "L" – Close-up of three 4-inch pipes, depicted in background of Exhibit "K", allowing water to flow past A&B/EMI dam on Honopou Stream

EXHIBIT "M"

29.8-110

29.8-109

Alan Murakami

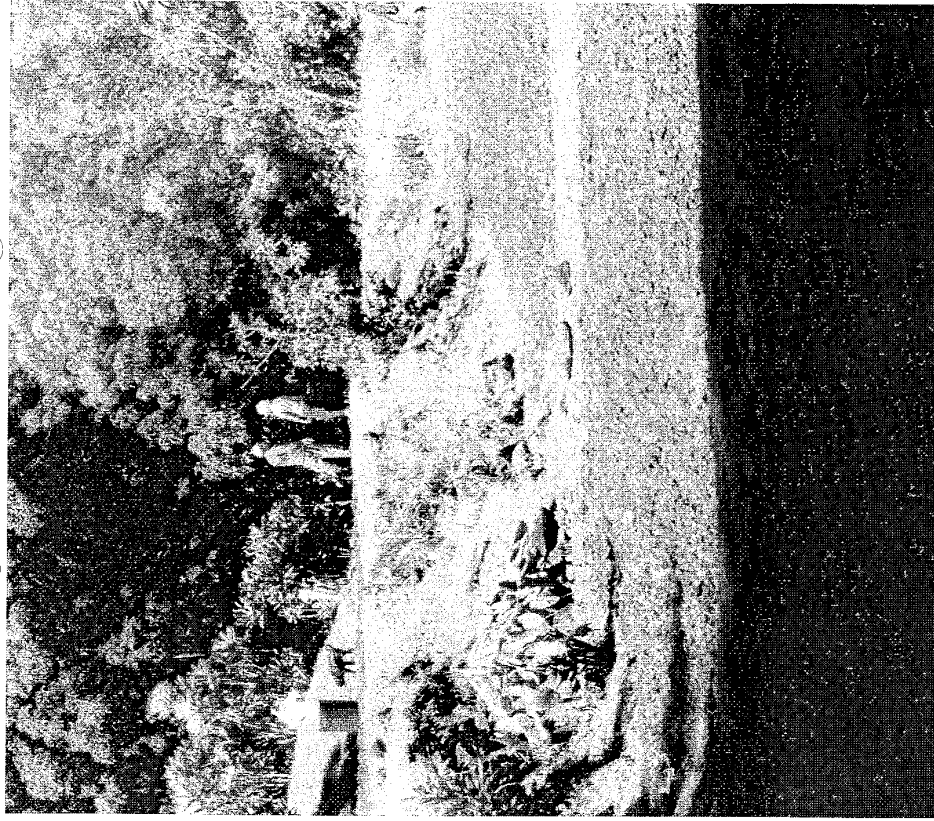
From: Alan Murakami
Sent: Thursday, December 13, 2007 12:06 PM
To: Alan Murakami; ' (morris.m.atta@hawaii.gov)
Cc: 'Linda L. Chow@hawaii.gov'; Mosses K Haia; ' (emout@earthlink.net)'; Lynn Scott (alohahaku@hawaiianet.net)
Subject: RE: Implementation of Interim Order

Morris

In order to make our meeting next week as productive as possible and without further delays, it will be crucial for you to present a plan to Lynn Scott on how the DLNR will restore flows to her mother and aunt's lo'i in Honopou. We spent a lot of time out there on two occasions with you with nothing to show for it so far. We spent even more time with Tim Johns, Linnell Nishioka, and Ed Sakoda from the CWRM/DLNR earlier trying to come up with more water.

On September 28, 2007 you'll recall that you and Linda Chow assured me during our meeting that you and Maui DLNR staff would make yourselves available in the field to monitor compliance with the March 23, 2007 Interim Order of the BLNR by you going over to Maui to meet with my clients for updates on a monthly basis, supplemented by meetings in the interim with visits by Maui DLNR staff. This accessibility and visibility is crucial to performing the functions assigned to the monitor, which my clients believed were eroded by your substitution for Maui staff as the official monitor. I am equally distressed that despite our agreed upon plan, nothing has happened until now and we have had NO formal attempt to revise that schedule, except to schedule this upcoming Dec. 17 site visit. This inattention to the thrust of the March 23 Interim Order is inexcusable.

I had thought that after your last site visit on October 4, 2007, you would at least present my clients a plan for restoring more flow to Honopou after consulting with Robin Shimabukuro in the field. I have received NOTHING since then, now two months ago. **Prior to our Monday visit, please provide us with a plan and timetable you propose to implement with Robin Shimabukuro's advice on how we get water to the dry lo'i.** What you saw on your last site visit in October 2007 was preceded by a lot of work by Aunty Beatrice to clear the lot in anticipation that she'd get the water to start planting, beginning in October 2005, when this shot was taken:



Not much has changed since Oct. 2005 as her lo'i looks essentially the same, as you yourself saw on Oct. 4, 2007. It will be a complete waste time on this Dec. 17 trip not to build upon the hours we spent two months ago in October this year.

You have to ask yourself, how do other taro farmer like Aunty Beatrice keep fighting the bureaucracy if they cannot PROMPTLY get water to support their food production and gathering from the stream? These are important daily necessities the DLNR is apparently overlooking. It's the same as if someone simply unplugged your refrigerator and told you not to worry about anything.

29.8-112

4/3/2008

29.8-111

EXHIBIT "M"

4/3/2008

Let's do something productive on this trip. Auntie Beatrice has met her burden of proof long ago, not only by having her land cleared to prepare for planting as this picture demonstrates, but under the applicable law. *In re Water Use Permits*, 94 Haw. 97, 142, 9 P.3d 409, 454 (2000) (holding that the public trust doctrine "effectively prescribes a 'higher level of scrutiny' for private commercial uses . . . [and] that the burden ultimately lies with those seeking or approving such uses to justify them in light of the purposes protected by the trust."). We have spent 6 years providing the CWRM documentation of Auntie Beatrice's appurtenant water rights, to no avail, despite the statutory command that such rights be preserved. Art. XI, sec. 7, HRS sec. 174C-63 (emphasis added) provides:

Appurtenant rights are preserved. Nothing in this part shall be construed to deny the exercise of an appurtenant right by the holder thereof at any time. . . .

What does "at any time" mean to the DLNR?

In addition, I am unaware of any action taken to coordinate the amendment of interim instream flow standards with the CWRM or to establish a temperature recording or stream flow recording near appropriate diversions as contemplated under paragraphs 1, 2, 5 and 8.

If no additional water is released within 7 days of our planned visit next week, please have Linda schedule a hearing before the BLNR so we can have the opportunity to demonstrate how inadequate this Interim Order has been to force the corrections to the record and decision contemplated under paragraphs 3(d) and 7. My clients will also seek to enforce what appears to be inaction after 8 months on paragraphs 1, 2, 5, 6 and 8

Alan T. Murakami, Esq.
Native Hawaiian Legal Corporation
1164 Bishop Street
Suite 1205
Honolulu, HI 96813

Tel: 808-521-2302
Fax: 808-537-4268

From: Alan Murakami
Sent: Wednesday, December 05, 2007 2:04 PM
To: (morris.m.atta@hawaii.gov)
Cc: 'Linda.L.Chow@hawaii.gov'; Moses K Haia; ' (emiout@earthlink.net)'; Lynn Scott (aloha@hauku@hawaiiantel.net)
Subject: Implementation of Interim Order

Morris and Linda

I note that it has been 8 months since the issuance of the BLNR Interim Order, which was to provide immediate relief to my clients pending a final disposition of the contested case hearing.

As you know, the first few months of the implementation showed promise of actual relief to my clients, with Daniel Omelias being easily accessible to my clients in the field as the monitor under the order. Daniel was able to provide relatively swift responses to our clients' concerns and appeared positioned on Maui to be able to do a lot of things necessary to life up to the spirit and letter of the order.

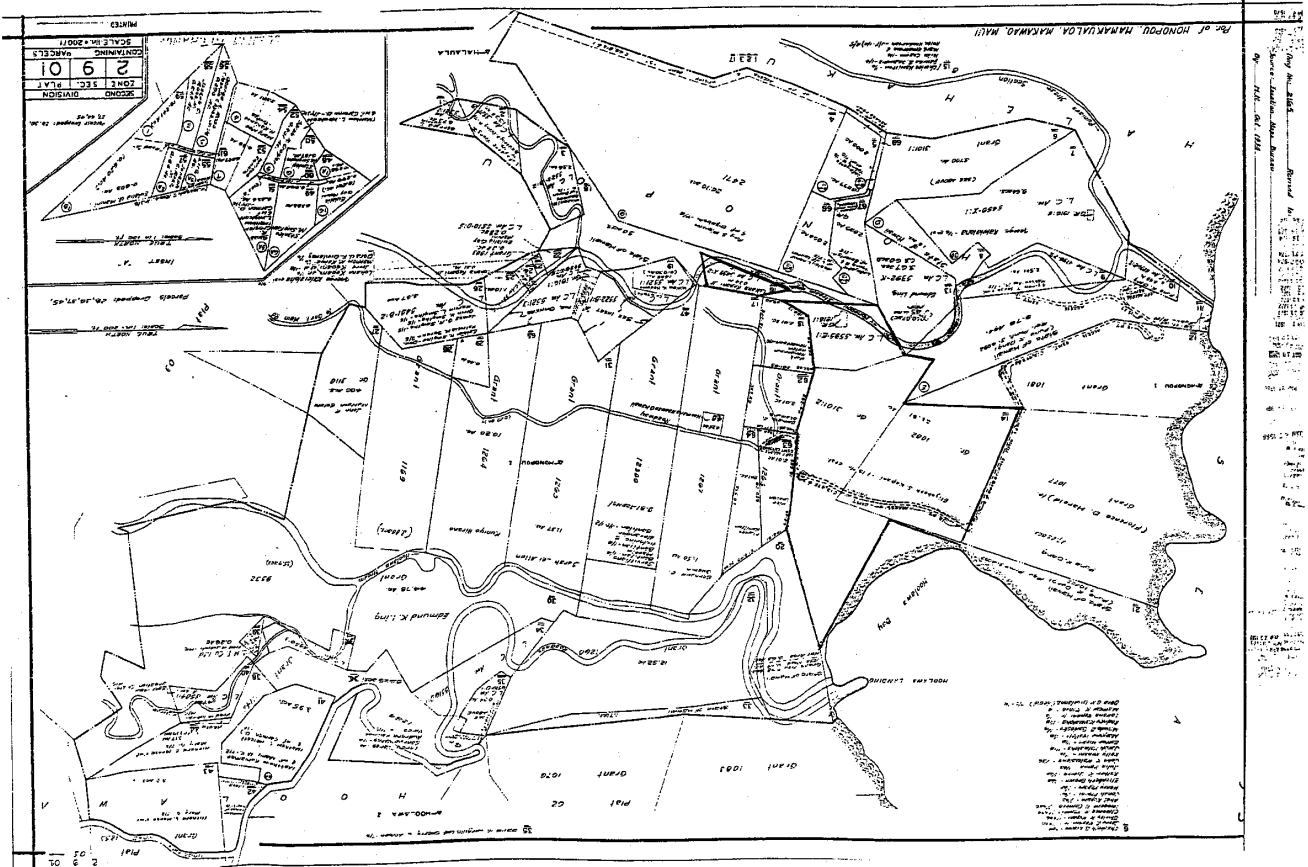
However, when you were substituted for Daniel on June 21, 2007, we immediately expressed concern for the change, given your residence on this island and inaccessibility to our clients. When we met a couple of months ago to go over those concerns, my clients were already experiencing delays in getting action and responses to our concerns as expressed in our July 3, 3007 letter to you. We remained hopeful after our last meeting that you would abide by your assurances that we could implement a regular schedule of contact with you on a monthly basis, interspersed with biweekly contact with DLNR Maui field personnel to supplement these contacts.

29.8-113

4/3/2008

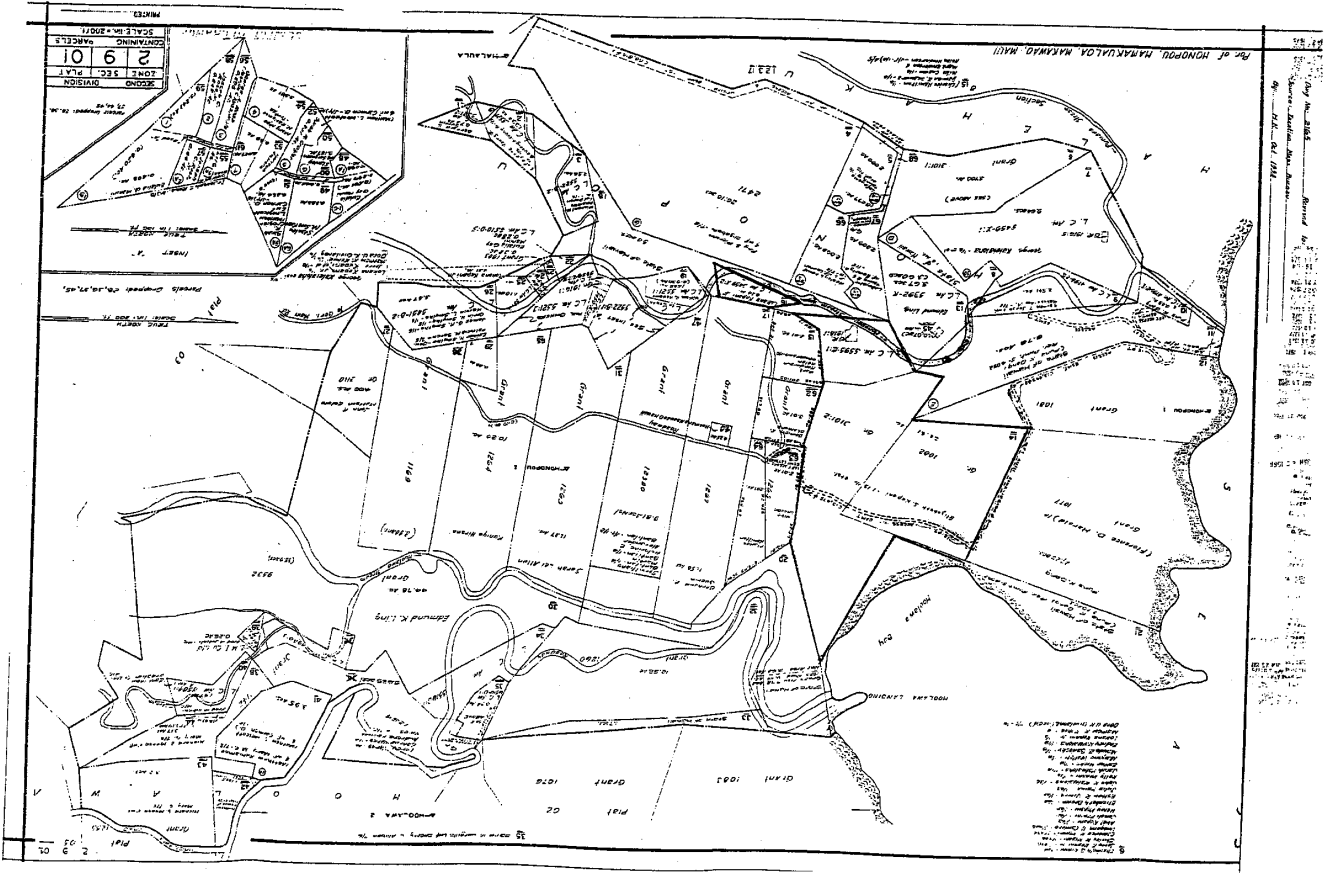
EXHIBIT 'N'

29.8-114



29.8-120

29.8-119
EXHIBIT D



29.8-122

EXHIBIT 29.8-122

IN THE CIRCUIT COURT OF THE THIRD CIRCUIT

STATE OF HAWAII

In the Matter of the Contested Case Hearing) DLNR FILE NO. 01-05-MA
 Regarding Water Licenses at Honomanu,)
 Keanae, Nahiku, and Huelo, Maui) DECLARATION OF EDWARD
 WENDT)
)
)
)
)
)
)
)
)

DECLARATION OF EDWARD WENDT

I declare under penalty of perjury that:

1. I am basing my statements on matters that are within my personal knowledge.
2. I am the current President of Na Moku Aupuni o Ko'olau Hui ("Na Moku").
3. Attached as Exhibit "A" is a true and correct copy of the current Articles of Incorporation for Na Moku.
4. Na Moku, whose membership exceeds 500, is a nonprofit corporation organized by Native Hawaiian residents of the Keanae-Wailuanui ahupua'a, which encompasses the Nahiku, Keanae, and Honomanu license areas.
5. Tax map key numbers relevant to the issue of Na Moku's standing include, but are not limited to, 1-1-01:44; 1-1-02:Portion 2; 1-1-04:28, 30; 1-1-05:16, 20, 22, 52; 1-1-06:8, 39, 46; 1-2-02:09; 1-2-04:05, 07.
6. Na Moku was formed "to promote the general welfare of the tenants and descendants residing in the ahupua'a of Keanae-Wailuanui and elsewhere; in social, spiritual, cultural, educational and economic affairs", "to preserve and protect, and enhance the quality of the existing life of the people within the Keanae-Wailuanui

EXHIBIT "O"

ahupua'a," and "to provide a formal voice and organization through which the residents of the community can participate fully and more meaningfully in the determination and development of policies and decisions affecting their destiny." See, Na Moku Articles of Incorporation, IV(A),(B), and (D), attached as Exhibit "A".

7. Thus, Na Moku's purposes encompass the assertion, on its members behalf, of rights as beneficiaries of the public trust, the Hawaiian Homes Commission Act, the trust created by Section 5(f) of the Admissions Act, and the constitutionally protected traditional and customary native Hawaiian practices which depend upon sufficient streamflow.

8. Many of Na Moku's members have property interests in kuleana within the Nahiku, Ke'anae, and Honomanu license areas. Although streamflow once fed lo'i on Na Moku's members' lands, that water is diverted and either no longer reaches these lo'i or results in lo'i water temperatures too high to effectively cultivate wetland kalo.

9. Na Moku seeks to restore streamflow in streams within the Nahiku, Keanae, and Honomanu license areas to their natural levels so that kalo cultivation is once again possible and its members may once again exercise their appurtenant and other traditional and customary rights ensured by Hawai'i's Constitution Article XI, §§ 1 & 7, Article XII, § 7, and HRS § 174C-63.

10. Na Moku also represents the interests of certain of its members who are beneficiaries of the trust created by the Hawaiian Homes Commission Act ("Act") and have applied for pastoral and agricultural homesteads within the Ke'anae-Wailuanui ahupua'a. Pursuant to Section 213(i) of the Act, they have a right to expect reasonable revenues to support programs for native Hawaiians and, pursuant to Section 221 of the Act, sufficient water to support homesteading. These rights are implicated by the proposed disposition of public lands for the development, diversion, and use of water.

11. Na Moku also represents the interest of its members who are beneficiaries of the trust established pursuant to Section 5(f) of the Hawaii Admission Act. As beneficiaries of this trust, Na Moku members have a right to expect reasonable revenues from the lease of public lands subject to the provisions of the trust to support programs "for the betterment of the conditions of native Hawaiians."

I declare under penalty of perjury that the foregoing statements are true and correct, to the best of my knowledge, information, and belief.

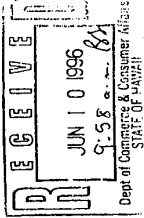
Dated: Honolulu, Hawaii, April 5, 2002.



EDWARD WENDT

DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS
BUSINESS REGISTRATION DIVISION
STATE OF HAWAII

P. O. BOX 40
HONOLULU, HI 96810



004 0012259 10-6/11/96 25.00

Articles of Incorporation of

Na Moku Aupuni O Ko'olau Hui

The undersigned, desiring to form a nonprofit corporation under the laws of the State of Hawaii, certifies as follows:

DEPARTMENT OF COMMERCE
AND CONSUMER AFFAIRS
STATE OF HAWAII
Filed on
JUNE 10, 1996

I

The name of the corporation shall be Na Moku Aupuni O Ko'olau Hui.

II

The location of the corporation's initial office shall be in Keanae-Wailuanui Ahupua'a, Maui, State of Hawaii, and the specific address is HC1, Box 62, Wailuanui Road, Keanae, HI 96708

III

The period of corporation's duration is perpetual.

and out is as add to ARTICLE 1
to (a) business and to (b) business
which business and
The corporation is organized and shall be operated exclusively for cultural, educational, charitable, religious, scientific and literary purposes within the meaning of 501(c) (3) of the Internal Revenue Code of 1954 and regulations thereunder as they now exist or as they may hereafter be amended. The objects and purposes of the corporation are:
28A7A, REV. 12/2/93

A. to promote the general welfare of the tenants and descendants residing in the Ahupua'a of Keanae-Wailuanui and elsewhere in social, spiritual, cultural, educational and economic affairs;

29.8-127

EXHIBIT A

29.8-128

EXHIBIT A

- B. to preserve and protect, and enhance the quality of the existing life of the people within the Keanae-Wailuanui Ahupua'a;
- C. to provide and improve communication and mutual understanding among the tenants and descendants of Keanae-Wailuanui Ahupua'a themselves and with other community associations concerning their mutual welfare;
- D. to provide a formal voice and organization through which the residents of the community can participate fully and more meaningfully in the determination and development of policies and decisions affecting their destiny.

V

As a means of accomplishing its cultural, educational, charitable, religious, scientific and literary purposes the corporation shall have, in addition to the general powers conferred upon it by the State of Hawai'i, but subject to the foregoing limitations, the following powers:

- A. to accept, acquire, receive, take and hold by bequest, devise, grant, gift, purchase, exchange, lease, transfer, by judicial order or decree, or otherwise, for any of this objects and purposes, any property, both real and personal, of whatever kind, nature or description and wherever situated;
- B. to enter into, make, perform, and carry out contracts of every kind for any corporation purpose, without limit as to amount, with any person, firm, association, corporation, or other nonprofit organization, including contracts for the employment of administrators, employees, consultants or other counsel;
- C. in general, and subject to such limitations, and conditions as are or may be prescribed by this Articles of Incorporation, to exercise such other powers which nor or are hereafter conferred by law upon a corporation organized for cultural, education, charitable, religious, scientific and literary purposes set further above, or necessary or incidental to the powers so conferred, conducive to or in furtherance of the attainment of the purposes of the corporation.

VI

In all events and under all circumstances, including but not limited to reorganization, dissolution, or amendment of the Articles of Incorporation of the corporation, the purposes and powers shall be subject to the following limitations:

- A. no substantial part of the activities of the corporation shall consist of carrying on propaganda, or otherwise attempt to influence legislation; nor shall it participate in, or intervene in (including the publishing or distributing of statements) any candidate for public office; not shall it engage in any activities which are unlawful under the laws of the United States or of the State of Hawai'i; nor shall it exercise any powers or engage in any transaction or activity not permitted to be conducted or carried on by an organization exempt under Section 501(c) (3) of the Internal Revenue Code and its Regulations as they now exist or as they may hereafter be amended, or by an organization, contributions to which are deductible under Section 170(c) (2) of such Code and Regulations as they now exist or as they may hereafter be amended;
- B. the corporation shall never be operated for the primary purpose of carrying on any trade or business for profit, and neither the whole nor any part or portion of the assets, income or earnings of the corporation shall be used, nor shall the corporation ever be organized or operated, for objects or purposes which are not exclusively cultural, educational, charitable, religious, scientific or literary, under the laws both of the United States and of the State of Hawai'i;
- C. neither the whole nor any part or portion of the assets, income or earning, current or accumulative, of the corporation shall ever be used for dividends or be otherwise withdrawn or distributed to or divided among any members, directors or officers of the corporation or any donor, whether upon liquidation or dissolution of the corporation or otherwise; provided, further, that neither the whole nor any part or portion of such assets, income or earnings shall ever be used for, accrue to, or inure to the benefit of any private individual within the meaning of the tax exemption requirements of the laws both of the United States and the State of Hawai'i;
- D. the corporation is not organized for profit and shall not issue any stock, and no part of its assets, income or earnings shall be used for dividends, or otherwise withdrawn or distributed to any of its members, directors or officers. The corporation is organized and shall be conducted exclusively for cultural, educational, charitable, religious, scientific or literary purposes;
- E. the corporation shall be operated so as to qualify as an organization described in Section 509(a) (3) of the Internal Revenue Code, and thereby avoid being classified as a "private foundation" within the meaning of Section 509(a) of the Internal Revenue Code. However, in the event that the corporation becomes or is declared to be a "private foundation", then the income of the corporation for each taxable year shall be distributed at such time and in such manner as not to subject the corporation to the tax under Section 4942 of the Internal Revenue Code and Regulations promulgated in connection therewith. Notwithstanding any other provisions of the Articles of Incorporation or any provisions of law, the corporation shall not:

- a. engage in any act of self-dealing as defined in Section 4941(d);
- b. retain any excess business holdings as defined in Section 4943(c), subject to the right to dispose of such holdings within the period prescribed in said Section;
- c. make any investments in such manner as to subject the corporation to tax under Section 4944 or;
- d. make any taxable expenditures as defined in Section 4945(d).

VII

The management of the business and affairs of the corporation and the control and distribution of its property shall be vested in a Board of Directors.

The Board of Directors shall have full power to control and direct the business affairs of the corporation, subject, however, to any limitations contained herein and in the By-Laws of the corporation. The initial directors of the corporation, all residents of the State of Hawai'i, and their home addresses are as follows:

<u>Name</u>	<u>Residence</u>
Edward Wendt	2965 Kaiiili Road Haiku, HI 96708
Henry Kaiiilaau	188A W. Lanai Street Kahului, HI 96732
Ellen P. Denecke	188A W. Lanai Street Kahului, HI 96732
Awapuhi Carmichael	HC1 Box 81 Haiku, HI 96708
Pualani Kimoeko	HC1 Box 65 Haiku, HI 96708
Willie K. Kimoeko	HC1 Box 65 Haiku, HI 96708
Mary Kaauamo	HC1 Box 100 Haiku, HI 96708

- Virgil E. Day, Jr.
HC1 Box 116
Haiku, HI 96708
- Patricia J. Neal
2965 Kaiiili Road
Haiku, HI 96708
- Solomon Kaauamo
HC1 Box 84
Haiku, HI 96708
- Joseph J. Day
HC1 Box 105
Haiku, HI 96708

VIII

The officers of the corporation shall consist of a president, vice-president, corresponding secretary, recording secretary, treasurer and sergeant-at-arms. The initial officers, all residents of the State of Hawai'i, of the corporation and their home address are as follows:

<u>Name</u>	<u>Office-Held</u>	<u>Residence</u>
Edward Wendt	President	2965 Kaiiili Road Haiku, HI 96708
Henry Kaiiilaau	Vice-President	188A W. Lanai Street Kahului, HI 96708
Ellen P. Denecke	Corresponding Secretary	188A W. Lanai Street Kahului, HI 96708
Awapuhi Carmichael	Recording Secretary	HC1 Box 81 Haiku, HI 96708
Pualani Kimoeko	Treasurer	HC1 Box 65 Haiku, HI 96708
Willie F. Kimoeko	Sergeant-At-Arms	HC1 Box 65 Haiku, HI 96708

IX

The property of the corporation shall alone be liable for payment of the debts and liabilities of the corporation and the private property of the directors and officers shall not be subject to the payment of the corporation's debts or claims against the corporation of any extent whatsoever.

X

Upon the dissolution of the corporation or the winding up of its affairs, the assets of the corporation shall be distributed exclusively to cultural, educational, charitable, religious, scientific or literary organizations which would then qualify under the provisions of Section 501(c) (3) of the Internal Revenue Code and its Regulations as they now exist or as they may hereafter be amended.

This Articles of Incorporation shall be subject to amendment from time to time as provided by law, except that no amendment shall be made which would change the objects and purposes of this corporation to inure to the benefit of any member, donor or private individual, or which would permit any transaction or activity not permitted to be conducted or carried on by an organization exempt under Section 501(c) (3) of the United States Internal Revenue Code and its Regulations as they now exist or as they may hereafter be amended.

IN WITNESS WHEREOF, I certify under the penalties of the Hawai'i Revised Statutes, Section 415B-158 that I have read the above statements and that the same are true and correct.

DATED: Keanae-Wailuanui, Maui Hawai'i, June 6, 1996.

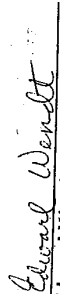

Edward Wendt

EXHIBIT 'P'

Moses K Haia

From: Alan Murakami
Sent: Wednesday, January 16, 2008 11:32 AM
To: Linda Chow (Linda.L.Chow@hawaii.gov)
Cc: (morris.m.atta@hawaii.gov); Mahealani Wendt; Moses K Haia
Subject: FW: EMI monitor
Attachments: Implementation of Interim Order, RE: Implementation of Interim Order, 2007 07 03 ltr to Morris
 Ata re concerns.pdf

Linda,

Since we last met on December 17, 2007 in Waiuanui, it appears that the DLNR was looking for another monitor, since Morris has been reassigned to other duties. Over the past month, we have heard nothing since the site visit to attempt to resolve the vacancy left by Morris' reassignment. In the interim, we urge the DLNR to IMMEDIATELY reassign these monitor duties to Daniel Ornellas with allowance for the additional staff time needed to effectively implement the provisions of the March 23, 2007 BLNR order. Assuming Mr. Ornellas' other duties will suffer, require other Maui staff to assist with those duties. If funding is the issue, then we request you seek the additional funding levels in the budget request you are submitting to this Legislature to account for this additional required staff time. If the DLNR has already done so, please provide the information necessary to track this requested funding at the Legislature.

Our clients remain frustrated that, while additional flow to Waiokamilo Stream has been released, other problems contemplated in the March 23, 2007 Interim Order remain unaddressed. You have our July 3, 2007 letter and December 5 and 13, 2007 email communications requesting various remedies inherently contemplated by that order. We note that despite the passage of almost a year, your DLNR monitor has yet to perform even the most elementary terms of the order. For example:

- Despite the terms of paragraph 1, there has been no report on the status of the Board's determination of the status of the pending petitions at the CWRM and if deemed necessary, the Board's filing of an appropriate petition with the CWRM for determination of the petitions for amendment of the IIFS for the diverted streams which are the subject of this action.
- Despite the terms of paragraph 3(c), the DLNR monitor has NOT made appropriate investigations to determine that the purported "6.0 mgd" release into Waiokamilo Stream will meet the needs of the Na Moku members while not exceeding current or foreseeable requirements of the Na Moku members.
- Despite the terms of Paragraph 3(d), and despite Ms. Kekahuna's undisputed attempts to increase the amount of acreage that she desires to cultivate as taro lo'i, the DLNR monitor has NOT determined the additional amounts A&B/EMI must decrease from its diversions of Honopou Stream to allow Kekahuna sufficient water to irrigate her additional taro lo'i, nor brought this unresolved issue to the BLNR since no agreement can be reached; (As we made clear at the last meeting with Morris, the proposed placement sites of temperature gauges at Honopou will not provide the temperature of the water in the lo'i, the most important reading in determining whether flow is adequate).
- Despite the terms of paragraph 5, the Department has failed to "immediately establish a program to monitor stream flows upstream and downstream of each diversion."
- Despite the terms in paragraph 6,
 - o there is not even a permanent monitor in place;
 - o the monitor has not investigated and resolved any of the complaints regarding stream flows Na Moku, et al. have identified in writing.
 - o the monitor has largely NOT been "available in the field upon written notice" by our clients
 - o the monitor has NOT made any recommendation to the Board for action on disputes which cannot be resolved by the monitor.
- Despite the terms in paragraph 7, the monitor has not made one recommendation to change any of the

29.8-135

5/29/2008

: EXHIBIT "P"

findings of the BLNR in instances where there is error in the BLNR's understanding of the facts, even though we have identified several key errors that need to be corrected

- Despite the terms in paragraph 8, there is no system to record temperature measurements to determine if further restrictions are needed of the EMI diversions to preclude pythium rot in the lo'i of our clients.

We are also requesting the immediate scheduling and resumption of the contested case hearing to resolve all outstanding claims and issues raised in our intervention before the BLNR on the revocable permits pending for the Hueilo, Honomanu, Keanae, and Nahiku license areas.

Please provide a response to this message as well as to our prior communications sent to you or Morris on July 3, 2007, December 5, 2007 and December 13, 2007 email communications. Please provide us with a detailed response to our requests IMMEDIATELY, since it is now over 6 months since we served them on you. We are particularly disappointed that you and Morris have reneged on providing my clients the regular scheduled contact visits we believed you AGREED to provide two months ago. The DLNR's failure to even provide this access to a dedicated field monitor is extremely disturbing in light of our major implementation concerns. It is clearly contrary to the letter of the March 23, 2007 Interim Order.

We are particularly alarmed that you have allowed EMI to continue diverting from Honopou and Waiuanui Streams despite the clear harm to our downstream taro grower clients. Is there any justification for this incessant delay in providing the interim relief the BLNR ordered? Ms. Kekahuna suffers daily from her inability to grow kalo for her table. Her very sustenance depends on your prompt and timely action to get EMI to release more water for her additional taro growing. We need IMMEDIATE relief for her.

Given these chronic failures to act, I repeat my request that we be placed on the agenda of the BLNR at its next meeting or as soon thereafter as possible. My clients are incensed that after 6 years, we are unable to even effectively implement the March 23, 2007 Interim Order, after so much energy has been expended to justify even that much preliminary relief. I ask that you immediately provide your responses to the above. If we do not receive an appropriate response to the above by 4:30 p.m. on Tuesday, January 22, 2008, we will be forced to take other appropriate action.

Alan T. Murakami, Esq.
Native Hawaiian Legal Corporation
 1164 Bishop Street
 Suite 1205
 Honolulu, HI 96813
 Tel: 808-521-2302
 Fax: 808-537-4268

29.8-136

5/29/2008

Moses K Haia

From: Moses K Haia
Sent: Monday, May 12, 2008 10:10 AM
To: 'Morris.M.Atta@hawaii.gov'; Linda.L.Chow@hawaii.gov
Cc: Alan Murakami; 'Ed Wendt'; 'idhall@maui.net'; 'Daniel.L.Omelias@hawaii.gov'
Subject: RE: site visit to filipino ditch along

Morris and Linda,

A reminder that we are still waiting for a response to the emails below.

Moses

From: Moses K Haia
Sent: Friday, April 25, 2008 4:22 PM
To: 'Morris.M.Atta@hawaii.gov'; Linda.L.Chow@hawaii.gov
Cc: Alan Murakami; 'Ed Wendt'; 'idhall@maui.net'; 'Daniel.L.Omelias@hawaii.gov'
Subject: RE: site visit to filipino ditch along

Morris and Linda,

Realizing that you are both busy, I would appreciate a response to the queries below at your earliest convenience.

Moses

From: Moses K Haia
Sent: Tuesday, April 22, 2008 8:13 AM
To: 'Morris.M.Atta@hawaii.gov'; Linda.L.Chow@hawaii.gov
Cc: Alan Murakami; 'Ed Wendt'; 'idhall@maui.net'; 'Daniel.L.Omelias@hawaii.gov'
Subject: RE: site visit to filipino ditch along

Morris:

According to Linda, you continue to be the stream monitor. So what, if anything, have you done since our last meeting with you in December 2007 to address the concerns first raised in our July 2007 letter to you? Do you recall your statement to me and my clients at the December 2007 meeting? What did you say then? I want to see if my recollection is accurate.

Linda,

If Morris Atta is still the stream monitor, why didn't you say so a month ago when I sent my March 24, 2008 email inquiry to you regarding a stream monitor?

Moses

From: Linda.L.Chow@hawaii.gov [mailto:Linda.L.Chow@hawaii.gov]
Sent: Tuesday, April 22, 2008 7:55 AM
To: Alan Murakami
Cc: Alan Murakami; 'Ed Wendt'; 'idhall@maui.net'; Moses K Haia; 'Morris.M.Atta@hawaii.gov'
Subject: RE: site visit to filipino ditch along

29.8-137

29.8-138

EXHIBIT "Q"

5/29/2008

EXHIBIT "Q"

Alan and Moses:

The last time a right of entry permit was requested and granted, it was with permission from A&B. This is not a unique situation. Any time Land Div. receives a request for access to State land that is under a disposition, they request permission from the party that occupies the land. Although the State arguably has the right to enter the land for its purposes, it does not necessarily have the right to give permission to third parties to enter the land w/out permission. The most I can do is to keep asking Land Div. to follow up on the request.

As for the stream monitor, as far as I know, Morris Atta is still the stream monitor. DLNR has been looking at someone to assist him with this duties, but I'm not sure that the idea is to replace him as the stream monitor.

Linda L.W. Chow
Deputy Attorney General
Land Transportation Division

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Alan Murakami <amurak@michi.org>
To: "Linda L.Chow@hawaii.gov" <Linda.L.Chow@hawaii.gov>; Moses K Hala <mohtase@michi.org>
cc: Alan Murakami <amurak@michi.org>; "ldhall@maui.net" <ldhall@maui.net>; "Morris.M.Atta@hawaii.gov" <Morris.M.Atta@hawaii.gov>; "Solomonkaauamo@hawaii.rr.com" <solomonkaauamo@hawaii.rr.com>; "Ed Wenzel" <ed.wenzel@hawaiianet.net>; Palani Hokanoa <palani.hokanoa@gmail.com>
Date: 04/21/2008 02:37 PM
Subject RE: site visit to filipino ditch along

Linda
I'm puzzled.

The last time we set up a site visit to ascertain compliance with the March 23, 2007 BLNR Interim Order, it took only a couple of week's time to get the ok to proceed. I'm pretty sure back then you did not think it necessary to ask A&B/EMI. In fact, doesn't the state retain the right to access property your dept leases at any time pursuant to para. B(6) of the last revocable permit issued, which provides:

6. The Board reserves the right for its agents, or representatives to enter or cross any portion of the Premises at any time in the performance of its duties.

Those duties include compelling compliance with water rights protected by the Hawai'i Constitution, the common law and the state Water Code:

16. The State reserves the right, subject to not less than thirty (30) days written notice, to withdraw water from this revocable permit to meet the following requirements as the State in its sole discretion may determine: Constitutionally protected water rights, instream flow standards, reservations needed to meet the Department of Hawaiian Home Lands, under section 221 of the Hawaiian Homes

5/29/2008

Commission Act as well as other statutorily or judicially recognized interests relating to the right to withdraw water for the purposes of and in accordance with the provisions of section 171-58(d), Hawaii Revised Statutes.

19. The Permittee shall comply with all requirements of the State Water Code, section 174C, Hawaii Revised Statutes, and other laws governing water in Hawaii.

The water rights of Wailuanui taro farmers are undisputed. These rights are clearly protected by constitutional, statutory, and common law. Furthermore, the same permit specifies that you have the power to stop any discriminatory conduct:

11. The use and enjoyment of the Premises shall not be in support of any policy which discriminates upon any basis or in any manner that is prohibited by any applicable federal, state, or county law.

Without the strict enforcement of the constitutionally-protected water rights of taro farmers and subsistence practitioners, who happen to be Hawaiians, the DLNR is discriminating against those who would benefit from the prompt action of the DLNR staff to the requests for access to determine compliance with the Interim Order. Conditioning access on the assent of A&B/EMI is completely contrary to the design of that order, especially if it turns out that your permittee is responsible for withholding releases to Waioakamilo through the Filipino Ditch diversion to Wailuanui Stream. Time is of the essence; it should not be extended because of the failure of the targeted party to consent.

Assuming without conceding that you are properly operating under the terms of the last revocable permit issued, I can see no purpose for delaying access until and unless your permittee, which is responsible for any failure to release water under the Interim Order, consents. Moreover, it is inconsistent with your prior prompt action to allow my clients access. I sincerely hope you are not delaying access because there is no appointed monitor, since we both know where that road will lead you, after 5 months of inaction in replacing Morris Atta.

Alan T. Murakami, Esq.
Native Hawaiian Legal Corporation
1164 Bishop Street
Suite 1205
Honolulu, HI 96813

Tel: 808-521-2302
Fax: 808-537-4268

From: Linda L.Chow@hawaii.gov [mailto:Linda.L.Chow@hawaii.gov]
Sent: Thursday, April 17, 2008 8:17 AM
To: Moses K Hala
Cc: Alan Murakami; ldhall@maui.net; Morris.M.Atta@hawaii.gov; solomonkaauamo@hawaii.rr.com
Subject: RE: site visit to filipino ditch along

I am still awaiting word from Land Division, who is waiting for a response from A&B. I have tried following up on your request and will continue to do so.

29-8-140

5/29/2008

Linda L.W. Chow
Deputy Attorney General
Land Transportation Division

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Moses K Haia
<mohaia@hitchi.org>
04/17/2008 07:03 AM
To: "Linda L.Chow@hawaii.gov" <Linda.L.Chow@hawaii.gov>; "Morris M. Atta@hawaii.gov" <Morris.M.atta@hawaii.gov>
cc: Alan Murakami <amurak@hitchi.org>; "solomonkaauamo@hawaii.rr.com" <solomonkaauamo@hawaii.rr.com>; "ldhal@maui.net" <ldhal@maui.net>
Subject: RE: site visit to filipino ditch along

Linda,

Are you going to respond?

Moses

From: Moses K Haia
Sent: Thursday, April 03, 2008 10:36 AM
To: "Linda.L.Chow@hawaii.gov"; "Morris M. Atta@hawaii.gov"
Cc: Alan Murakami; solomonkaauamo@hawaii.rr.com; ldhal@maui.net
Subject: RE: site visit to filipino ditch along

Linda,

I would appreciate an update on (1) my request for a right of entry and (2) the appointment of a stream monitor.

Moses

29.8-141

5/29/2008

From: Moses K Haia
Sent: Monday, March 24, 2008 11:34 AM
To: "Linda.L.Chow@hawaii.gov"
Cc: Alan Murakami; solomonkaauamo@hawaii.rr.com; ldhal@maui.net
Subject: RE: site visit to filipino ditch along

Linda,

As you know, the Interim Order, which is now one year old, required the immediate appointment of a monitor to (a) monitor stream flows upstream and downstream of each diversion, (b) ensure compliance with the interim order and investigate and resolve all complaints regarding stream flows by any party, (c) make recommendations to the Board for action by the Board for disputes which cannot be resolved by the monitor, (d) verify that the Board's understanding of the facts of the case, as set forth in the Interim Order, are correct and, (e) periodically record the temperature of the streams in question and make recommendations for further decreases of diversions should it appear such action is necessary to control pythium rot. Despite our numerous attempts to obtain compliance with the above, none of the above duties has been implemented.

You have to know that the Board viewed the appointment and actions of a stream monitor as a necessary component of its Interim Order. Without it, I am certain that the Board had good reason to suspect that my clients would never have given the Interim Order a second thought. You too know that it is precisely because of the appointment and duties of the monitor that my clients took the Board at its word. As such, please provide me with an update on appointment of a stream monitor. The lack of a stream monitor renders this Interim Order legally deficient.

Moses

From: Linda.L.Chow@hawaii.gov [mailto:Linda.L.Chow@hawaii.gov]
Sent: Thursday, March 20, 2008 4:13 PM
To: Moses K Haia
Cc: Alan Murakami
Subject: Re: site visit to filipino ditch along

Moses:

I will pass your request along to DLNR Land Div. They will probably need to contact A&B/E/M regarding the request prior to providing you with a response. As with all encumbered lands, it is my understanding that Land Div.'s practice is to not grant right of entry permits or easements without the concurrence of the current tenant. Either I or DLNR Land Div. will contact you either for more information or with a response to your request.

In order to help Land Div. process your request, it would be helpful if you provided them with further details such as the projected dates for entry, how you will be accessing the area (i.e. on foot, vehicle, etc.), and how many people will be involved.

Linda L.W. Chow
Deputy Attorney General
Land Transportation Division

29.8-142

5/29/2008

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Moses K Hala <mohala@nhlich.org>

03/20/2008 04:05 PM

To: Linda.L.Chow@hawaii.gov
cc: Alan Murakami <amurak@nhlich.org>
Subject: site visit to filipino ditch along

Linda,

On behalf of our clients, Na Moku Aupuni O Ko'olau Hui, I hereby request a right of entry over the upper mauka reaches of the ahupua'a of Ke'anae and Waiauani, including the Ke'anae Water License Area, Ko'olau Forest Reserve and other lands (TMKs: (2) 1-1-002:002, 002 and 1-1-008:005), to inspect and photograph features related to the ditch system at and above Ko'olau Ditch, including the areas referred to as Kikkiko, Filipino Ditch, Hauolo Wahine.

We are seeking a right of entry similar to the one provided to Na Moku by letter of the Chairperson dated September 14, 2004. Please contact me by Wednesday, March 26, 2008.

Moses Hala
Attorney for Na Moku, et al.

APPENDIX

“1”

29.8-143

29.8-144

5/29/2008

APPENDIX

Article XI, § 7

Water Resources

Section 7.

The State has an obligation to protect, control and regulate the use of Hawaii's water resources for the benefit of its people. The legislature shall provide for a water resources agency which, as provided by law, shall set overall water conservation, quality and use policies; define beneficial and reasonable uses; protect ground and surface water resources, watersheds and natural stream environments; establish criteria for water use priorities while assuring appurtenant rights and existing correlative and riparian uses and establish procedures for regulating all uses of Hawaii's water resources.

Article XII, § 7

Traditional and Customary Rights

Section 7.

The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Island prior to 1778, subject to the right of the State to regulate such rights.

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of the Contested Case Hearing) DLNR FILE NO. 01-05-MA
Regarding Water Licenses at Honomannu,)
Ke'anae, Nahiku, and Huelo, Maui) DECLARATION OF ALAN T.
) MURAKAMI
)
)

DECLARATION OF ALAN T. MURAKAMI

I declare under penalty of perjury that:

1. I am one of the counsel for Intervenor Na Moku Aupuni O Ko'olau Hui, Beatrice Kekahuna, and Marjorie Wallett.
2. Unless otherwise stated, the following statements are based on personal knowledge.
3. On March 23, 2007, this board issued an interim order granting partial relief to my clients pending the final outcome of the contested case hearing in this proceeding.
4. Attached as Exhibit "A" to the Memorandum in Support of Motion is a true and correct copy of this Board's Findings of Fact, Conclusions of Law, and Decision and Order dated March 23, 2007 (Interim Order), which I received from the Board and is a document maintained in the regular course of business at my office.
5. The Department initially appointed Maui Department of Land and Natural Resources staff worker Daniel Ornellas as the monitor specified in the order.
6. Attached as Exhibit "B" to the Memorandum in Support of Motion is a true and correct copy of an email dated April 20, 2007, which I received from Linda Chow over the internet and is maintained as an electronic file in the regular course of business at my office.
7. Initially during the first few months of its implementation the Interim Order, Mr. Ornellas' actions showed promise of affording actual relief to my clients.
8. As a Maui island resident, Mr. Ornellas was easily accessible to my clients in the field as the monitor under the order and appeared positioned to be able to tackle and address the specific steps and directions contained in the order.

9. Mr. Ornellas made himself reasonably accessible to parties in the field upon their request, and was able to provide relatively swift responses to our clients' concerns.

10. During the initial months of implementation of the Order, Mr. Ornellas oversaw the release of water from Waiokamilo Stream, as required under Paragraph 3(c) of the Order, inspecting diversion facilities on the ground to verify the release of water ordered.

11. Attached as Exhibit "C" to the Memorandum in Support of Motion is a true and correct copy of an email dated June 15, 2007, which I received from Daniel Ornellas over the internet and is maintained as an electronic file in the regular course of business at my office.

12. We also accompanied Mr. Ornellas on site visits to Waiuanui Valley he set up to orient him to the physical features related to our claims, and the diversion structures installed by Alexander & Baldwin's East Maui Irrigation Company to divert water from Waiokamilo and Kulani Streams and to oversee the installation of a real time stream gauge on Waiokamilo Stream, which he helped arrange for installation by staff from the U.S. Geological Survey office.

13. While the initial results of the release were less obvious, over time, my clients reported significant improvement in the health of the taro being irrigated by this release of water in those parts of Waiuanui Valley affected by the release of water into Waiokamilo Stream.

14. Nevertheless, for the eastern side of Waiuanui Valley, which is dependent on free-flowing water in Waiuanui Stream, my client's members who raise taro in that portion of the valley reported a lack of sufficient water to support the level of taro cultivation in which they desired to engage.

15. However, this board erroneously found, in Finding of Fact 11, that "[n]o Petitioner asserted a claim of insufficient water for taro growing purposes from Waiuanui and Palauhulu Streams."

16. Similarly, since the BLNR had concluded, in its Conclusion of Law 9, that Ms. Beatrice Kekahuna did not require additional water from Honopou Stream for growing taro, based strictly on the measurements of stream flow by A&B/EMI employees, it did not order any water to support the taro growing by her and Ms. Marjorie Wallett.

17. However, the BLNR had provided for the monitor to correct any errors in the determinations of water need.

18. Accordingly, on behalf of our clients, Moses Haia, III and I sought an investigation by Mr. Ornellas to determine and resolve whether the Board was in error in finding

that (a) Na Moku members had not claimed the need for water from Waiuanui Stream to irrigate taro on the eastern end of Waiuanui Valley (Finding of Fact); and (b) Ms. Kekahuna and Ms. Wallett did not need more water for, and were not seeking to expand, their taro cultivation on their taro lands in Honopou Valley.

19. Mr. Haia and I provided Mr. Ornellas with the documentary evidence of the November 2005 and February 2006 hearing transcripts and exhibits to establish what information had been submitted to the hearing officer during the proceedings on whether to grant interim relief to our clients.

20. Attached as Exhibit "D" to the Memorandum in Support of Motion is a true and correct copy of a letter dated June 21, 2007, which I received from Allan A. Smith by mail, replacing Mr. Ornellas with Mr. Morris Atta as the appointed monitor, and is maintained as an electronic file in the regular course of business at my office.

21. When my clients received word on June 21, 2007 that Mr. Ornellas was being replaced by Morris Atta, Mr. Ornellas had not had the time to begin his investigation of the claims we had made for Honopou Valley.

22. Moses Haia and I immediately communicated with Ms. Linda Chow and Mr. Atta to express concern for the change, given Mr. Atta's residence on O'ahu, which would render him less available to our clients, as well as less able to respond to requests for action, as required by the March 23, 2007 Order.

23. Between June and September 2007, my clients did in fact predictably experience delays in getting action and responses to concerns, as expressed in a July 3, 2007 letter to Mr. Atta, outlining the specific issues and complaints we requested that he address, pursuant to paragraph 6 of the Order.¹

24. Attached as Exhibit "E" to the Memorandum in Support of Motion is a true and correct copy of letter from M. Haia to M. Atta dated July 3, 2007, which I was mailed to Mr. Atta and is maintained as part of the case file of this action in the regular course of business at my office.

25. After much delay and inaction, upon my request, on September 28, 2007, Na Moku President Edward Wendt and I met personally with Mr. Atta and Deputy Attorney General

¹ Paragraph 6 requires that the monitor "... investigate and resolve if possible all complaints regarding stream flows by any of the parties to this proceeding."

Linda Chow in Honolulu, in the hope of securing assurances that Mr. Atta would follow a regular schedule of contact with parties to this proceeding on a monthly basis, interspersed with biweekly contact with DLNR Maui field personnel to supplement these contacts.

26. Because of his residence on O'ahu, Mr. Atta could be and was not available to the parties on Maui in a timely fashion, and, because he was completely absent from the physical realities of the circumstances facing taro farmers and subsistence gatherers in East Maui like my clients, he was not contributing and did not contribute at all to investigation and resolution of the changes sought by intervenors.

27. At the September 28, 2007 meeting, Mr. Atta and Ms. Chow agreed with the request Mr. Wendt and I made as being reasonable, and assured us that Mr. Atta would immediately begin fulfilling their obligation under the March 23, 2007 Order to the East Maui taro farmers who were suffering daily by the lack of state action to implement the Order after more than 6 months had passed.

28. Mr. Atta notified me that he planned to fly to Maui on October 4, 2007 to specifically assess the priority claim of Ms. Beatrice Kekahuna and Ms. Marjorie Walleit, two kupuna clients of mine approaching their 80's, who were and are steadfastly attempting to get the BLNR to respect their appurtenant water rights, rather than allow a commercial sugar plantation to divert it from Honopou Valley where they are unsuccessfully attempting to obtain sufficient water for their taro crops.

29. On that October 4, 2007 site visit, he brought along an UH CTAHR Extension Agent, Robin Shimabukuro, assertedly to assist him to determine appropriate methods and locations for measuring stream flow and temperature readings contemplated in the Order.

30. In the presence of intervenors, he and Mr. Shimabukuro, conducted a site visit to assertedly listen to the request for more water for expanded taro cultivation envisioned by Ms. Kekahuna, Ms. Walleit, and their ohana, to investigate and assess its merits and to determine proper placement of temperature gauges as required by paragraph 8 of the March 23 Order.

31. Mr. Shimabukuro was already familiar with the layout of the Kekahuna-Walleit taro field in Honopou, having visited the site earlier in connection with an aborted attempt to assist Garrett Hew in establishing a lo'i kalo to attempt a demonstration that dry land kalo could be raised on that land.

32. At that site visit, I made it clear to Mr. Atta that the proposed placement sites of

temperature gauges in the stream, such as at Honopou, will not provide the temperature of the water in the lo'i, the most important reading in determining whether flow is adequate.

33. Since the October 4, 2007 site visit neither I nor my clients received any written or oral determinations related to what Mr. Atta or Mr. Shimabukuro found, investigated, or resolved after their site visit.

34. Mr. Atta failed to make the previously scheduled November trip.

35. In November 2007, when I inquired with Ms. Chow why Mr. Atta had failed to go on his trip as promised, I learned that he and Ms. Chow were renegeing on the schedule they had previously agreed would be followed, were working on a revised schedule, unbeknownst to me or any of my clients, and assured me that Mr. Atta would be communicating shortly with me what that new revised schedule would be.

36. After I never received notice of that new schedule, I wrote to Mr. Atta and Ms. Chow to express my concerns for the lack of action 8 months after the Order had been issued.

37. Attached as Exhibit "F" to the Memorandum in Support of Motion is a true and correct copy of an email dated December 5, 2007, which I wrote to Mr. Atta and sent over the internet, and is maintained as an electronic file in the regular course of business at my office.

38. Mr. Atta then announced he was scheduling another site visit to Honopou on December 17, 2007.

39. Prior to that December 17, 2007 site visit, I wrote Mr. Atta to request that he precede that trip with the presentation of a proposed plan to resolve Ms. Kekahuna and Ms. Walleit's claim that they needed more water released into Honopou from the A&B/EMI diversions which were depriving them of sufficient water to cultivate their taro crops.

40. I reminded him of the time and expense my clients had invested in attending site visits in the past with numerous state officials charged with protecting the appurtenant and traditional water rights of Na Moku members, Ms. Kekahuna and Ms. Walleit as the reasons we sought effective resolution of our complaints and claims to him.

41. Attached as Exhibit "M" to the Memorandum in Support of Motion is a true and correct copy of an email dated December 13, 2007, which I sent to Morris Atta and Linda Chow over the internet and is maintained as an electronic file in the regular course of business at my office.

42. At no time by or after December 17, 2007, did I receive any plan or timetable to

resolve Ms. Kekahuna and Ms. Walleit's claims, or new information about how he planned to measure water flow or take temperature measurements or to resolve Ms. Kekahuna's declared need for more water to grow taro.

43. I learned from Moses K.N. Haia that Mr. Atta reported that he had been promoted at the DLNR and could no longer serve as monitor, and had asked for suggestions for a replacement monitor.

44. After receiving little or no feedback from the attempt to implement the Order following Mr. Atta's December 17, 2007 site visit, I wrote another email message to him and Linda Chow to summarize my clients' growing frustration with the DLNR's inaction.

45. Attached as Exhibit "P" is a true and correct copy of an email dated January 16, 2008, which I sent to Morris Atta and Linda Chow over the internet and is maintained as an electronic file in the regular course of business at my office.

46. Attached as Exhibit "N" is the Declaration of Beatrice Kekahuna, establishing the injury to her of the continued disrespect of her appurtenant water rights in Honopou Valley, which was submitted earlier in these proceedings.

47. Attached as Exhibit "O" is the Declaration of Edward Wendt, establishing the injury to the residents of Wailuanui Valley, who are members of Na Moku Aupuni O Ko'olau Hui, of the continued disrespect of their appurtenant water rights in Wailuanui Valley, which was submitted earlier in these proceedings.

48. Despite communications from me or Mr. Haia of July 3, 2007, December 5, 2007, December 17, 2007, January 16, 2008, I have never received any written response to the requests, claims or issues raised in those communications.

49. By its inaction, inattention, and refusals to act, the DLNR staff is forcing Hawaiian taro farmers and gatherers from East Maui to bear the expense and burden of implementing the Order, in an attempt to enforce their basic rights, thereby imposing tremendous and onerous burdens on them in their efforts to simply practice their culture.

50. After 8 months of "implementation" of the March 2007 order, the DLNR staff has overseen the release of water into one stream - Waiokamilo.

51. However, the water release into Waiokamilo is insufficient to meet the water needs of our clients, as detailed in our July 3 letter.

52. Our clients in Wailuanui report that due to the topography of Wailuanui Valley, the lo'i located on the extreme east side of the valley cannot be irrigated by gravity flow.

53. Our clients rely on the water they would otherwise divert from Wailuanui Stream to irrigate those lo'i on the extreme east side of Wailuanui Valley.

54. Despite our written requests to Linda Chow to appear before the Board of Land and Natural Resources to report the frustrations of my clients, she has never responded to those requests, forcing me to file this motion.

DATED: Honolulu, HI, May 29, 2008.



Alan T. Murakami

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

In the Matter of the Contested Case Hearing) DLNR FILE NO. 01-05-MA
Regarding Water Licenses at Honomanu,)
Ke'anae, Nahiku, and Huelo, Maui)
DECLARATION OF MOSES K.N. HAIA,)
III)
)

DECLARATION OF MOSES K.N. HAIA, III

I declare under penalty of perjury that:

1. I am one of the counsel for Intervenor Na Moku Aupuni O Ko'olau Hui, Beatrice Kekahuna, and Marjorie Walleit.
2. Unless otherwise stated, the following statements are based on personal knowledge.
3. During October and November 2005, hearing officer E. John McConnell held hearings to determine whether Ms. Kekahuna and Ms. Walleit, now both approaching their 80's, required interim relief during the pendency of the contested case hearing on Alexander and Baldwin and East Maui Irrigation Company's (hereafter, A&B/EMI) application pursuant to HRS 171 to use water from ceded lands in the Huelo, Honomanu, Ke'anae, and Nahiku license areas.
4. During and after those hearings, Ms. Kekahuna and Ms. Walleit labored to keep their traditional taro growing properties in Honopou Valley (hereafter, "Honopou properties") from going to weeds during the months they had anticipated more water being released from A&B/EMI diversions from Honopou Stream in order to demonstrate their commitment to growing taro.

5. When the Hearing Officer E. John McConnell ordered a site visit to Honopou as part of those interim relief hearings on October 10, 2005, I attended the site visit and observed the extensive maintenance work my clients had performed on their Honopou properties.
6. Attached as Exhibits "G" and "H" to the Memorandum in Support of Motion are two photographs of the Honopou properties which truly and accurately depicts the conditions on those properties on October 10, 2005 on October 10, 2005.

7. Hearing Officer McConnell is depicted in Exhibit "G" to the Memorandum in Support of Motion viewing the property.

8. My clients cleared these same properties so they could, in pursuit of their clear rights, plant taro on these lands.

9. When my clients received word on June 21, 2007 that Mr. Ornellas was being replaced by Morris Atta, Mr. Ornellas had not had the time to begin his investigation of the claims we had made for Honopou Valley.

10. Thereafter, Alan Murakami and I immediately communicated with Ms. Linda Chow and Mr. Atta to express concern for the change, given that Mr. Atta's residence on O'ahu would likely render him less available to our clients as well as less able to respond to requests for action, as required by the March 23, 2007 Order.

11. Nonetheless, I prepared a detailed request for interim relief by the monitor and mailed it to Mr. Atta to document our specific concerns which we expected him to address pursuant to the March 23, 2007 Order.

12. Attached as Exhibit "E" to the Memorandum in Support of Motion is a true and correct copy of the letter from me to M. Atta dated July 3, 2007, which was mailed to Mr. Atta

jointly labored to keep our traditional taro growing properties in Honopou Valley (hereafter, "Honopou properties") from going to weeds during the months we anticipated more water being released from A&B/EMI diversions from Honopou Stream, after the conclusion of the interim relief hearings.

6. That was hard work requiring significant labor from all our ohana members.
7. When the Hearing Officer E. John McConnell ordered a site visit to Honopou as part of those interim relief hearings on October 10, 2005, I was on the Honopou properties to proudly display the extensive maintenance work my ohana had performed on these properties as a demonstration of our commitment to growing more taro.
8. Attached as Exhibits "G" and "H" to the Memorandum in Support of Motion are two photographs of the Honopou properties on October 10, 2005, which truly and accurately depicts the conditions on those properties on October 10, 2005, and on which Ms. Wallett and I were, and still are, attempting to cultivate in taro.
9. Hearing Officer McConnell is depicted in Exhibit "G" to the Memorandum in Support of Motion viewing the Honopou properties.
10. The land depicted in both photographs was then ready for planting taro, had enough water been available from Honopou Stream to irrigate it throughout its plant life without subjecting it to possible pythium rot from inadequate water flow.
11. Almost exactly two years later, on October 4, 2007, I was present when DLNR field monitor Morris Atta, at his request, accompanied by Robin Shimabukuro, a

University of Hawai'i Agricultural Extension Agent, conducted a site visit to the Honopou properties.

12. I had previously witnessed Mr. Shimabukuro helping Garrett Hew plant a crop of taro on part of the Honopou properties as part of an attempt to demonstrate the potential for growing dry land taro
13. Accordingly, Mr. Shimabukuro was already familiar with the layout of the taro lo'i on this property.
14. Attached as Exhibit "T" to the Memorandum in Support of Motion is a photograph of the Honopou properties, which truly and accurately depicts the conditions on those properties on October 4, 2007, and on which Ms. Wallett and I were and are still attempting to cultivate in taro.
15. Mr. Atta is depicted in Exhibit "T" talking to my niece Lyn Scott next to the taro lo'i my ohana could not plant or cultivate because of the lack of adequate water from Honopou Stream, which is located to the rear of the picture beyond the cleared ground but before the distant ridge.
16. During the two years, my ohana and I were very disappointed that no additional water of any significance was released back into Honopou Stream so Ms. Wallett and I could restore taro on the Honopou properties without those crops suffering from pythium rot due to higher water temperatures caused by insufficient water being available to irrigate these crops.
17. As a result, my ohana could not plant taro because it would have been a waste of time and labor to attempt taro cultivation with the level of water available from Honopou Stream during that time period.

18. On November 5, 2007, I harvested some taro from the Honopou properties we had attempted to grow and which should have matured had there been sufficient water to irrigate a healthy crop.

19. That stunted taro was almost a year old since it had been planted.

20. Attached as Exhibit "J" to the Memorandum in Support of Motion is a photograph of this stunted taro I harvested from Honopou properties, which truly and accurately depicts the condition of the taro on November 5, 2007.

21. Exhibit "J" depicts taro which is stunted and suffered pythium rot due to the warmer water typical of the level of flow available from Honopou Stream during that growing cycle.

22. On December 17, 2007, I again was present during a site visit to the Honopou properties with Mr. Atta to inspect my clients' properties in Honopou Valley on Maui.

23. During that site visit, I was surprised to learn that Mr. Atta had been promoted at the DLNR and could no longer serve as monitor, and was asking for suggestions for a replacement monitor.

24. At the suggestion of Morris Atta, in January 2008, I consulted with my attorney Moses Haia to forward the name of an expert who we believed qualified to perform the functions as a replacement for him to be the DLNR monitor.

25. We believe that the person we suggested had qualifications which exceeded those of Mr. Atta to perform the monitor functions under the March 23, 2007 Order, and would be more available physically to my family when needed.

26. I understand that the Commission on Water Resources Management previously qualified this person as a water expert in another administrative hearing.

27. To date, I have NOT heard confirmation from the DLNR being taken to replace Mr. Atta.

28. To date, I have NOT heard confirmation from Mr. Atta or Mr. Shimabukuro about plans for restoring more stream flow to Honopou Stream below the massive dam A&B/EMI built and maintains to divert virtually all of the water from Honopou Stream.

29. Attached as Exhibit "K" to the Memorandum in Support of Motion is a photograph of the dam A&B/EMI maintains on Honopou Stream about a mile and a half above the Honopou properties.

30. Attached as Exhibit "L" to the Memorandum in Support of Motion is a photograph of the three 4-inch pipes which allow water to flow downstream in Honopou Stream past the A&B/EMI dam.

31. On a typical day, A&B/EMI's dam allows **only** what little passes over this massive dam in these three 4-inch pipes to flow downstream in Honopou Stream.

32. My ohana must share what little is allowed to flow past this dam with many others nauka of the Honopou properties and below the dam.

33. Because of the delays in implementing the Interim Order issued by the BLNR over a year ago, my ohana have suffered from the lack of taro we have been unable to grow.

34. In addition, the lack of stream flow in Honopou Stream has deprived my ohana of the fish, opae, o'opi, and hihwai we might otherwise be able to supplement our diet.

35. This deprivation of natural food sources from gathering and fishing caused by the lack of adequate stream flow has had a financial impact on my ohana as well, forcing us to buy substitute foods from the local stores to add to our diets.

36. Our inability to follow the subsistence traditions of my Hawaiian ancestors has caused not only a financial strain on us, but diminished if not deprived us of our very ability to survive off our family lands in Honopou, a loss that is incalculable to us culturally.

DATED: Haiku, Maui, HI, April 30, 2008.

Beatrice Kekahuna
Beatrice Kekahuna

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was served upon the following parties in the manner indicated to their last known address:

The Honorable E. John McConnell (Ret.)
33 N. Market Street, Suite 200
Wailuku, Hawaii 96793
U. S. MAIL [X]
E-MAIL
FACSIMILE

Elijah Yip, Esq.
David Schulmeister, Esq.
Cades Schutte
1000 Bishop Street, 10th Floor
Honolulu, Hawaii 96813
U. S. MAIL [X]
E-MAIL
FACSIMILE

Isaac Hall, Esq.
2087 Wells Street
Wailuku, Maui, Hawaii 96793
U. S. MAIL [X]
E-MAIL
FACSIMILE

Robert H. Thomas, Esq.
1001 Bishop Street
Punahoa Tower, Suite 1600
Honolulu, Hawaii 96813
U. S. MAIL [X]
E-MAIL
FACSIMILE

Brian T. Moto, Esq.
Jane Lovell, Esq.
Deputy Corporation Counsel
County of Maui
200 S. High Street
Wailuku, Hawaii 96793
U. S. MAIL [X]
E-MAIL
FACSIMILE

Richard Kiefer, Esq.
444 Hana Hwy, Suite 204
Kahului, Hawaii 96732
U. S. MAIL [X]
E-MAIL
FACSIMILE

Linda L. Chow, Esq.
Deputy Attorney General
465 S. King Street, Room 300
Honolulu, Hawaii 96813
U. S. MAIL [X]
E-MAIL
FACSIMILE

DATED: Honolulu, Hawaii, May 29, 2008.

Moses K. N. Haia III
ALAN T. MURAKAMI
MOSES K. N. HAIA III
Attorneys for Petitioners
Na Moku Aupuni o Ko'olau Hui, et al.
29-8-162

30.0 Karen Nelson



"Karen Nelson"

[Redacted]

06/01/2008 12:57 PM

To: <dlr.cwrn@hawaii.gov>

cc

bcc

Subject: No water for taro farmers of East Maui?

6-1-08

Hello,

I'm writing in regards to the diversion of water to East Maui taro farmers.

I feel strongly that taro farmers on East Maui should have the right to all the water they need to allow them to properly farm their crops.

The original owners, royalty, of Maui intended this water to flow naturally and to not be diverted so as to hurt the farmers and their crops. Not only do taro farmers have water rights to farm but think about the environmental effects on wildlife and vegetation in these pristine valleys.

Please stop the diversion of water to taro farmers and preserve a lifestyle, culture, and environment. Surely, this is what the original owners intended and surely, this is the right thing to do.

A concerned American citizen,

Karen Nelson

31.0 Nikhilananda



"NIKHILANANDA"



06/10/2008 11:46 PM

To <dlmr.cwrm@hawaii.gov>

cc "LINDA LINGLE" <gov@hawaii.gov>, "LINDA LINGLE"

<linda.lingle@hawaii.gov>, "LINDA LINGLE"

<governor.lingle@hawaii.gov>

bcc

Subject testimonymokupapastream

10 June 2008

State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii
96809

Re: Petition by Na Moku 'Aupuni o Ko'olau Hui

Aloha:

Recently, request has been made by the Commission on Water Resource Management, Department of Land and Natural Resources (DLNR), State of Hawaii, for comment on the setting of in stream flow standards for 27 East Maui Streams.

There are literally hundreds of streams and creeks throughout East Maui. This petition deals with only 27 of them. Unfortunately, the stream which runs through my property, Mokupapa Stream, is not included. My property is approximately two and a half acres, TMK: II-2-9-005-046, located in Huelo, Mokupapa, Hamakualoa, Maui, Hawaii. A few hundred yards of what would be Mokupapa Stream meanders through the middle of my property, as does part of the East Maui Irrigation (EMI)'s Ha'iku Ditch. Located about fifteen feet to the West of my property line, is one of EMI's dams, which blocks and diverts virtually all of the water which is continuously flowing in Mokupapa Stream. A few times a year, because of the huge amounts of rainfall in the East Maui Watershed East of my land, the dam overflows and Mokupapa Stream is flowing, sometimes almost as a rushing river. It is beautiful, alive and wonderful. Afterwards, one can

find various prawns, little fish and other animal life. The stream is alive and vibrant. However, most of the year, the stream is dead; killed and ruined by EMI and by their dam, which cuts off the natural flow of the stream.

On the other side of their dam, the water of Mokupapa Stream never, ever, stops flowing. This is why I testified against, almost ten years ago, EMI'S request for a thirty year lease of the East Maui streams. At that time, I was told that they do not take all of the water from Mokupapa Stream. The reason they could make that outrageous and erroneous claim, is because they do not take the water above their dam! Nevertheless, by diverting all of the water which would naturally flow through the creek, which then passes through my property, the stream is effectively and for practical purposes, dead. This is criminal and needs to be stopped. The dam height needs to be lowered, and the water needs to be released back into Mokupapa Stream.

In addition, below my property, there are other landowners, as my land is located approximately a mile and a half south and upstream of the Pacific Ocean. All of these property owners, as am I, are denied their legal right to this water.

In August of 2000 in Keanae, approximately a year prior to the filing of this petition, public testimony was taken, before the State of Hawaii, County of Maui, Board of Water Supply, by the then director, David Craddock, regarding this very same issue. It is now almost eight years later, and the water is still diverted and the streams are dead. Mokupapa stream is dead! Enough is enough. The water needs to be restored, it needs to start flowing through the stream and make its way to the ocean. The environmental destruction has gone on long enough.

Please include Mokupapa Stream, and all of the other creeks and streams in East Maui, and return sufficient water back into them so that they can rehabilitate and be brought back to life. Allow the natural flow of the stream to be re-introduced into this stream and these streams. This is the only fair and pono thing to do.

Please keep me informed of all proceedings by this Commission on

Water Resource Management, Department of Land and Natural Resources, State of Hawai'i, pertaining to this issue and all future actions on re-introducing water back into our streams. Mahalo for allowing me to testify on this urgent matter.

Nikhilananda



MOKUPA'APA TESTIMONY 2006 SUBMITTED.wps



32.0 Office of Hawaiian Affairs



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

RECEIVED

08 JUN 18 08:03

FAX (808) 594-1865

HRD008/3727

June 10, 2008

Ken Kawahara, Deputy Director
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

RE: Request for comments on the Instream Flow Standard Assessment Report (IFSAR) for East Maui streams.

Aloha e Ken Kawahara,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned request for comments. OHA has reviewed the project and offers the following comments.

OHA recognizes that there is a general need to move away from the now somewhat arbitrary instream flow standards (IFS) set in 1988 and towards measurable standards based on best available information. We are pleased that the Commission on Water Resource Management (CWRM) is now taking on the task of doing so in East Maui.

However, we do recognize that some of the IFS have not been maintained, which is of course, problematic. The Honolulu Star Bulletin reported on June 9 in their *Hawaii News* section that taro farmers in East Maui say their summer crop is being ruined by a lack of water and by the failure to maintain stream flows to their patches. OHA was also saddened to read that Hawaiians in the area point out at one stream in Waiokamilo, there is virtually no water flowing, endangering the health of the native species. As you know, many of our native species are diadromous and require an unimpeded mauka to makai connection. Such species as opae ocha' a and o'opu-akupa are also listed specifically under the State Water Code §174C-101 Native Hawaiian Water Rights.

32.0-1

Ken Kawahara
June 10, 2008
Page 2

OHA points out that the public trust doctrine deems "Native Hawaiian and traditional and customary rights" as public trust purposes.¹ As such, the state's responsibility as that of a trustee of this public trust means that agencies of the state (such as OHA and CWRM) must act with the diligence and care of a fiduciary in assuring that "... those bona fide trust purposes such as . . . 'traditional and customary Hawaiian rights'" are protected when deciding what constitutes a "maximum beneficial use."²

Additionally, the Hawai'i Constitution article XII, section 7 "places an affirmative duty on the State and its agencies to preserve and protect traditional and customary native Hawaiian rights, and confers upon the State and its agencies the power to protect these rights and to prevent any interference with the exercise of these rights."³

The State Water Code also further requires that: "adequate provision shall be made for the protection of traditional and customary Hawaiian rights."⁴ Therefore, OHA urges that the water rights of appurtenant kuleana and taro lands must not be abridged or denied nor shall the reserves of water set aside for Hawaiian Home Lands be diminished including in combination with other proposed projects in the area.⁵

OHA is also concerned because of the potential effects on Native Hawaiians' subsistence gathering because of potential reductions in groundwater seeps and natural springs that feed lo'i and other culturally significant crops; fish, mollusks, limu and other stream, estuarine and marine species; and additional natural resources traditionally and customarily gathered for subsistence, religious and cultural purposes.

OHA understands that the IFSAR is a compilation of the hydrology, instream uses, and noninstream uses related to a specific stream and its respective surface water hydrologic unit.⁶ As such we respect that this is inherently a complex undertaking; however, we urge that Native Hawaiian rights relating to water be given their proper weight in this report.

OHA understands that CWRM defines an IFS as a quantity of flow of water or depth of water which is required to be present at a specific location in a stream at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.⁷ We further request that CWRM consider re-defining this

¹ In re Waiahole Ditch Combined Contested Case Hearing, 94 Haw. at 137, 9 P.3d at 449.

² Waiahole, 94 Haw. at 137, 9 P.3d at 146.

³ Ka Pū akai O Ka 'Aina v. Land Use Comm'n, 94 Haw. 31, 42 (2000).

⁴ See, Hawaii Revised Statutes (HRS) section 174C-2.

⁵ See, HRS section 174C-101.

⁶ CWRM website: http://hawaii.gov/dnr/cwrms/sw_ifsar.htm, June 10, 2008.

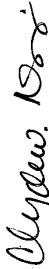
⁷ CWRM website: http://hawaii.gov/dnr/cwrms/sw_ifsar.htm, June 10, 2008.

32.0-2

to include Native Hawaiian uses that are a part of the policies and constitution of this state, ratified and elaborated upon by law, and are a part of the very water code itself.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold (808) 594-0263 or e-mail him at grant@oha.org.

'O wau iho nō me ka 'ōia 'i'ō,



Clyde W. Nāmu 'o
Administrator

C: OHA Maui CRC Office

33.0 David C. Penn

June 10, 2008

Comments on Public Review Drafts of Instream Flow Standard Assessment Reports for the Hydrologic Units of Honopou (6034), Hanehoi (6037), Pinaau (6053), Waiokamilo (6055), and Wailuanui (6056)

David C. Penn, Ph.D.
Appurtenant Water Rights Advisory Group, State of Hawaii Commission on Water Resource Management
Adjunct Assistant Professor of Geography, University of Hawaii-Manoa

The instream flow standard assessments contain useful information. Additional action and information is needed to provide the Commission and its analysts with a comprehensive framework for decisionmaking. Given emerging and potentially conflicting objectives with regard to food security and energy security, the availability of water for wetland taro cultivation deserves our closest attention. In order to provide the best available information for basin-wide adjudication of stream flows, I suggest additional emphasis on:

1. Identification and quantification of reserved uses of stream water (surface flows and groundwater sources) as determined under **HRS §174C-101**.
2. Certification of reasonable and beneficial uses as declared by water users under **HRS §174C-27**.
3. Identification of land parcels that adjoin the stream and thus enjoy the protection of their riparian water rights.
4. Refining the identification and quantification of appurtenant rights (see Penn 1997).
5. Estimating the Native Hawaiian population using the hydrologic units; identifying the instream flow regimes needed to fully support their traditional and customary beliefs, values, and practices; and assessing the relative importance of this support for the health and welfare of the State and the fulfillment of public trust and other constitutional obligations.
6. Quantification of these reserved, certified, and rightful water uses across a spectrum of streamflow, diversion, and return flow conditions.
7. Identification of all known springs within the hydrologic unit and assessment of the status of their connectivity with stream water (surface flows and groundwater sources)
8. Refinement of the contributing area boundaries used for basin delineation in hydrologic analyses. For example, the contributing areas used by USGS for gauging station records are only recorded on hand-drawn maps archived by USGS, and are likely to be different than those assumed and employed by others mappers and methods.

I don't understand why the "(non-riparian)" qualifier is part of the Commission's current operating definition of appurtenant rights, and I have found no historic or legal basis for this definition. Nothing bars riparian lands from holding appurtenant water rights, and in fact a case can be made for riparian rights to be extended to lands adjoining irrigation systems that divert water from streams to service riparian and appurtenant lands. I suggest that the entire discussion of traditional and customary Hawaiian rights be more explicitly differentiated between rights of lands and rights of people.

33.0-1

My professional and personal experience of Honopou, Pinaau, Waiokamilo, and Wailuanui streams includes incomparable and inexpressible enjoyment of their value for agricultural, domestic, recreational, aesthetic, and traditional and customary purposes within their hydrologic units. In general, the extent and value of these uses are extremely underestimated in the current reports, and do not make full use of local knowledge and kamaaina testimony. Although the Hawaii Stream Assessment provides some useful information in this regard, it would be a disservice to the filers and the streams to not augment this limited information with a more comprehensive and careful inventory of the declarations of water use filed with the Commission.

33.0-2

34.0 Kelly Ruidas

into renewable energies with the help of the State of Hawaii. They're able to accomplish this through tax incentives which has accumulated into the millions of dollars. Through this joint venture, HCTS and the State of Hawaii can realize Hawaii's goal of 20% renewable energy by the year 2030.

I happened to attend the April 10, 2008 fact gathering meeting. It was at the Haina Community Center that I witnessed an emotionally charged crowd. There were a lot of A+B, EMI, and HCTS bashing occurring that night. Aside from the contested case, in defense of A+B and its companies, A+B does a lot for man's communities. This is done through A+B foundation. Numerous organizations receive much need funding and also in-kind services through this entity.

At this time I'd like to acknowledge the opposing factors in all fairness. I'm aware of the State water code/doctrine, hawaiian rights through Kuleana lands and water usage. I also recognize the importance of the stream wildlife that is in danger of existing, therefore having a negative impact ³⁴⁰⁻³ on the marine wildlife as well. Last but not least is man's county's residence dire need for water

which is very important.

In conclusion, I urge your commission to take into consideration some of the components I have stated. I understand the complexity of your task at hand, and the burden that has been placed on your commissions behalf. I greatly thank each and every one of you for your countless time and energies that you have devoted to this case.

-Good Luck and Mahalo,
Kiley Dick

35.0 Ray Rutkowski

INSTREAM FLOW STANDARD ASSESSMENT REPORTS (IFSAR)

For the Hydrologic Units of
Honopou (6034), Hanehoi (6037), Piinaau (6053), Waioakamilo (6055), and Wailuanui (6056)

Public Fact Gathering Meeting	Public Review Drafts Availability
Date: Thursday, April 10, 2008	Kalanimoku Bldg. Room 227,
Time: 5:00 p.m. to 9:00 p.m.	1151 Punchbowl St., Honolulu, HI 96813
Location: Haiku Community Center	Public Libraries in Hana, Kahului, and Wailuku
1008 Hana Highway, Hana, HI 96708	Maui Community College Library
	Website: http://www.hawaii.gov/dinr/cwrm/

Please provide any comments you wish to offer on the public review drafts of the **INSTREAM FLOW STANDARD ASSESSMENT REPORTS** for each of the hydrologic units:

ALOHA, I LIVE ON HONOPOU STREAM. I RAISED MY SON HERE & WE USE THE STREAM TO FISH FOR PRAWNS & USE FOR RECREATION. 80% OF THE TIME THE WATER TURNS BLACK FROM MANGO DEBRIS & WE CANNOT USE IT. 10% OF THE TIME ITS PERFECT & WE GO OUT TO FISH & PLAY, THE TIME ITS TOO MUCK BECAUSE OF HIGH WATER OR EARTHQUAKE OF HUNDRENS YEARS AGO THE STREAM FLOWED & WAS WEARABLE 90% OF THE TIME 10 YEAR AGO 50% NOW 10%

Please let the water flow - we need this to have a healthful & peaceful life. MAHAHO

PLEASE PRINT Name: RAY RUTKOWSKI Phone: [REDACTED]
Affiliation: HONOPOU STREAM
(if applicable)
Address: [REDACTED]
Email: [REDACTED]

Submit this form (plus additional sheets, if any) via mail or fax. Comments may also be e-mailed.
Mail: Mailing address located on the back.
Facsimile: (808) 587-0219
E-mail: dinr.cwrm@hawaii.gov (Please include information in the shaded area with the e-mail)

All comments must be received or postmarked by **June 10, 2008**. Mahalo!

36.0 Jette Slater



"jette@vcasa.net"

To: dnr.cwrn@hawaii.gov

cc

06/09/2008 12:21 PM

Please respond to [redacted]

bcc

Subject: Public on the Water Issue, before June 10, 2008

To whom it may concern - and it should be everybody.

As I am writing this, Maui is in a drought. The weather forecast are saying that there still is no rain in sight for the next week and we are personally running out of water. We have water rights on our deed to several ditches and Waipio Stream; but are not using that right. The stream are barely flowing as most streams here in Huelo. It is a crying shame to let people go with no water to support their livelihood such as farming Taro and vegetables and for not supporting the stream life. To only let a trickle of water go into a streambed, which before sugar (corporate) takeover was a major stream is criminal. The native freshwater fishes and limpets ect. are barely found anymore. The water that should be cascading from waterfalls into the ocean are barely there now, which also has a big effect on the marine life. Hundreds of well paying jobs at the sugar company does not balance with the livelihood of all the people from Hana to Honopou who need their water as well as does nature to stay healthy. The hoarding of our water is enough already. What is more important here - to give back at least a little (Long overdue) or keep giving to who already get's it all?

Jette Slater

[redacted]
Resident of Huelo, Maui

dnr.cwrn@hawaii.gov

 mail2web.com - What can On Demand Business Solutions do for you?
<http://link.mail2web.com/Business/SharePoint>

37.0 Steve Slater



"Steve Slater"

06/09/2008 02:02 PM

To <dlmr.cwrm@hawaii.gov>

cc

bcc

Subject Testimony for the Commission of Water Resource Management

As a long time resident of Huelo, Maui, I would like to call attention to the following points regarding this public input on Stream Diversion on Maui.

1. Numerous Endangered Species are Effected ! I do not feel like I have to present a complete list, that is what DLNR should be addressing and addressing it in light of new data. The few remaining Monk Seals live right here off of Huelo. I have seen them twice while snorkeling off this coast. Their food supply is affected by massive stream diversions. How many other plants and animal species on the Endangered Species list would benefit from increased stream flow?
2. Mosquitoes! When Dengue Fever hit East Maui several years ago, there was never any discussion about the stagnant water in what used to be healthy streams. A quick look at Naniuku Landing, for example, which is one of the designated streams, will demonstrate the problem. The health of the community is being sacrificed by diversion because of the increases in mosquitoes.
3. Taro & Crime, The lack of respect for traditional farmers here on East Maui has caused such frustration that many young people have turned to crime. Traditional farming is one of the only home based businesses these people could look forward to. As the cost of commuting and the recession increase the pressure on the population, increasing water flow would have an inverse effect on meth addiction and crime.
4. Tourism, The new generation of Eco Tourists are here and they are looking for the fabled Maui Waterfalls. The tiny amount of taxes that HC&S pays compared to the tourism it stifles is ridiculous. As the recession creates a situation where only the richer tourists will continue to come, pristine nature is worth its weight in gold, while subsidized corporate sugar will help drag us down like lead.
5. Food for ones family. According to my deed, I have the right to take water from Waipio Stream with a 1 inch pipe, but the flow is so bad that I could not do so. I could be growing more of the food for my family. I am not even allowed to buy ditch water at any cost, even though the ditch runs right near our house. We live completely on catchments. There is a tiny stream right through the middle of our property, which ends in what used to be a waterfall. It is clear from the landscape that this used to be a large stream, now it only runs every other month for a day. Funding major streams could very well effect the flow and allow us to practice the agriculture that this area was zoned for.
6. Breaking the Corporate Stranglehold. Standing up to these vested corporate interests and making them play by the same rules as the private citizen, would go a long way in improving community. For many years, small farmers had to reduce water consumption by 10% or more during droughts. HC&S even though it uses over 80% of the Islands water, never had to reduce. Stream Flow increases should be tied to a mandated percentage decrease in water. A fair minded mediator from anywhere in the World, would be agghast with the discrepancies in cost, amount and benefit provided by private verses corporate use.
7. Law, Law, Law: Waiahole Ditch Decision - almost 8 years later, no substantial change !

Steve Slater

38.0 United States Geological Survey

Summary of Comments by the United States Geological Survey

Comments by the U.S. Geological Survey on the Commission on Water Resource Management's (Commission) Draft Instream Flow Standard Assessment Reports for the hydrologic units of Honopou, Hanehoi, Piinaau, Waiokamilo, and Wailuanui, Island of Maui, were originally submitted via Adobe Acrobat PDF files utilizing comment tools that are part of the Acrobat software program. Those comments have been summarized by Commission staff in the following tables. Please note that page citations in the following comments refer to the draft reports, thus citations may have changed as a result of report revisions.

Honopou (6034)		
Chapter	Page	Comment
	iii	Reference for Figure 13-2 should be Izuka et. al., 2005.
1.0	3	IFSARs do not provide IFS recommendations. Need to clarify whether or not recommendations are part of the IFSAR.
		[Referring to statement: "The purpose of the IFSAR is to present the best available information for a given hydrologic unit, and to provide IFS recommendations."]
2.0	10	Reference Gingerich (1999) about perched water in the Haiku area. Ground Water and Surface Water in the Haiku Area, East Maui, Hawaii WRi no.98-4142.
2.0	12	There needs to be a reference for this sentence.
		[Referring to statement made about estimated annual fog drip rate.]
2.0	13	Shade (1999, fig. 9) estimates pan evaporation less than 30 up to 80 inches per year.
		[Referring to statement: "Within the cloud layer, evaporation rates are particularly low due to the low radiation and high humidity caused by fog drip."]
2.0	22	Best to round off to at least the nearest inch.
		[Referring to Figure 2-5.]
3.0	31	Might state that they are probably high based on comparison with 1933 and 1946 measurements.
		[Referring to statement: "We stated "Since a majority of the basin characteristics for Puniawa fall outside of the range, the estimated flow statistics may not be representative of the flow conditions in Puniawa Stream."]
7.0	48	I believe Twin Falls are on Hoolawa stream to the east and represent falls on the two branches upstream of the confluence.
7.0	49	This study did not address this stream.
		[Referring to Figure 7-1.]
12.0	64	The bottom two rows are shifted to the left. There should be no values for average or median under the Number heading. The last column should say 210,000 for average and median.

Honopou (6034)		
Chapter	Page	Comment
		[Referring to Table 12-4.]
13.0	70	Do you have any information about the economic value of the taro cultivation using the stream water? What sort of agriculture provides the most value per gallon of water used: sugar, taro, pineapple?
13.0	71	Should note that the diversion capacity far exceeds the estimated median flow of the stream. 30 MGD is about a Q01 flow for station 16587000.
		[Referring to Table 13-1, REG152.6.]
13.0	73	These do not represent water taken from Honopou. Replace "in Honopou" with "near Honopou".
		[Referring to USGS gaging station 16588000 at Wailoa Ditch.]
13.0	74	These stations measure flow in the Ditches near Honopou Stream. The flow represents all diversions to the east of the site but it has nothing to do with streamflow in Honopou. Maybe should not even be included in this report as it is not really relevant to the stream.
		[Referring to statement: "Comparison of the daily median total flows for each month at the ditch shows that more water was diverted in the summer months of April, May, July and August probably due to higher evaporation rates (Table 13-3)."]
13.0	79	What would the impact on west and central Maui recharge by reducing the amount of water diverted from just this stream because this document is specific to only one stream?
13.0	80	Reference should be Izuka et. al., 2005
		[Referring to Figure 13-2.]
13.0	87	How about the economic value of the water used by the DWS from the ditch system?
14.0	94	Missing reference: Gingerich, S.B., Yeung, C.W., Ibarra, T.N., and Engott, J.A., 2007, Water use in wetland kalo cultivation in Hawai'i: U.S. Geological Survey Open-File Report 2007-1157, 68 p. [http://pubs.usgs.gov/of/2007/1157/]. Version 1.0 July 24, 2007 Revised figure 36, page 57 May 30, 2007 Initial release online at http://pubs.usgs.gov/of/2007/1157/ .

Hanehoi (6037)		
Chapter	Page	Comment
	iii	Reference for Figure 13-2 should be Izuka et. al., 2005.
1.0	3	IFSARs do not provide IFS recommendations. Need to clarify whether or not recommendations are part of the IFSAR.
		[Referring to statement: "The purpose of the IFSAR is to present the best available information for a given hydrologic unit, and to provide IFS recommendations."]
2.0	10	Reference Gingerich (1999) about perched water in the Haiku area.

Hanehoi (6037)		
Chapter	Page	Comment
		Ground Water and Surface Water in the Haiku Area, East Maui, Hawaii WRi no.98-4142.
2.0	12	There needs to be a reference for this sentence. Are you saying that this small area (1%) still contributes 58 inches/year? Seems high.
		[Referring to statement made about estimated annual fog drip rate.]
2.0	13	Shade (1999, fig. 9) estimates pan evaporation less than 30 up to 90 inches per year.
		[Referring to statement: "Within the cloud layer, evaporation rates are particularly low due to the low radiation and high humidity caused by fog drip."]
2.0	22	Best to round off to at least the nearest inch.
		[Referring to Figure 2-5.]
3.0	28	This has not been verified with measurements so cannot say whether it is gaining or losing. Might be good to say the equations represent a maximum value, losing streams would be lower. Replace "surface and ground water interaction" with "losing streams".
		[Referring to statement: "Even though flow increases from the tributaries to the outlet, which would normally suggest the stream is gaining flow from ground water, this assumption should not be made for Hanehoi Stream because the regression equations do not account for surface and ground water interaction."]
7.0	45	This study did not address this stream.
		[Referring to Figure 7-1.]
12.0	59	The bottom two rows are shifted to the left. There should be no values for average or median under the Number heading. The last column should say 210,000 for average and median.
		[Referring to Table 12-3.]
13.0	65	Do you have any information about the economic value of the taro cultivation using the stream water? What sort of agriculture provides the most value per gallon of water used: sugar, taro, pineapple?
13.0	66	Should note that the diversion capacity exceeds the estimated median flow of the stream.
		[Referring to Table 13-1, REG155.6.]
13.0	68	What would the impact on west and central Maui recharge by reducing the amount of water diverted from just this stream because this document is specific to only one stream?
13.0	69	Reference should be Izuka et. al., 2005
		[Referring to Figure 13-2.]
13.0	75	How about the economic value of the water used by the DWS from the ditch system?

Hanehoi (6037)

Chapter	Page	Comment
14.0	83	Missing reference: Gingerich, S.B., Yeung, C.W., Ibarra, T.N., and Engott, J.A., 2007, Water use in wetland kalo cultivation in Hawai'i: U.S. Geological Survey Open-File Report 2007-1157, 68 p. [http://pubs.usgs.gov/of/2007/1157/]. Version 1.0 July 24, 2007 Revised figure 36, page 57 May 30, 2007 Initial release online at http://pubs.usgs.gov/of/2007/1157/ .

Piinaau (6053)

Chapter	Page	Comment
	iii	Reference for Figure 13-2 should be Izuka et. al., 2005.
1.0	3	IFSARs do not provide IFS recommendations. Need to clarify whether or not recommendations are part of the IFSAR. [Referring to statement: "The purpose of the IFSAR is to present the best available information for a given hydrologic unit, and to provide IFS recommendations."]
2.0	13	Gingerich, 1999 is an additional appropriate reference for this sentence. [Referring to statement: "During the field investigation for a study published by Gingerich at the United States Geological Survey (USGS) in 2005, the reach, or section of Piinaau Stream below the Koolau Ditch was dry until about halfway to the sea."]
2.0	14	There needs to be a reference for this sentence. [Referring to statement made about estimated annual fog drip rate.]
2.0	16	Shade (1999, fig. 9) estimates pan evaporation less than 30 up to 80 inches per year. [Referring to statement: "Within the cloud layer, evaporation rates are particularly low due to the low radiation and high humidity caused by fog drip."]
2.0	19	Add the word "can" before "withdrawal" in the referred sentence. [Referring to statement: "The long-term effects of ground water withdrawal include the reduction of streamflow, which may cause a decrease in stream habitats for native species and a reduction in the amount of water available for irrigation."]
2.0	20	Ground-water withdrawal from wells open to any part of the aquifer will reduce streamflow and/or coastal discharge. [Referring to statement: "Wells open to any part of the aquifer will reduce streamflow and discharge to sea."]
2.0	24	Best to round off to at least the nearest inch. [Referring to Figure 2-5.]
3.0	30	Add "On Palauhulu Stream" before the referred sentence.

Piinaau (6053)

Chapter	Page	Comment
		[Referring to statement: "The 0.6 mile reach below the confluence at about 950 feet elevation is gaining flow from the tributaries as well as Plunkett Spring, while little flow was observed in the 0.8 mile reach (between 800 feet and 300 feet) downstream from an ungaged site (station PhM) due to infiltration losses.]
3.0	31	All of these location elevations should be rounded off to the nearest 20 ft or so as the sites were just generally located along the streams.
		[Referring to elevations of the USGS gaging stations.]
3.0	31	They are probably not representative at all. Way too high based on observations.
		[Referring to statement: "Thus, flow statistics estimated with the regression equations may not be representative of the actual flow conditions in Piinaau Stream. Estimated median flows at stations PhL, PhM, HWU, and KoU in Palauhulu Stream are 17, 14, 1.5, and 4.5 cubic feet per second."]
3.0	32	Add "and to diversion at Koolau Ditch" at the end of the referred sentence.
		[Referring to statement: "Approximately 44 percent of the median total flow and 36 percent of the median base flow at the middle site are lost to infiltration."]
4.0	37	Reference should be Gingerich, 2005 for the referred sentence.
		[Referring to statement: "With a few exceptions, the diversions capture all base flow and an unknown amount of total streamflow in each stream, decreasing flow downstream of the diversion and sometimes causing streams to go dry (Gingerich and Wolf, 2005)."]
4.0	37	The equations can be used to estimate the relative amount of usable habitat at diverted conditions when compared with the undiverted condition, as a percentage of the undiverted habitat.
		[Referring to statement: "The end product of the study was a set of equations that estimates the area of usable streambed habitat over a range of streamflow under natural (undiverted) and diverted conditions."]
4.0	37	Reference should be Gingerich, 2005 for the referred sentence.
		[Referring to statement: "By incorporating hydrology, stream morphology, and habitat characteristics, the model simulated habitat and streamflow relations for various species and life stages (Gingerich and Wolf, 2005)."]
4.0	37	Reference should be Gingerich, 2005 for the referred sentence.
		[Referring to statement: "The model results also show that the addition of even a small amount of water to a dry stream can have a significant effect on the amount of habitat available (Gingerich and Wolf, 2005)."]
4.0	37	Remove entire sentence.
		[Referring to statement: "Honomanu Stream, which is dry under diverted conditions, can potentially maintain at least 90 percent of expected natural

Piinaau (6053)		
Chapter	Page	Comment
		habitat when 50 percent of the natural base flow is returned to the stream.”]
4.0	39	Additional data to Table 4-3. Table A1 of Gingerich and Wolff, 2005 lists abundances of oopu and opae observed in these streams during recon.
12.0	69	The bottom two rows are shifted to the left. There should be no values for average or median under the Number heading. The last column should say 210,000 for average and median.
		[Referring to Table 12-3.]
13.0	77	Do you have any information about the economic value of the taro cultivation using the stream water? What sort of agriculture provides the most value per gallon of water used: sugar, taro, pineapple?
13.0	78	It is important to note that the intake capacity is much higher than the estimated median flow for these streams.
		[Referring to Table 13-1, REG309.6.]
13.0	80	Actually, some data is for taro diversion from Palauhulu stream near the coast, so it does not really apply to EMI diversions.
		[Referring to statement: “Data available for the major EMI diversions from Piinaau allow for further analysis via a flow duration curve, which is a cumulative-frequency curve that shows the percentage of time a daily median discharge is equaled or exceeded during a given time period.”]
13.0	80	Palauhulu Stream upstream of confluence with Piinaau.
		[Referring to statement: “Figure 13-1 is a flow duration curve for USGS gaging station 16522000 at the taro patch feeder ditch in Piinaau Stream.”]
13.0	81	This station measured flow in Koolau Ditch near Piinaau Stream. The flow represent all diversions to the east of the site but it has nothing to do with streamflow in Piinaau. Should not even be included in this report as it is not relevant to the stream.
		[Referring to USGS Gaging Station 16523000 at Koolau Ditch.]
13.0	82	Replace “in” with “near” in the referred figure and table.
		[Referring to Figure 13-2 and Table 13-4.]
13.0	83	What would the impact on west and central Maui recharge by reducing the amount of water diverted from just this stream because this document is specific to only one stream?
13.0	84	Reference should be Izuka et. al., 2005
		[Referring to Figure 13-2.]
13.0	90	How about the economic value of the water used by the DWS from the ditch system?
14.0	98	Missing reference: Gingerich, S.B., Yeung, C.W., Ibarra, T.N., and Engott, J.A., 2007, Water use in wetland kalo cultivation in Hawai'i: U.S. Geological Survey Open-File Report 2007-1157, 68 p. [http://pubs.usgs.gov/of/2007/1157/]. Version 1.0 July 24, 2007 Revised

Piinaau (6053)		
Chapter	Page	Comment
		figure 36, page 57 May 30, 2007 Initial release online at http://pubs.usgs.gov/of/2007/1157/ .
Waiokamilo (6055)		
Chapter	Page	Comment
	iii	Reference for Figure 13-2 should be Izuka et. al., 2005.
1.0	3	IFSARs do not provide IFS recommendations. Need to clarify whether or not recommendations are part of the IFSAR. [Referring to statement: "The purpose of the IFSAR is to present the best available information for a given hydrologic unit, and to provide IFS recommendations."]
2.0	11	Gingerich, 1999 is a more appropriate reference for this sentence. [Referring to statement: "During the field investigation for a study published by Gingerich (USGS) in 2005, the reach, or section of Waiokamilo Stream below the Koolau Ditch was dry until just below the Akeke spring."]
2.0	13	There needs to be a reference for this sentence. [Referring to statement made about estimated annual fog drip rate.]
2.0	15	Shade (1999, fig. 9) estimates pan evaporation less than 30 up to 80 inches per year. [Referring to statement: "Within the cloud layer, evaporation rates are particularly low due to the low radiation and high humidity caused by fog drip."]
2.0	18	Add the word "can" before "withdrawal" in the referred sentence. [Referring to statement: "The long-term effects of ground water withdrawal include the reduction of streamflow, which may cause a decrease in stream habitats for native species and a reduction in the amount of water available for irrigation."]
2.0	18	Ground-water withdrawal from wells open to any part of the aquifer will reduce streamflow and/or coastal discharge. [Referring to statement: "Wells open to any part of the aquifer will reduce streamflow and discharge to sea."]
2.0	19	This figure depicts a perched system above a thin freshwater lens. The more appropriate figure would be fig. 13 from Gingerich, 1999 which depicts the fully saturated vertically extensive system east of Keanae Valley. [Referring to Figure 2-2.]
2.0	23	Best to round off to at least the nearest inch. [Referring to Figure 2-5.]
3.0	29	Replace "24" with "200; stream has coastal waterfall of about 200 ft" in the

Waiokamilo (6055)		
Chapter	Page	Comment
		referred sentence.
4.0	33	[Referring to statement: "Three sites were selected along Waiokamilo Stream: 1) station WoL is located at about 24 feet elevation in the lower reach;..."] The equations can be used to estimate the relative amount of usable habitat at diverted conditions when compared with the undiverted condition, as a percentage of the undiverted habitat.
4.0	33	[Referring to statement: "The end product of the study was a set of equations that estimates the area of usable streambed habitat over a range of streamflow under natural (undiverted) and diverted conditions."] Reference should be Gingerich, 2005 for the referred sentence.
4.0	34	[Referring to statement: "By incorporating hydrology, stream morphology, and habitat characteristics, the model simulated habitat and streamflow relations for various species and life stages (Gingerich and Wolf, 2005).] Add the word "relative" before "amount" in the referred sentence.
4.0	34	[Referring to statement: "These equations were applied to two sites in Waiokamilo Stream, middle (WoM) and lower (WoL), to estimate the amount of available habitats under diverted and natural conditions."] Reference should be Gingerich, 2005 for the referred sentence.
4.0	36	[Referring to statement: "Thus, the addition of even a small amount of water to a relatively dry stream can have a significant effect on the amount of habitat available (Gingerich and Wolf, 2005)."] Additional data to Table 4-2. Table A1 of Gingerich and Wolff, 2005 lists abundances of oopu and opae observed in these streams during recon.
12.0	64	The bottom two rows are shifted to the left. There should be no values for average or median under the Number heading. The last column should say 210,000 for average and median.
13.0	72	[Referring to Table 12-3.] Do you have any information about the economic value of the taro cultivation using the stream water? What sort of agriculture provides the most value per gallon of water used: sugar, taro, pineapple?
13.0	73	Should note that these diversion capacities are much higher than the estimated median flow upstream of the diversion.
13.0	76	[Referring to Table 13-1, REG326.6. What would the impact on west and central Maui recharge by reducing the amount of water diverted from just this stream because this document is specific to only one stream?
13.0	77	Reference should be Izuka et. al., 2005 [Referring to Figure 13-2.]

Waiokamilo (6055)		
Chapter	Page	Comment
13.0	85	How about the economic value of the water used by the DWS from the ditch system?
14.0	92	Missing reference: Gingerich, S.B., Yeung, C.W., Ibarra, T.N., and Engott, J.A., 2007, Water use in wetland kalo cultivation in Hawai'i: U.S. Geological Survey Open-File Report 2007-1157, 68 p. [http://pubs.usgs.gov/of/2007/1157/]. Version 1.0 July 24, 2007 Revised figure 36, page 57 May 30, 2007 Initial release online at http://pubs.usgs.gov/of/2007/1157/ .

Wailuanui (6056)		
Chapter	Page	Comment
	iii	Reference for Figure 13-2 should be Izuka et. al., 2005.
1.0	3	IFSARs do not provide IFS recommendations. Need to clarify whether or not recommendations are part of the IFSAR. [Referring to statement: "The purpose of the IFSAR is to present the best available information for a given hydrologic unit, and to provide IFS recommendations."]
2.0	10	Probably need to reference Meyer, 2000, which discusses vertically extensive water body. This may (or may not) be a factor beneath part of the hydrologic unit.
2.0	10	Only one known exposure of a dike in Honomanu Basalt along entire north coast of east Maui. What reference justifies this sentence? [Referring to statement: "This area contains dikes."]
2.0	12	Gingerich, 1999 is a more appropriate reference for this sentence. [Referring to statement: "During the field investigation for a study published by Gingerich (USGS) in 2005, the reach, or section of Waiokamilo Stream below the Koolau Ditch was dry until just below the Akeke spring."]
2.0	13	There needs to be a reference for this sentence. [Referring to statement made about estimated annual fog drip rate.]
2.0	15	Shade (1999, fig. 9) estimates pan evaporation less than 30 up to 80 inches per year. [Referring to statement: "Within the cloud layer, evaporation rates are particularly low due to the low radiation and high humidity caused by fog drip."]
2.0	18	Add the word "can" before "withdrawal" in the referred sentence. [Referring to statement: "The long-term effects of ground water withdrawal include the reduction of streamflow, which may cause a decrease in stream habitats for native species and a reduction in the amount of water available for irrigation."]
2.0	19	Ground-water withdrawal from wells open to any part of the aquifer will

Wailuanui (6056)		
Chapter	Page	Comment
		reduce streamflow and/or coastal discharge.
2.0	19	[Referring to statement: "Wells open to any part of the aquifer will reduce streamflow and discharge to sea."] This figure depicts a perched system above a thin freshwater lens. The more appropriate figure would be fig. 13 from Gingerich, 1999 which depicts the fully saturated vertically extensive system east of Keanae Valley.
2.0	23	[Referring to Figure 2-2.] Best to round off to at least the nearest inch.
3.0	28	[Referring to Figure 2-5.] Add "at 620 ft. elevation" after "Wailuanui Stream" in the referred sentence.
3.0	28	[Referring to statement: "Between the ditch and the station on Wailuanui Stream, the stream gains about 0.79 million gallons per day (Gingerich, 1999)."] The numbers cited here are dependent on the length and timing of the record. Gingerich (2005, table 2) has better numbers for median total and baseflow because the records have been adjusted to a common base period. For example, the median flows would be 2.4, 4.4, and 3.2 cfs. Okay, I see the adjusted stuff below. Perhaps here, it would be good to point out that adjusted (and presumably better) data will be discussed below.
4.0	36	[Referring to median flows at USGS stations 16521000, 16519000, and 16520000.] Reference should be Gingerich, 2005 for the referred sentence.
4.0	36	[Referring to statement: "With a few exceptions, the diversions capture all base flow and an unknown amount of total streamflow in each stream, decreasing flow downstream of the diversion and sometimes causing streams to go dry (Gingerich and Wolf, 2005)."] The equations can be used to estimate the relative amount of usable habitat at diverted conditions when compared with the undiverted condition, as a percentage of the undiverted habitat.
4.0	36	[Referring to statement: "The end product of the study was a set of equations that estimates the area of usable streambed habitat over a range of streamflow under natural (undiverted) and diverted conditions."] Reference should be Gingerich, 2005 for the referred sentence.
4.0	38	[Referring to statement: "By incorporating hydrology, stream morphology, and habitat characteristics, the model simulated habitat and streamflow relations for various species and life stages (Gingerich and Wolf, 2005)."] Additional data to Table 4-4. Snorkel surveys of West Wailuanui Stream upstream of the Koolau Div. detected only opae. Even though this is acceptable Alamoo habitat, none were found upstream of the Koolau ditch on any of the 20 or so streams surveyed during the USGS study (Gingerich

Wailuanui (6056)		
Chapter	Page	Comment
		and Wolff, 2005). At the lower Wailuanui site, only 17 oopu were observed, while at the middle site, 18 oopu were observed in the transects
10.0	60	Additional information: Gingerich and Wolff, 2005, Table 4, lists temperature measurements from Wailuanui Stream. Lower Wailuanui site had highest average temperatures of the 13 sites monitored mainly due to low flow combined with taro return water from Wailua area.
12.0	70	The bottom two rows are shifted to the left. There should be no values for average or median under the Number heading. The last column should say 210,000 for average and median.
		[Referring to Table 12-3.]
13.0	77	Do you have any information about the economic value of the taro cultivation using the stream water? What sort of agriculture provides the most value per gallon of water used: sugar, taro, pineapple?
13.0	78	It is important to note that 15 MGD or 23 CFS is much higher than the median or mean flow and is about a Q_{14} flow at gaging station 16619000; therefore no water passes the diversion 86 percent of the time and immediately downstream sections are subsequently dry the same amount of time.
		[Referring to Table 13-1, REG321.6]
13.0	78	It is important to note that 10 MGD or 15.5 CFS is much higher than the median or mean flow and is about a Q_{14} flow at gaging station 16620000; therefore no water passes the diversion 86 percent of the time and immediately downstream sections are subsequently dry the same amount of time.
		[Referring to Table 13-1, REG321.6.]
13.0	79	What would the impact on west and central Maui recharge by reducing the amount of water diverted from just this stream because this document is specific to only one stream?
13.0	81	Reference should be Izuka et. al., 2005
		[Referring to Figure 13-2.]
13.0	88	How about the economic value of the water used by the DWS from the ditch system?
14.0	95	Missing reference: Gingerich, S.B., Yeung, C.W., Ibarra, T.N., and Engott, J.A., 2007, Water use in wetland kalo cultivation in Hawai'i: U.S. Geological Survey Open-File Report 2007-1157, 68 p. [http://pubs.usgs.gov/of/2007/1157/]. Version 1.0 July 24, 2007 Revised figure 36, page 57 May 30, 2007 Initial release online at http://pubs.usgs.gov/of/2007/1157/ .

39.0 Wanda Mililani Vierra

RECEIVED
May 11, 2008

JUN 12 11:20

Mr. Chairman,

My name is Wanda Mililani Vierra. My maiden name is Kekahuna. I live at [redacted] in Haiku. I am the daughter of Beatrice Pualani Kekahuna, her maiden name is Kepani. Her mother is Juliama Koko from Hana and her father is Lokana Kepani from Honopou. Mom was just one of 12 children. This is the beginning or the start of where our taro farming history began. My grandfather, Lokana, and his father together, worked very hard to build up the taro patches on our aina in Honopou with the help of family and friends.

I was about 7 years of age when I sat along the banks of the taro patches watching my grandfather plant, clean, irrigate and harvest taro. To me it seems like that was just yesterday. Today, that memory means so much to me and my family. How honored I was to have had the chance to see and participate in my Hawaiian culture. These are the reasons why the kalo is sacred to me and to all Hawaiians.

I remember getting on the bank and grandpa telling me to stay. I sat until I got lonely, then I'd start to cry because I couldn't see him. I'd yell "Papa, where are you?" He would pop up his head and then disappear under the huge taro leaves once more. The taro leaves were so huge it was impossible for me to see my 'Papa'. Weekends were fun because everyone would come together and help pull the taro, clean, cultivate, irrigate and bag the taro. When the work was done everyone would sit and talk stories. Us kids would play in Honopou Stream.

'Back then' the water would flow down to the taro patches. It was cold enough so the taro would grow healthy. The taro plants were very healthy plants. We didn't worry so much about taro rot and diseases and snails. The cold water kept the taro healthy.

As soon as East Maui Irrigation heard that my grandfather was dying they started to slowly shut the water down. After his death the water became less and less abundant. Now E.M.I. has allowed us only three 3 inch pipes where water can flow through and into Honopou Stream. By the time the water gets to our lo'i it is not a sufficient flow to keep the water cool. And E.M.I. has the nerve to say that we have enough water to grow taro.

East Maui Irrigation had shut the water without notice in the 1970's. They just shut it down. They took the water that belongs to us, the people. **GIVE IT BACK.**

Thank you,

Wanda M. Vierra
[redacted]

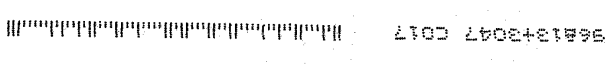
39.0-1

39.0-2

Commission on Water Resource Management
1151 Punchbowl Street Rm. 227
Honolulu HI 96813



Wanda M. Vierra
[redacted]



40.0 Jean Leppala Wayne



"Jean wayne"

[Redacted]

06/02/2008 04:28 AM

To: <dlmr.cwrm@hawaii.gov>

cc

bcc

Subject: water rights

Greetings:
Diverting water should be discontinued in E Maui where taro is a staple.
Please check into agreements broken.

Mahalo,
Jean Leppala Wayne

41.0 Elaine S. Wender

INSTREAM FLOW STANDARD ASSESSMENT REPORTS (IFSAR)
For the Hydrologic Units of
Honopou (6034), Hanehoi (6037), Pihana (6053), Waioakamilo (6055), and Wailuanui (6056)

June 9, 2008

Public Fact Gathering Meeting
 Thursday, April 10, 2008
 5:00 p.m. to 9:00 p.m.
 Haiku Community Center
 1008 Hana Highway, Hana, HI 96708

Public Review Drafts Availability
 Kalanimoku Bldg. Room 227,
 1151 Punchbowl St., Honolulu, HI 96813
 Public Libraries in Hana, Kahului, and Wailuku
 Maui: Maui Community College Library
 Website: <http://www.hawaii.gov/dnr/cwrm/>

Please provide any comments you wish to offer on the public review drafts of the **INSTREAM FLOW STANDARD ASSESSMENT REPORTS** for each of the hydrologic units:

See attached six pages

RECEIVED
 JUN 10 10 49 AM '08
 COMMISSION ON WATER
 RESOURCE MANAGEMENT

(attach additional sheets as necessary)

PLEASE PRINT Name: Elaine S. Wendev **Phone:** [redacted]

Affiliation: [redacted]
 (if applicable)

Address: [redacted]

Email: [redacted]

Submit this form (plus additional sheets, if any) via mail or fax. Comments may also be e-mailed.
 Mail: [redacted]
 Facsimile: (808) 587-0219
 E-mail: dlnr.cwrm@hawaii.gov. (Please include information in the shaded area with the e-mail)

All comments must be received or postmarked by June 10, 2008. Mahalo!

[redacted]
 Commission on Water Resource Management
 State Department of Land and Natural Resources
 P. O. Box 621
 Honolulu, Hawaii 96809

RE: Instream Flow Standard Assessment Reports for Five East Maui Streams

I am submitting testimony at this time as I was off-island on April 10, 2008 and thus unable to attend the public fact gathering meeting concerning the drafts of the Instream Flow Standard Assessment Reports (IFSAR) for five East Maui streams.

Ancestors of current residents of Ke'anae-Wailuanui protested the taking of stream water 125 years ago. Those in power ignored them. That has been the pattern for over a century. For over 25 years I have testified along with many others at countless hearings asking for restoration of streamflow. I hope that you are finally ready to listen, and to act in accordance with your legal mandate.

Over 20 years ago, in November, 1987, the Ke'anae-Wailuanui Community Association submitted comments, signed unanimously by all 11 directors, on the proposed IIFS, specifically recommending that a continuous flow from the mountain to the sea be reestablished in area streams, including Waioakamilo, Wailuanui and Pi'ina'au (see attached). Similar comments were submitted at the CWRM in April, 1988 (see attached Maui News article). In the past 20 years, five of those who signed have died: President Harry Kūmihī Mitchell, Vice-President Ruth Hanson, Harry K. Pahukoa, Jr., Samuel E. Kaauamo and Harry O. Mitchell, Jr.. Sarah Kaauamo, who earlier was a director, has also passed away.

The community's input was rejected, and the CWRM set the IIFS for over a hundred streams in East Maui which are diverted by East Maui Irrigation (EMI) at ZERO. Since EMI takes everything at the ditch, the flow immediately below, except during times of big water, (when the ditch cannot accommodate all the flow), is zero. And that is what we've gotten.

I am the end user on Waioakamilo Stream. Table 13-1 (p. 83-84) incorrectly states my registrations / declarations 1203.6, 1204.6 and 1205.6 as "1511.65 acres." The documents I submitted clearly state "151.65 acres", which encompasses all of TMK 1-1-8-11. I have had to run pipe 3,000 feet to get to a spot where I can be sure I will get water. It is very difficult for me, as I become older, to maintain this lifeline.

41.0-2

In only four of the past 24 years has the Waiokamilo Stream run continuously from the springs below the ditch to the ocean; the last year was 1994. The other 20 years had interrupted flow, with many dry days. Thus my riparian and other water rights are not honored.

As you know, the endemic stream species which are gathered in our community need continuous fresh water to complete their life cycles. Often this does not exist, because the stream water which feeds our springs is taken. The often too-warm water which is in the streams provides breeding grounds for the apple snail, a terrible pest for taro, as well as various diseases.

The EMI system removes over 60 billion gallons a year from East Maui. It is the largest private water delivery system in the U.S. Over 90% of this water goes to sugar cane. Over 20 years ago A&B completed conversion to drip irrigation. They acknowledge that this saves them at least 1/3 on water needs. Yet they continue to take every drop.

I ask you to imagine for a moment what East Maui would look like if the streams flowed free. Then imagine a company coming in to try to build the system which now exists. You would never allow it to happen. It is only because it has existed for so long that you are numb to the devastation that it creates.

This community has been waiting far too long time for justice. In just the time that I've been involved, a whole generation has passed. As I write this, anger and sadness envelop me. Your inaction for so many years is shameful and illegal. You have the power, the obligation and all the information you need to amend the IIFS and put water back into the streams. I hope that I live long enough to see it happen.

Sincerely,



Elaine S. Wender

Enclosures:

Comments on Interim Instream Flow Standards (IIFS) for East Maui; Ke'anae-Wailuanui Community Association, Inc.; November 18, 1987

"Panel hears please to both increase, reduce river flow." The Maui News, April 28,

1988

41.0-3

COMMENTS ON INTERIM INSTREAM FLOW STANDARDS (IIFS) FOR EAST MAUI
KE'ANAE-WAILUANUI COMMUNITY ASSOCIATION, INC.
November 18, 1987

Ka wai ola is the very lifeblood of our existence in Ke'anae and Wailua. We are dependant on the waters of Kane and Kanaloa to irrigate our lo'i kalo, and to provide an environment where the native flora and fauna which are an essential part of our Hawaiian lifestyle can flourish.

East Maui presents a unique situation. Nowhere else in Hawai'i does such an extensive ditch and tunnel system exist, stretching from Nahiku, near Hana to upcountry and central Maui. Every single stream which crosses this system is completely dewatered at that point during almost the entire year. Only when there are storm flows is there an overflow from the ditch. Even then, a continuous flow is not established from the mountain to the sea because many of the diversions are above the ditch, and dewater the streams above, and the storm flow is not released until it hits the ditch. Normally we are completely dependant solely on those spring waters which arise below the ditch.

Nothing in the Water Code requires the grandfathering in of all these diversions. The licenses to take the water from East Maui are currently being renewed from month to month, so that at the present no claim can be made that there is a vested interest in the taking of all of this water. You are mandated by the new code to "protect, enhance, and reestablish, where practicable, beneficial instream uses of water." (sec. -71(4)) The restoration of some streamflow would lead to the restoration of suitable aquatic habitat for native species such as 'o'opu, 'opae and hi'iwai. We have been caught in a Catch-22 in that you have refused to deal with the issue of minimum stream flow in the contested case regarding the issuance of the East Maui water licenses, stating that the matter will be dealt with via the Code. But when we raise the issue in the context of the Code, we are told that existing diversions will be grandfathered in. Thus there is no forum in which to address the issue.

Without a reestablishment of continuous flow from the mountain to the sea, the discussion of what mathematical formula to use to set the IIFS is meaningless as far as flows below the ditch are concerned. Right now, the flow immediately below the ditch on all streams is zero almost all the time. So whether you use the mean or the median, 60% or 100%, the figure will remain zero. Beneficial instream uses will be completely sacrificed. The assurances in the Code of the continuation of our Hawaiian gathering rights are meaningless if there is nothing in the streams to gather. If you begin by considering the unimpeded flow of the streams, then we can debate the formulas presented. It is obvious that DOWALD does not have adequate data to recommend standards that have any real meaning. There is absolutely no biological or geological data to support the assertion that the formula suggested will result in

41.0-4

page two/Ke'anae-Wailuanui Community Association, Inc.

a flow "necessary to protect adequately fishery, wildlife, recreation al, 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." (sec. -71(1)(C) Tennant has specifically disassociated himself from the misuse of his formula. His formula was devised for mainland, not island, streams, and the use of the mean rather than the median is a critical element in the formula. He has stated that use of the median flow in the application of his method would yield entirely different, and perhaps detrimental, biological results. Therefore, we agree with U.S. Fish & Wildlife Service that if the Tennant Method is used, it should be applied as originally proposed by its author. The average or mean flow should be used rather than the median flow. This should be the observed mean flow, based on all available records.

The IIFS should, obviously, be a very conservative figure, since it is not based on any real biological standard. If new diversions are allowed during this interim period, it will be very difficult to eliminate them once the permanent standards are put into effect. As long as the formula is based on the unimpeded flow of the stream, we would agree to a figure of less than 100% of observed mean flow. However, if you insist on grandfathering in all existing diversions, then the IIFS must be set at 100% of observed mean flow. No further diversions should be allowed. The standards set will primarily affect the water above the ditch.

The County's concern about its modification of intakes west of Waikamoi could be dealt with on a case-by-case, stream-by-stream basis on individual application. Ideally, all IIFS should be set on a stream-by-stream basis, based on actual biological and stream flow data.

Because of their importance to our community as habitat for native species and use for irrigation for our lo'i kalo, other agricultural use and domestic use, we especially recommend that no further diversions (aside from riparian and appurtenant rights) be allowed on the following streams, and that a continuous flow from the mountain to the sea be reestablished in Hanawi, Waiohue, Kopiliula, Kapaula, East and West Wailuaiki, East and West Wailuanui, Waiokamilo, Palahuulu, Pi'inaau, Nua'alua and all their tributaries.

Finally, we must object to the procedures which have been followed in establishing the IIFS for East Maui. The public informational meetings held last month could have more accurately been titled "public disinformational meetings." No attempt was made to notify those of us whom you are well aware are concerned about water issues. Fortunately one of our members saw the small legal notice you printed once in the newspaper one week before the meeting. We get the paper in the mail, so actually we saw it five days before. Those from DOWALD who made the presentation seemed to have little understanding of the unique nature of the water situation in East Maui, and seemed not to comprehend that the legislature intended for separate standards to be set for the various areas of the state. East Maui and Kaula'i should be considered individual.

page three/Ke'anae-Wailuanui Community Association, Inc.

Likewise, the notice for this meeting was inadequate. We received notice by mail four days before the meeting. We have not seen any published notice. Neither this meeting nor the informational meetings gave adequate notice as required by Chapter 91. Surely you are engaged in rule making in establishing the IIFS, and must adhere to due process. What you do here today will have a severe impact on our lives. We hope that you will do your best to protect our waters of life.

Adopted unanimously by Board of Directors
Ke'anae-Wailuanui Community Association, Inc.
November 18, 1987

Harry Kunihi Mitchell
Harry Kunihi Mitchell
President

Stephanie A. Hookano
Stephanie A. Hookano
Recording Sec'y.

Frances G. Ah Koi
Frances G. Ah Koi

Quanita J. Chong
Quanita J. Chong

Issac Kanooa, Jr.
Issac Kanooa, Jr.

Harry K. Pahukoa, Jr.
Harry K. Pahukoa, Jr.

Ruth Hanson
Ruth Hanson
Vice-President

Charmaine K. Day
Charmaine K. Day
Corresponding Sec'y.

Samuel E. Kaauamo
Samuel E. Kaauamo

Wendell H. Kaililaau
Wendell H. Kaililaau

Harry O. Mitchell, Jr.
Harry O. Mitchell, Jr.

By GARY KUBOTA
Staff Writer

KAHULUI — Native Hawaiians last night criticized a proposal supported by Maui County and some farm interests to "grandfather" all existing diversions from East Maui streams and allow more water to be taken in the future.

Keanae resident Harry Mitchell and representatives of the Keanae-Wailuani Community Association called upon the state water commission to restore some streams that are dry because of existing diversions.

"We've been neglected so long it's not funny anymore," Mitchell said.

The county, Hawaiian Commercial & Sugar Co., and Kula farm groups argued in favor of increasing the diversions to accommodate economic and population growth.

About 55 people attended the meeting at Kahului School to discuss how much water should be allowed to flow in East Maui streams.

The state Commission on Water Resource Management, which held the meeting, is reviewing a staff recommendation to allow existing diversions and establish interim flows for 77 East Maui streams.

The conflict last night stems partly from the diversion of East Maui streams about a century ago for sugar cane cultivation from sources traditionally used by native Hawaiians.

During the meeting, Mitchell asked commission chairman William Pay to deliver a message to Gov. John Waihe'e, calling for the restoration of some streams in the Keanae area.

Mitchell warned that if the commission supported grandfathering all existing diversions, native Hawaiians will be forced to go to court to assert their aboriginal water rights.

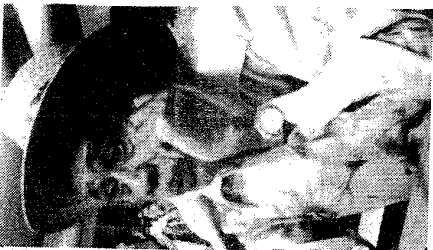
Eli Wender, a Keanae resident, said the classification of certain streams as having "low value" leaves them vulnerable to future diversions.

Wender said two streams in this category are the East and West Wailuani streams. Bonneville Pacific Corporation wants to use both for hydroelectric development, a project opposed by a number of native Hawaiians in Keanae.

Wender said the Waioakamo, a stream also listed as having low value, is the main source for taro farming at Wailua.

Wender said the stream was dry the majority of the time during the 1984 drought and any further diversion away from East Maui would hurt the community.

Alan Muraakami, an attorney with the Native Hawaiian Legal Corp., said the interim stream flow standards were intended to protect



HARRY MITCHELL
"We've been neglected"

diverted from the streams. East Maui Irrigation warned that a reduction in the current diversions could result in a severe water shortage Upcountry, especially during droughts such as the one experienced in 1984.

Robert Warzecha, EMI's general manager, said during the drought, Hawaiian Commercial & Sugar Co. was forced to lay off scores of employees, and the company, as well as Maui Land & Pineapple, suffered economic losses.

Warzecha said the commission's staff proposal leans heavily toward protecting stream wildlife and that equal consideration should be given to its economic impact.

Warzecha said a requirement reducing the amount of water that could be diverted from the streams could "spell economic doom for a great deal of Maui's agriculture."

He added that Maui County, which relies upon EMI as a source of water, would be unable to provide water to its Upcountry residents.

Maui County Water Director Vince Bagoys said he recognized the need to protect native Hawaiian wildlife but noted that the county needs to supply water to farms and residents Upcountry.

He asked the commission to consider grandfathering existing diversions used for public purposes. Support for grandfathering also was supported by the Maui Farmers Cooperative and the Maui County Farm Bureau. But not all Upcountry residents took a hard position.

County Council Member Tom Mow and Upcountry farmer Robert Menden asked the commission to try to accommodate the request by the Keanae-Wailuani community to restore some stream

42.0 Kimberly M. Wendt



Kimberly Wendt

05/20/2008 01:24 PM

To: dlnr.cwrm@hawaii.gov

cc

bcc

Subject: East Maui water restoration

My father as well as many of our relatives and their families are working really hard to preserve and maintain the beauty of Wailua. I personally visited our property this past weekend and find the beauty so breathtaking and I truly cherish what my father and other farmers are trying to keep alive! Do the right thing and restore stream flow to the East Maui streams. Diverting water to EMT is not only unlawful but unimaginably selfish. What once were thriving waterfalls, taro patches, and taro farms is now diminishing before our eyes. Most of the streams and waterfalls just run by a trickle. I can't even fathom the idea of our culture becoming something of the past. We need to keep the Hawaiian culture alive so that our future generations have something left of what Old Hawaii used to be. It breaks my heart to see my dad working so hard for countless days/hours doing his part to preserve and maintain the beauty of Wailua Valley. Its now time for you to do your part! I hope one day if I am blessed with children of my own, that I am able to take them and let them experience the wonderful culture of Keanae.

Sincerely,
Kimberly M. Wendt

