

**LANA`I PLANNING COMMISSION
REGULAR MEETING
NOVEMBER 19, 2008**

Approved 12-17-08

A. CALL TO ORDER

The regular meeting of the Lana`i Planning Commission was called to order by Chair Sally Kaye at approximately 6:02 p.m., Wednesday, November 19, 2008, in the Lana`i High & Elementary School Cafeteria, Lana`i City, Hawaii.

Ms. Sally Kaye: We'll call the November 19, 2008 Lana`i Planning Commission meeting to order. Let the record show we have quorum with Commissioners Gamulo, Zigmond, de Jetley, Ruidas, Kaye, Castillo and Endrina. First on our agenda is the approval of the minutes from October 15th. Both Bev and I sent around some corrections by e-mail, and I'm hoping you all read them. And I'll entertain a motion to accept them.

B. APPROVAL OF THE MINUTES OF OCTOBER 15, 2008 MEETING

Ms. Alberta de Jetley: Madame Chair, I move to approve the minutes with the corrections as submitted.

Ms. Beverly Zigmond: Second.

Ms. Kaye: Any discussion? Any other additions or corrections? All in favor? Okay, thank you. Motion carries.

**It was moved by Commissioner Alberta de Jetley, seconded by
Commissioner Beverly Zigmond, then unanimously**

**VOTED: To approve the October 15, 2008 meeting minutes with the
corrections as noted.**

C. PUBLIC HEARING (Action to be taken after public hearing.)

1. CASTLE & COOKE RESORTS, LLC requesting a Phase II Project District Approval and a Special Management Area Use Permit to construct an adult pool measuring 29.6 feet by 51 feet, related improvements, and resurfacing existing family pool deck at the Manele Bay Hotel, TMK: 4-9-017: 001, Manele, Island of Lanai. (PH2 2008/0001) (SM1 2008/0013) (D. Dias)

- a. Public Hearing**
- b. Action**

Ms. Kaye: Next on our agenda is a public hearing on Castle & Cooke Resorts requesting a Phase II Project District Approval and Special Management Area Use Permit to construct an adult pool measuring 29.6 feet by 51, and related improvements. I think, first, the Planning Department would probably like to present its findings to us.

Mr. Danny Dias: Good evening Madame Chair and members of the Lana`i Planning Commission. The Planning Department doesn't have a whole lot to present. This is a fairly straight forward project. As you said, it is a pool measuring 29.6 feet by 51 feet. It is proposed to be constructed adjacent to an existing pool on the existing Manele Bay Hotel property. All the land use designations line up. Its State Land Use is urban. Its Community Plan Project District One, and it's zoned Project District One Hotel Subdistrict by the Maui County Code. And there's two permits involved. One is a Project District Phase II Approval. The other is a Special Management Area Use Permit. And with that, I think I'm ready to just hand it over to the applicant. They have a power point they have prepared.

Ms. Kaye: Thank you Danny.

Mr. Doug McClafin: I'm Doug McClafin with Castle & Cooke. I'm the Senior Project Director on the project. And I'm going to let Mich Hirano do the presentation. I just wanted to introduce the project. We've been working on this now for almost a year. And it's not just an approval of a project or a swimming pool. It's actually an approval of a future growth for the resort to be competitive with other facilities similar in Hawaii. And we look at it as a necessary step for us to be competitive, to bring tourists to the island, and to keep our image up accordingly. This is sort of an on-going project. I was involved in the restoration and the turn-over to Four Seasons, and this will be a continuing practice for us to maintain that level of experience that we want to provide to the guests. So it's a swimming pool to be added as part of the assets down at Manele. But it's also, one, to maintain the job levels for the people of Lana`i, and to continue our competition with the other resorts. It goes on to say that all of us have been reading in the newspapers, we are in for a bit of a ride coming forward, and we want to get ahead of that curve and make sure that we can keep everybody here employed the fullest and keep the resorts full. So with that, I'm going to turn it over Mich Hirano, and he'll go through that, the project. Thank you.

Mr. Mich Hirano: Thank you Doug. And good evening Chair Kaye and Lana`i Planning Commission members. We have prepared a power point presentation for the project and we would like to just show that to you. Thank you. And thank you very much Danny for your staff report. Just to give you the over view of the project. It's an adult pool that will be built, adjacent to the existing pool. The applicant, of course, is Castle & Cooke Resorts. It's part of the TMK of the hotel property, and it's at the Four Seasons at Manele Bay. In terms of the property overview and the scope, there's a number of small elements as well that are associated with this project. There's going to be resurfacing of the existing pool

deck. And then of course, construction of the new adult pool. And then relocation of the existing utility lines, and as well, connecting those lines to service the new pool and new landscaping.

Part of the underlying land entitlements and designations, the State Land Use classification is that the project is in the urban district. Its Community Plan designation is Project District One, Manele. The County Zoning is Lana`i Project District, Manele. And the approval sought this evening is approval for the Project District Phase II approval because it is a project district, and the Special Management Area Use Permit because it is within the special management area of the island of Lana`i.

I'd just like to introduce the project team. They are available tonight and will be able to answer any questions that the Commissioners may have. Of course, Castle & Cooke Resort – Doug McClafin is the representative and project manager. The civil engineering is Austin Tsutsumi and Associates, and Adrienne Wong who is in the audience tonight. The archaeological consultant is Cultural Surveys Hawaii. The landscape architect is Russel Gushi, and Russel is, as well, here tonight. The pool consultant is Pacific Apple Group. And the planning consultant is Munekiyo & Hiraga, and I'm Mich Hirano.

This is a regional location map, and I'm sure that you're all familiar with the project district. But that's just the outline of the project district, so it's a fairly large area. And this is a site location map, and it just shows you the Manele Bay Hotel. And these are the hotel buildings, and the pool, adult pool, is really to the south and west of the existing pool. And that's a rough area of the project area. And as Doug had mentioned, the periodic renovation is necessary to rejuvenate the property, and as well, to enable it to successfully compete with other resort properties.

This is the outline of the site plan. I'd like to just point some of the features. This is the existing family pool. And this is the area, the shaded area, is the area where the pool will be resurfaced. The deck will be resurfaced. And then the new adult pool is just located to the south and west of the existing pool. And as you can see, it's a rectangular shape and there are two spas on either end of the pool. Another feature that, of course, is a very important feature is the archaeological site. There is a coastal complex archaeological site that is just to the east of the pool. This area is protected by a 30-foot buffer and will not be impacted during construction. There is a 90-foot setback from the rocky shoreline, and that was the setback that was established through the project district ordinance. So the pool property or the pool project is well back of the shoreline setback, and it is also outside the area of the archaeological buffer.

Again, like we said, it's located at the Four Seasons Resort at Manele Bay. And the current area is landscaped and irrigated. And it is setback outside the 90-foot setback area. The pool measures approximately 29 ½ feet by 51 feet. It will be ADA, or Americans with

Disabilities Accessibility, so there will be a lift, and that's the pool lift. Other related improvements include construction of the pool deck, walkways around the pool, site grading, landscaping and relocation of utilities – water, sewer and electrical. The pool will only be about three to four feet deep. There will be two spas at either end of the pool. And the other component would be resurfacing of the existing pool area. As I mentioned, there will also be a new towel cabana and a shower. And this is really just for people to wash off before they swim or after they swim or just take sand off their body if they have come from the beach. The existing family pool will be resurfaced and there will be new pathways from the pool to the guest units.

Here is a pool site plan. And as you can see, this is kind of where the existing pool ends. And this area, there are steps leading to a pathway around the archaeological site and down to the beach. As well, there is an existing wall just to the left of the screen which is part of the hotel property. This is the wall, right around here. I'm sorry, this is the wall, right here. So the pool really is just sort of an extension of the existing pool area.

This is a landscape plan of the pool. And basically it's just going to replicate the existing landscape around the pool – you know, palms, bougainvillea, hedges, naupaka, ground cover – so a lot of native plants in the landscape design. The lighting, of course, will be down cast shielded and of lower voltage.

I want to just go over a bit of the water usage. Water had been such an important topic in Lana`i. And we have broken down the water at the existing Manele Bay Hotel, and we've compared it to from the Lana`i – excuse me – you see this column is the existing water usage. The 2010 demand column and the future demand column, in million gallons per day, is from the 1967 draft Interim Water Use Development Plan for Lana`i. And those are where those figures come from. And we've taken just the hotel project district area. So basically just to summarize, in 2007, the water usage at the hotel was approximately 58,000 gallons per day. The Manele landscaping was approximately 176,000 gallons per day. The single-family components were 13,000. The multi-family unit demand or use was approximately 15,000 gallons per day. There were some small use, as well, at the golf course. So the total water usage within the project district as of 2007 was 276,000 gallons per day. And in comparing this to the projection that was established in the Draft Water Use and Development Plan for Lana`i, you can see that the existing water use is well below what was projected for 2006. It's 276,000 gallons per day compared to 2010 forecasted demand of 680,000 gallons per day. And the big difference is really a lot of the single-family, multi-family developments and the hotel have not been developed to the plan capacity.

In terms of the existing pool property – and I'd like to explain this table because you've had in your handout, the pool used approximately 978 gallons per day, and that was further refined. And basically what that computation lacked was there was additional water. So

when we talk about the existing demand, this is the water that is currently used for irrigation and landscaping of that area. So we've calculated that at approximately 1,378 gallons per day. And the proposed water demand is really the pool, evaporation and back wash, the spa, the two spas, and the shower and the irrigation. So when we added all those up, we came to 1,325 gallons per day. So the net result, we feel, would be really a net decrease in water use from the project because the difference is really the existing landscaping that will be taken away and will no longer be using water. And the water that will be used for the pool, the shower, and the new landscaping, will be actually less than what is currently used.

As well as the hotel and Pat Ware who is the Director of operations and maintenance for both hotels is here tonight. And Four Seasons has been doing a lot in the way of conservation measures. And currently some of the programs in place are the low flow toilets in all guest rooms. There's low flow flush-o-meters in all public and staff restrooms. The knee faucets are fixed on all wash basins in the staff washrooms. And this is very important because at a hotel such the Four Seasons there's probably more staff than there are guests. The staff to guest ratio is more than one. So a lot of the water is used by staff. And to have these facilities with these conservation measures does save a lot of water at the hotel. And as well, the hotel does daily readings of the resort's irrigation, and cooling system make up meter reading, to really monitor for leaks and to make sure that everything is as it should be and that there is no waste of water through leakage or through lack of maintenance.

Future conservation measures in the long term include the use of more drought tolerant plants in the hotel landscaping. And best management practice is used in the implementation of a pool maintenance program. And part of that involves, really, doing the wash, the back wash, doing the maintenance of the pool as needed rather than having it on a specific time program.

This is a picture of the existing site. And as you can see the area is in landscape. This is the wall and the bougainvillea planting just across the wall from the existing hotel. And this is the pathway, and as well, the Naupaka planting around the, and the protection, around the archaeological site. So the pool will actually just sort of sit in this area.

There is as well an archaeological preservation and monitoring plan. An archaeological and cultural monitoring plan will be prepared and approved prior to any ground altering work. There will be an area specific archaeological preservation plan for the sites in the immediate vicinity of the project area, and that is in response to the letters from the State Historic Preservation Division which is in your packets. There has been comments from the State Historic Presentation Division on the project application, and this is the result of it that there will be an archaeological preservation plan put into place. And the preservation plan will be reviewed by the Lana`i Archaeological Committee prior to submittal to the State

Historic Preservation Division.

That concludes our sort of presentation. I just wanted to summarize that we are seeking approval this evening. We feel that the current water use at the hotel is well below what has been allocated. The proposed project will not result in an increase water use at the hotel. And we are requesting approval for the Project Phase II and the Special Management Area Permit. So thank you.

Ms. Kaye: Thank you. Mich don't run away. Commissioners, questions?

Ms. Zigmond: Madame Chair? Actually, I have a few questions from the handouts that we had today, but I'd like to go to the 2007 Manele Project District potable water usage slide please. Can you tell me, Mich, how the totals for each column were derived?

Mr. Hirano: Yes. These totals were taken from the meter readings from the 2007 water report.

Ms. Zigmond: No, I meant the total at the bottom. So the 0.276 is that –

Mr. Hirano: That's adding up all these.

Ms. Zigmond: Adding up.

Mr. Hirano: Yes.

Ms. Zigmond: You know –

Mr. Hirano: They don't add up?

Ms. Zigmond: Well the future demand, I did it four times, and I get 0.68, not 1.03 which is actually less, but –

Mr. Hirano: 0.6 – sorry.

Ms. Zigmond: – we've been suspect of figures for a while because they haven't typically added up. So if you add the future demand column, the 0.18.

Mr. Hirano: The 1.03?

Ms. Zigmond: Yeah, I don't get that. I get 0.68.

Mr. Hirano: I see.

Ms. Zigmond: And so I'm just curious again because once again the figures that we're getting are incorrect. You know, I have cappuccino at two in the afternoon and I'm wired so –

Mr. Hirano: I'm sorry. Well the bottom figures are taken from the water use and development plan. And that was basically what we were trying to compare with in terms of the allocation.

Ms. Zigmond: But something is wrong.

Mr. Hirano: Yes, and I'll check with the graphs, so thank you for pointing that out.

Ms. Zigmond: Okay, an adult pool only three to four feet deep?

Mr. Hirano: Yes.

Ms. Zigmond: I'm just curious why only three to four feet deep?

Mr. Hirano: It's more of a wading pool.

Ms. Zigmond: It's a waiting pool. I'm sorry.

Mr. Hirano: The existing pool is three to four feet deep.

Ms. Zigmond: Okay.

Ms. Kaye: I'm sorry, but let me just interrupt. If you're going to answer a question, you need to be on the mic, okay?

Ms. Zigmond: You're talking here about recycling and I'm curious because I am a fan of recycling – that all these things are available for recycling and I'd like to know where so that I could utilize them.

Mr. Hirano: You're talking about recycling at the hotel?

Ms. Zigmond: We're talking – it's on page 10 under Solid Waste.

Mr. Hirano: Yes, I see that.

Ms. Zigmond: So we have programs for recycling diverted waste such as glass, tires, cardboard, green waste, scrap metal, used oil, newspapers and aluminum. Is that here on Lana`i?

Mr. Hirano: Well we've said it's been undertaken by individuals, schools, students, the 4-H Club and Castle & Cooke Resorts. Castle & Cooke Resorts does recycle as much as they can with these.

Ms. Zigmond: But I mean are all these programs available on Lana`i? I'm just curious.

Mr. Hirano: They have been at times. And some of them are currently in use by the hotel and Castle & Cooke Resorts.

Ms. Zigmond: Okay, I'm going to try to tap into that. Thank you. How about, what is the status of the plan for the archaeological society? How far are you on that?

Mr. Hirano: That is by Cultural Surveys Hawaii. They will be doing the archaeological plan. They've done the monitoring plan. And the preservation plan is in draft form. I believe, they're working on it.

Ms. Zigmond: And so –

Mr. Hirano: Because I guess in terms of the conditions that this will be done prior to any ground altering activities, so it will have to be done in the near future.

Ms. Zigmond: So there will be, as requested, a qualified archaeological monitor or monitors present during all ground altering activities?

Mr. Hirano: Yes. That's in the monitoring plan. Yes.

Ms. Zigmond: Awesome. Okay. And I'm almost done. If you could speak to the calculation error that the Department of Water Supply that you all talked to the Department of Water Supply about.

Mr. Hirano: That calculation error basically was a double counting of the hotel irrigation and the hotel use. In the report, there was a line item that had hotel use, including irrigation, at 226,000 gallons per day. And there was a separate line item of just irrigation which was about 168,000 gallons per day. And that was double counted in the total. So the actual use was about 168,000 less than what was reported in the water report. So that's how that was – I guess, that's how the Department of Water Supply had thought that was actually higher use than what was actually in place because of the calculation.

Ms. Kaye: Just have one conversation at a time okay?

Ms. Zigmond: Get a calculator for somebody. And finally, the Department of Water Supply had recommended using brackish or reclaimed water not only for the construction purposes

but also for irrigation. And I noticed that the applicant says that – well they don't even mention irrigation so I'd like to know, #1, what are the sources of water for irrigation, and #2, it says existing private water will be utilized for the dust control. Can you tell me what that is also please?

Mr. Hirano: The irrigation at the Manele Bay Hotel is using potable water. They use potable water for irrigation. That was part of what was approved for the hotel. So there is no brackish water available, or non-potable water available at the hotel. Private water for – that's controlled. It could be done through water tanks, construction water tanks, to spray water on the dust on the ground if need, or it can be reused water from the pool.

Ms. Zigmond: I'd like to see that as a condition because while I have no objections to an adult pool, I certainly object to drinking water being used for controlling dust.

Mr. Hirano: Yes?

Ms. Darlene Endrina: Madame Chair, do we know what is at the archaeological site? Is it artifacts? Is it remains?

Mr. Hirano: It's called a coastal complex. There are areas that are shelters or rock shelters. There is as well a reference of a fishing shrine there. So there is a shrine and rock shelters. And there are a number of – it's a fairly large complex – and there are a number of features around there.

Ms. Endrina: Thank you.

Ms. Kaye: Commissioners, additional questions? Gerry?

Gerald Rabaino: Regarding the location of the new pool next to the existing pool which is lower from the Plumeria building on the Manele Project area, you say three to four feet, you're not planning to go below that depth? Okay, the next question is that you have two showers – how many – the two showers that you have for the pool?

Mr. Hirano: There's just one shower. I'm sorry about that. This one right here.

Mr. Rabaino: Yeah, but according to your print out here, it states two showers. Are you including the existing shower with the additional shower?

Mr. Hirano: Yeah, there's an existing shower but that was going to be relocated.

Mr. Rabaino: Okay because I noticed you have the new towel cabana.

Mr. Hirano: Yes.

Mr. Rabaino: So you're removing the existing towel cabana from the lower side of the Plumeria Building.

Mr. Hirano: Now this is a new building. This will be a new towel cabana.

Mr. Rabaino: Yeah, but you have the existing where the existing pool is, you have a cabana there.

Mr. Hirano: Yes.

Mr. Rabaino: I was there when they opened up Manele Bay Hotel, so I'm very familiar with the property site.

Mr. Hirano: Yes.

Mr. Rabaino: I'm no longer there. I've been absent. I moved away for about 12 years, but I know the existing site. I'm assuming that you're taking the number two as an additional shower to the new pool site that you're going to be constructing.

Mr. Hirano: The shower.

Mr. Rabaino: Yeah?

Mr. Hirano: There is a shower right here – about right here – but that will be relocated and there will be a new shower at this location. Is that correct? Yes.

Ms. Kaye: So in other words you're replacing, you're just moving.

Mr. Hirano: Just moving the shower, yeah.

Mr. Rabaino: Going back to your drought resistance plants. Do you have a list that you're going to be implementing around the new construction site?

Mr. Hirano: Yes, we do. I'll ask Russel Gushi to just to speak on that.

Mr. Rabaino: Wait, let me see. That answers my questions. You know, the last question I'm a little concerned of. When you drain the pool, where does that water go being that you have chlorine in it? Is it drained to the sewage up on the hill? Or is it reused for irrigation on the hotel property?

Mr. Hirano: That's a very good question. It can be both. It can be drained back into the waste water system. When it mixes with the existing effluent, the chlorine is diluted so that it isn't a negative aspect in the system. It can also be sometimes – and the pool hasn't been emptied very often, but you can also just still the pool and 24-hours the chlorine burns off and it can be reused for landscaping irrigation as well. That could be possible.

Mr. Rabaino: As recycled water, yeah?

Mr. Hirano: Yes.

Mr. Rabaino: Okay, my last question to you and if anything pops up I'll speak out. My last question to you, the existing pool –

Mr. Hirano: Yes?

Mr. Rabaino: – how many gallons of potable water is pumped into the existing pool versus the new pool which is the additional pool that you are planning to build, how much water will be pumped into that?

Mr. Hirano: The new pool capacity is a little over 45,000 gallons. The existing pool was 91,500 gallons.

Mr. Rabaino: Okay, but you're not too sure when the existing pool, when the water is drained if its been used for other purposes besides – because I'm assuming – that's not my expertise but I'm assuming when water is drained, it automatically goes into the sewage for sewage treatment.

Mr. Hirano: It does. It does.

Mr. Rabaino: And goes back for recycling where ever it is needed.

Mr. Hirano: That's correct. It does.

Mr. Rabaino: Thank you.

Ms. Kaye: Stan? Alberta? Questions?

Ms. de Jetley: I have a comment. I work frequently down at Manele Bay, and work directly with guest children, and this new pool will be a wonderful asset to the hotel because the existing pool is always jammed packed with kids. It's very heavily used, so this new pool would make a wonderful addition to the property.

Mr. Hirano: Thank you.

Mr. Stanley Ruidas: Mich, you're calling this an adult pool. What is that, like topless/bottomless kind?

Mr. Hirano: It's a quieter area and mainly used for adults. The existing pool is really an activity area for the younger guests. And right now, there's only the one pool. So the hotel wants to have another pool which will be a quieter pool where the adults can maybe go swim and relax, and it will be more quiet.

Mr. Ruidas: Okay thanks. Just checking.

Ms. Kaye: Okay, questions?

Ms. Zigmond: You can go. I have one more.

Ms. Kaye: What is a make-up meter?

Mr. Hirano: Make-up meter? I'm sorry I have to ask the maintenance. I'll have to ask Pat Ware who is the maintenance director.

Mr. Pat Ware: My name is Pat Ware. I'm the Maintenance Director for Manele Bay and the Lodge at Koele. A make-up meter is simply a water meter that measures the volume of water that goes into any given area. It could be for a pool. It could be for a cooling water system. It could be for a closed lube water system used for treating the hotel. It's a means for us to measure to ensure that we don't have leaks and we can monitor the consumption that is consistent with other (phonetics).

Ms. Kaye: Thank you. I've noticed in the packet that you sent to us that it's a very nice artistic rendition of it. I see no evidence of lighting. You've referenced several times that lighting will be shielded down, but it doesn't appear on any of the drawings. So where – how much lighting?

Mr. Hirano: Yes. I'll have Russel – Russel Gushi is the landscape architect.

Mr. Russel Gushi: Good evening Commissioners, my name is Russel Gushi. I'm the project landscape architect. I don't believe the plan does show any lighting on it, but our intent is to use low voltage landscape lighting. And conforming to the new County of Maui Lighting Ordinance, we will be using all down lights as well as lights that have cut out shields so that there's minimum glare.

Ms. Kaye: Do you have any idea how many lights?

Mr. Gushi: How many lights? My estimate is maybe about 15 lights, which would include path lights. I'm sorry? 15. One, five, yes. Again, these would be including path lights which would be located in the planters around the walkways and the pool itself. And some lights to highlight some of the planting.

Ms. Kaye: I don't know who is the appropriate person to ask, but the walkway that exists now will separate the archaeological preserve from your construction efforts, correct?

Mr. Hirano: Yes. And as well the planting around, the bougainvillea planting as well, will be separate.

Ms. Kaye: The existing planting that is down there you mean.

Mr. Hirano: I can't recall.

Mr. Gushi: I'm sorry, could you repeat the question? The existing bougainvillea is actually along the top of this wall here. There's Naupaka along this pathway, and there's more bougainvilleas around the archaeological site.

Mr. Hirano: So is that in the existing?

Mr. Gushi: This is here is the existing. It's an extension of the existing Naupaka. This is a new pathway here. This is the existing pathway that walks along this way.

Ms. Kaye: I'm sorry. Could you say that again? I didn't hear you.

Mr. Gushi: This here, right along this edge here, is a new pathway. I think the existing pathway comes down this way. It swings around this way and then it ties into this path here. So this along here is an existing Naupaka hedge. Along this edge would be the new extension of the Naupaka hedge.

Ms. Kaye: Okay, in the 90-foot setback you mentioned that was established when the project district was set up. It's measured from where?

Mr. Hirano: From the shoreline, the certified shoreline.

Ms. Kaye: And this will be how far? Just at 90-feet or further back?

Mr. Hirano: As you can see, there's the 90-foot setback –

Ms. Kaye: I'm sorry.

Mr. Hirano: – so it will be setback quite a ways.

Ms. Kaye: Thank you.

Ms. Zigmond: Madame Chair, I'm referring now to the DNLR's comment letter, and it speaks about – and I'll just read it – “we are concerned that some of the surface features may have already been impacted by on-going development or on-going use of the land. We have recently been informed that there may be cultural sites that are currently being impacted by a water leak from the existing swimming pool.” What's going on with that leak and has it affected/impacted anything? And how do you keep a handle on leaks?

Mr. Hirano: Again, I'll ask Pat Ware to speak on that.

Mr. Ware: Once again, this is Pat Ware. I can address that. There was a recent leak, probably three months ago in the area of the arch site. It was not from the pool. It was from the blocked drain and it was captured during diligence of our own staff. It was probably within minutes of it occurring. We were able to down the water and protect the arch site. So we work toward the diligence of our own staff. They are our protection.

Mr. Hirano: Thank you Pat.

Mr. Rabaino: Okay, my next question is two questions. First one, the pathway is going to be what three feet wide where a cart can go up and down to deliver items to the new pool site? That's standard, three feet?

Mr. Hirano: Yes. That's what is there now.

Mr. Rabaino: Is that going to be matched with the existing walkway which is gravel, or is that going to be concrete?

Mr. Hirano: It's going to be gravel, so it will extend gravel up to here.

Mr. Rabaino: And right around the new adult swimming pool, you're going to have low vegetation as you said the bougainvillea, Naupaka and other shrubberies which will be so called the drought resistance plants. How many palm trees are you planning to plant there from the ocean view?

Mr. Gushi: I'm not sure which area you are referring to, but along here, there's some existing palm trees that will be relocated. If you look at the symbols, these symbols here which are open star like symbols are existing palm trees. And there's a couple of them here and here. There are a couple here that are going to be relocated. These are all new or relocated palm trees. And again, the intent is because they are going field stock,

matured sized palms, the views will be pretty much open under the canopy of the trees. When you look in plan, of course, the look pretty much obscured – obscuring the view, but they're really not because they are high enough that you can see under the trees under the palms. And these again will be bougainvillea, Naupaka. When we talk about drought tolerant plants, we're not only talking about drought tolerant plants, but we're also talking about native Hawaiian plants as well. So the intent here, again, to not create a very tropical lush landscape, but something that's more appropriate for the coastal environment.

Mr. Rabaino: The relocation of the existing utility lines are – all these lines are going to be underground?

Mr. Hirano: Yes they are.

Mr. Rabaino: That's fine. Thank you very much.

Mr. Hirano: Thank you very much for your questions.

Ms. Kaye: I have one more Mich.

Mr. Hirano: Yes, Chair Kaye.

Ms. Kaye: On page 13, you make two references throughout the SMA Permit process, agency review and public participation, and then you say you're here tonight. And then under that, you say throughout the SMA Permit process, public participation. So does tonight satisfies those? Is this it?

Mr. Hirano: Yes.

Ms. Kaye: Okay. Commissioners?

Mr. Dwight Gamulo: I was curious about the landscaping. Some of those palm trees that you're putting in around there, the one you saved from your stock, are some of those the native Pritchardia?

Mr. Gushi: No. What is existing now is just the coconut palms.

Mr. Gamulo: No, I mean the ones that you're going to put in.

Mr. Gushi: Propose?

Mr. Gamulo: Yeah.

Mr. Gushi: Native Pritchardia and some plants if we need to do some screening from the adjoining units, we may consider something like areca palms or something, depending on how much screening we need. But the intent is to use the native Pritchardia, the Loulu Palms.

Mr. Gamulo: And other native plants too throughout the whole planting?

Mr. Gushi: Yes. All the shrubs.

Mr. Gamulo: You have them designated in some places, but not just in those places, but all throughout.

Mr. Gushi: Where ever we are showing landscaping, the intent is to use native plants as much as possible. Yes.

Mr. Gamulo: Alright, thank you.

Mr. Hirano: Thank you Russel.

Mr. Rabaino: Just out of curiosity, what is the time table for this project from the beginning to the end?

Mr. Hirano: I'll let Doug McClafin who is the project manager respond to that.

Mr. McClafin: Right now we would like to get approval this evening. We're going to then proceed onto working drawings and solicit for building permits. And the construction, once those are approved, the construction, we anticipate will probably take six to eight months depending upon how we schedule it. To be right up front, I've got to go back to Mr. Murdock. It has taken a year to get to this point, so I need to go back to him to make sure that, you know, he's still with us and proceed quickly as we can. It's one of those catch-22's. We're low on occupancy. You build it when it is low, and hope that it comes or you wait till the occupancy to build and then go and build it. So I can't answer precisely, but right now I'm asked to go get all the entitlements and get everything ready and go in. So again, we would ask for your approval this evening so we can keep that momentum.

Ms. Zigmond: So the archaeological plan will have to be going on at this point?

Mr. McClafin: It's actually occurring right now. I think, as Mich mentioned, the monitoring plan, I believe is already completed. I believe that they already drafted the other one. We asked them to move ahead on it and get everything set up. I will also say this, I've talked to Hal Hammett personally about it, and the site has already been exposed. It was exposed during the original construction. The utilities that criss-cross the site are well below

the foundation to where the pool is going to go. So his anticipation is that there will not be anything there. It actually has been exposed in the original construction. It has been back filled. The pool site, and the arch site obviously we're staying away from that, I think, the 30-foot setback. So we are not anticipating any archaeological discovery. Although we are going to be monitoring it during construction. . . (*Changed cassette tapes*) . . .

Ms. Kaye: If there are no other questions, we'll take public testimony. Dwight, I'm sorry, you have one more?

Mr. Gamulo: Yeah. Please. Thanks. Okay, I just want to know about these, you know these statements in your proposal here, the coastal ecosystem that is on page 13. The statement for the coastal ecosystem the proposed improvement do not anticipate result in any adverse impacts on coastal ecosystem, coastal hazards, the majority of the proposed in located in the flood zone and minimum flooding. Beach protection development is not anticipated to impact beach process. And marine resources provided best management practices are incorporated in projects. You folks make these statement yourselves, make these determinations and then make these statement yourselves. Is that right?

Mr. Dias: That's actually the Department.

Mr. Gamulo: That's your statement?

Mr. Dias: Yes. That's our report. Yes.

Mr. Gamulo: Alright, the one on the -. I had a question. There's periodically there's suppose to be a study on the impact of any kind of run off from the hotel, and especially in Hulopoe Bay, and it's suppose to be ongoing. When was the last one done and when is the next one is going to be done?

Mr. Hirano: I'm not aware of a requirement for monitoring the marine quality - monitoring for the hotel right now. Shelly Barfield.

Ms. Shelly Barfield: Shelly Barfield, Castle & Cooke. The first quarter was done by Dr. Brock. The second one isn't completed yet. He's ongoing right now, but it should be, I'm hoping by the end of the month. That's the second quarter.

Mr. Gamulo: I see. When do we see those? Do we ever see those?

Ms. Barfield: Yes, it's mailed out -

Mr. Gamulo: Okay.

Ms. Barfield: – to the Planning Department, and it's distributed to the libraries. There's various agencies that it's distributed to. There's at least seven or eight.

Ms. Zigmond: Wasn't that brought up, where in the past, where we were suppose to get copies of those?

Ms. Barfield: That would be through your Planning Department.

Ms. Zigmond: Planning Department, we would like to get copies of those please. Could we please? Thank you.

Mr. Hirano: Thank you Shelly. Thank you for the question.

Ms. Kaye: Okay, I think we'll open it up to public testimony now. If anyone has something.

Mr. Hirano: Thank you very much Commission.

Mr. Fairfax "Pat" Reilly: Good evening. My name is Pat Reilly. 468 Ahakea Street. Resident. Commissioners, I call your attention to Commissioner Zigmond's and Commissioner Endrina's comments, and I'm recommending that I know you're getting a review, but the whole point is to write things into the project specific conditions. And I'm going to recommend particularly related to the archaeological study that on exhibit 19-A you choose item #1 and write it into a project specific condition because the previous letter indicates that the plan has not be updated for a long period of time. And that under new law, that is a requirement. And this individual, Jenny Pickett, provides two options. And my language would be update the cultural interpretative plan to current archaeological preservation plan standards. That would be my language for specific condition #19.

Secondly, Commissioner Zigmond addressed the confusion and continuing confusion about water use numbers. And that will tie into, I guess, the workshop that will happen subsequent to this hearing. There has to be some demand from the Commission that the water use numbers and the water use plans be accurate and accurately represented. You're dealing with two matrixes here. One is the 1997 plan, and you well know that there is a Draft Water Use and Development Plan being worked on, and hopefully, someday that plan will be completed and adopted by the County Council into law. I read those figures six times, one of which said it was 26% overage than the testimony, and the response was well they double counted the numbers and that's not exact. It's got to be exact. Now I'm not going to argue about 965 gallons a day. That's not my point. At some point, you know, a million gallons here, a million gallons there, and you pretty well get to some big numbers after a while. And if you don't it accurately metered and accurately represented, it's hard to make decisions. Thank you very much.

Ms. Kaye: Commissioners, questions or comments for Pat? Pat, I have a question, so don't run away. Sorry. Can you tell me what – the condition you're proposing is in addition to #9 that the County has imposed? I need to understand the difference.

Mr. Reilly: I could not tell in reading that whether that meant the option #1.

Ms. Kaye: Sorry?

Mr. Reilly: Option 1, exhibit 19-A. She gave two options on exhibit 19-A as to how to respond to that. You have in your packet, at least I have a packet that I picked up, it has exhibit 19-A at the back of your presentation. By the way, I must say, compared to the old days, these Departments are actually responding in quite detail. I give them a lot of credit.

Ms. Kaye: Okay.

Mr. Reilly: Do you see where I'm looking? Exhibit 19-A, #1, you have two options.

Ms. Zigmond: Sally, it's the copy of the e-mail. It's after the archaeological.

Ms. Kaye: Right.

Mr. Reilly: It says Jenny L. Pickett.

Ms. Kaye: And my question is this which is a list of the conditions that our staff planner has proposed. They're both County conditions and project specific conditions, and #9, do you have that Pat?

Mr. Reilly: I'm looking at it right now.

Ms. Kaye: Okay, so, in accordance with representations, no work shall happen until –

Mr. Reilly: I just want to be sure that #9 is the same thing as I mean in condition #1 option. I can't tell if it's the same language.

Ms. Kaye: Well, maybe we could have somebody address that.

Mr. Reilly: There you go. Thank you.

Ms. Kaye: Okay.

Mr. Hirano: Thank you for your question Pat. Mich Hirano. The response to that was made and what will be carried out is a site specific preservation plan for that. And that would be

what will be in #9 that there will be an archaeological and cultural monitoring plan, an updated archaeological preservation plan. And that archaeological preservation plan as the Company had agreed to with the State Historic Preservation is to do a – and as well through the architect – the site specific preservation plan for that site.

Ms. Zigmond: Does that include the cultural interpretative plan which is what this is directly referencing? The #1 option on that e-mail is referring to the CIP.

Mr. Dias: Option #1 states to update the CIP to a current archaeological preservation plan. Just to go back to our recommendation, Jenny Pickett did provide two options to meet the requirement for an archaeological preservation plan. So she basically wants an archaeological preservation plan and she's saying well there's two ways to do it. And so that's why our condition is written in such a way that they have to do an archaeological preservation plan, either or, just make sure that an arch plan is done.

Ms. Zigmond: But my question was does that include a CIP?

Mr. Dias: I believe it's an update to the CIP because something was already done, they're just saying you need to do a little more now.

Mr. Hirano: Excuse me, I think the applicant has agreed to option #2, which is determine a specific area as proposed for the project area, including any areas being affected by the extent and complete an area specific archaeological preservation plan for the sites in the designated area proposed effect. This way is phased and any future work for treatment of features within the site will be evaluated on a case by case basis. So, they will do a site specific archaeological preservation plan and not update the current archaeological CIP.

Ms. Kaye: I'm a little confused. Who is they at this point?

Mr. Hirano: The applicant, Castle & Cooke Resorts.

Ms. Kaye: Okay, so this Jenny Pickett is?

Mr. Hirano: She's with the State Historic Preservation Division.

Ms. Kaye: Okay. And it's her recommendation that either of these two would be satisfactory?

Mr. Hirano: Yes, according to that e-mail.

Ms. Kaye: And just to clarify, the condition that Danny has written into this conforms with which one?

Mr. Hirano: Well it could be either, but they're going with #2.

Ms. Kaye: #2. Okay, is this clarified for the Commissioners? Does everybody understand what we're doing here or do we still have some questions on this issue? Before we leave this, I thought we just make sure there weren't any other questions on the options that were provided. Okay, Ron?

Mr. Ron McOmber: Good evening, my name is Ron McOmber, resident of Lana`i. I'm also a member of LWAC and we had these folks before us this afternoon giving us a presentation on this. I've got to say something and it's going to sound strange coming out of my mouth, but I'm going to say it. The presentation, I think, was very good on the specific numbers that we asked for today. They knew what the evaporation rate was. They knew how much water was going to be used. They knew just about everything. So I was very much encouraged what I heard today. This is the first application I've seen since I've been doing this kind of stuff that we didn't have ask them to come back and give us some more information later. It was almost completely given to us. So they've done their homework. And as far that archaeological site, if you guys remember that thing has been covered over and covered over and filled up. If there's any archaeological site in that particular area, they're going to have to dig way deep to find them. If you remember that was all back filled in there. So that wasn't like that folks. So if there are any, and I'm sure if Hammott would have gone through it and he's going to be looking at this site, I think we're pretty well protected in that range too. But I was encourage what I heard today. And like I said, this was the first time in a long time I've heard an application that was as clear as the one as today as far the questions that we asked on water issues. So thank you.

Ms. Kaye: Commissioners, questions for Ron? I would just like to add to that because I was at the same meeting Ron was at, and I think that everyone there now gets the value of having the Lana`i Water Advisory Committee Vet things that deal with water projects because we really did come in with a lot of questions and there were some errors that the applicant corrected right away. Some of them you guys haven't brought up so we'll just let them go. But they were minor and as Ron said, they were very responsive. And at the end of the meeting, the decision – what the LWAC is going to do going forward with similar projects is to either find that it complies with the existing Water Use and Development Plan or doesn't. And in this case, the LWAC found nothing to object to. Okay, is there any other public testimony?

Ms. Katie Mitchell: Hi. My name is Katie Mitchell, and I'm the Director of Sales and Marketing for the two properties on Lana`i. And I just wanted to add my feelings of how important this is for the long term success of the two resorts and specifically for Manele Bay. Competitively, I think you've already heard many, many hotels are adding a quiet pool to their existing pool situation. And our sister property in Maui is actually adding that pool as we speak. And so, in the long term, moving forward it's really important that we be able

to separate people wanting a quiet area and quiet enjoyment – couples and romantic experiences – from people’s families and children’s abilities to have a great time at the pool. So thank you so much for your consideration and I just wanted to let you know how important we feel it is for the long term success of the hotel.

Ms. Kaye: Okay, Commissioners questions for Katie? Okay, any other public testimony? Okay, I think probably at this point we are looking to see what the Planning Department is going to be recommending to us.

Mr. Dias: Okay, Madame Chair, before we get into that, Corporation Counsel pointed out – if you look at the applicant’s power point presentation, page 21, they indicate that a preservation plan will be reviewed by the Lana`i Archaeological Committee prior to submittal to SHPD. So if the Commission would want or would like, perhaps that could be added to condition #9. That’s a suggestion.

Ms. Kaye: I think that’s a terrific idea.

Mr. Dias: Okay. Okay. So we suggest that condition #9 read in full that “in accordance with representations made by the applicant, no work shall be initiated on the site until an archaeological and cultural monitoring plan, and an updated archaeological preservation plan is submitted and approved by the State Historic Preservation Division (SHPD.) In addition, the archaeological preservation plan shall be reviewed by the Lana`i Archaeological Committee prior to submittal to SHPD.”

Ms. Kaye: I’m sorry I have to ask this. You only said “review,” which doesn’t indicate any kind authority on the part of the Lana`i Archaeological Committee to have input or add any conditions – approval or non-approval. Do we want to think about adding some enforcement?

Mr. Dias: That’s up to the Commission. I’m not sure if the applicant wants to say something about that – if there’s an issue about it going beyond just review. I think there’s also an issue with the authority of the Archaeological Committee. We’re not sure if that’s all their jurisdiction is just review or if they can go beyond that. I think SHPD they’re pretty much the authority as far as requirements are concerned. So I think we need to sort of –

Ms. Kaye: Okay then why don’t we swap them and have the condition be that the Lana`i Archaeological Committee reviews it first and then can comment to the State. That way they have their input, and the State gets to make the decision that they’re qualified to make.

Mr. Dias: Okay. So perhaps we can add another condition so condition #9 will read along the lines of perhaps the archaeological preservation plan shall be reviewed by the Lana`i

Archaeological Committee prior to submittal to SHPD – that will be one condition. And the new condition #10 would be what is currently condition #9, and we will just re-number everything after that.

Ms. Kaye: Okay, I think the way you said it is fine. If you could just add a little provision and comments should may be forwarded to the State.

Mr. Dias: Okay.

Ms. Kaye: Does the applicant have any issue with that?

Mr. Hirano: No that's fine. I think that's appropriate. Yes.

Ms. Kaye: Questions from the Commissioners? Okay. I'm sorry, Dwight?

Mr. Gamulo: Yeah, in the public comments it says November 6 you haven't received any written or any letters from the public who were against the project. Do you have any now and what's the cutoff for that?

Mr. Dias: As of when we left Maui, no, no comments at all. And as far as November 6th, the report is due two to three weeks prior so that's why the date is a couple weeks back.

Ms. Kaye: Okay, at this point we have, I think, four choices. We can approve with the conditions our planner has laid before us, with the addition the Lana`i Archaeological Committee. We can defer. We can deny or add additional conditions.

Ms. Zigmond: I'm asking for guidance on how to do that because I'd like to approve with an additional condition which is about the water for the dust control. So how do we proceed on that please?

Ms. Kaye: Well, I think you would suggest what you want to suggest as an additional condition. And then we can discuss it, then vote. Or we can do – we've got Michael – which is preferable?

Mr. Michael Hopper: You have the discretion Madame Chair to handle that how you want. You could discuss a bit before a formal motion if you like. Or you could make a formal motion and then amend it with an additional condition. That's your discretion.

Ms. Kaye: I'm not making the motion.

Ms. de Jetley: Madame Chair, I'd like to approve the applicant before us with the standard recommendations made by the Planning Department's staff with the addition of #9 as read

by the Planning Department. The additions to #9 as read by the Planning Department's staff. That's it.

Mr. Hopper: Madame Chair? Sorry. Just as a comment. There's also project specific conditions.

Ms. Kaye: Right.

Ms. de Jetley: I'm sorry. I'm sorry. Yes, I totally forgot that. So standard recommendations made by staff, and project specific conditions that were made by staff.

Ms. Kaye: Anyone second?

Ms. Zigmond: I'll second, but I want to put that amendment in.

Ms. Kaye: Will you state the amendment you'd like us to consider?

Ms. Zigmond: It would be #20 I believe.

Ms. Kaye: I'm sorry. I see 18.

Ms. Zigmond: Well became –. We have a new #9. And then #9 became #10, so #10 became #11. So it would be #20 that brackish or reclaimed water – and I don't know exactly how to put this because Mich referred to using water tanks – but I don't want the drinking water used for dust control. So that brackish or reclaimed water be used for dust control.

Ms. de Jetley: Madame Chair, I second the amendment.

Ms. Kaye: Okay, discussion? Could we hear from the applicant whether that is an onerous condition, or one you can live with because once its there. Let me clarify Bev. One second. You're talking about using – and I would think given the place where it is – brackish would probably be more suitable than reclaimed. And it's dust control during construction? Okay, which we heard was going to be six to eight months – actual construction?

Mr. McClaflin: Yeah. I mean, that's approximate. We don't know. I haven't secured a contractor yet and the involvement. I do want to comment that the site is not a large site. We hope to be in and out of the ground. The added burden of bringing in tanker trucks and that sort of thing is a little cumbersome. We actually have to use smaller types of equipment because of the accessibility to the site. It's sort of like heart surgery. I understand the nature of it. My nature is to get the job done faster, use less water all

around, and be in and out. I don't want to add any burdens to the project in time. I do understand the concern. It's unfortunate we don't have piping down there with this. I'd have to bring in trucks, and it would heavily be burdensome, and it could extend the time period.

Ms. Kaye: Could you estimate for us how much water?

Mr. McClaffin: I have no idea.

Ms. Kaye: No idea.

Mr. McClaffin: I have no idea. I know that we're going to try to get in and out of that area because this is the middle of the hotel. We're going to have guests at the hotel. I mean, our intention is to get in and out of there as fast as we can. So I apologize, I don't know the quantities that will be used. I think it's going to be somewhat minimal in comparison to the overall usage on the property. Remember now, we're not irrigating anything during construction. So that water usage that we would normally be irrigation and using in the pool and evaporation, and including the current irrigation, will not be occurring during construction. So if there is any consequences of trade off that might be the effort there.

Ms. Zigmond: Mich alluded to being able to use tankers. The Department of Water Supply requested that brackish water be used, and I can't support using potable water.

Mr. Rabaino: I'm familiar with landscaping because I've been 21 years with Castle & Cooke in the early 1970's and mid-1980's. Would you be able to bring in, like you use sprayers with plastic tanks that would fit on the pathway from the current pool – you know that you use on the golf course, you have those plastic sprayers? You can convert that and bring in brackish water inside that container to water down –

Mr. McClaffin: To answer your question, this is solvable. It's all doable. Absolutely. But I think the motive of all of us is to not use as much potable water as we possibly can. That's the motive. And that's what we've been trying to do through our conservation plans. We'll use it through our construction methodology and that sort of thing. So in answer, I don't have any other argument other than it's going to add a certain burden to the project, and of course we could do that.

Mr. Rabaino: Thank you.

Ms. Kaye: Okay, any additional discussion? We've got a motion on the floor with two conditions appended. Three?

Mr. Jeffrey Hunt: I think you have an amendment to deal with first as I understand it.

Ms. Kaye: Well, Michael told us we could –. But we can do whatever you think is most appropriate.

Mr. Hopper: Because she decided a motion to approve first, and then a motion to amend that motion to approve, you would want to vote on the motion to amend first. It seems like you did choose to do that formally, so that's what I would recommend.

Ms. Kaye: So we have a motion and a second to amend to add the additional condition that non-potable water be used during construction, correct? Okay. Anymore discussion on that? All in favor? Any oppose?

It was moved by Commissioner Beverly Zigmond, seconded by Commissioner Alberta de Jetley, then unanimously

VOTED: To amend the motion to add a condition, Condition #20, in which brackish or reclaimed water be used for dust control during construction.

Ms. Kaye: Okay, now we move to the – pardon?

Mr. Hopper: It's the main motion now Madame Chair. Because the original amendment is part of the original.

Ms. Kaye: Right, I'm just trying to remember who seconded it. Who seconded? Okay. Any discussion on the main motion and the amendment to the additional condition? Okay, all in favor? Any oppose? Thank you.

It was moved by Commissioner Alberta de Jetley, seconded by Commissioners Beverly Zigmond, then unanimously

VOTED: To approve the Department's recommendations, the addition of condition #9, in which an archaeological preservation plan shall be reviewed by the Lana`i Archaeological Committee prior to submittal to the State Historic Preservation, and the addition of condition #20 as so noted.

Ms. Kaye: I think now we'll take a five minute break and come back for our presentation.

(The Lana`i Planning Commission recessed at approximately 7:20 p.m., and reconvened at approximately 7:29 p.m.)

D. LANAI WATER WORKSHOP NO. 4

- 1. Dr. James Juvik, University of Hawaii at Hilo**
- 2. Department of Health Representative**

Ms. Kaye: Okay Commissioners we're back in order. Alberta. Darlene. Dwight. Okay, next on our agenda is Dr. James Juvik, University of Hawaii at Hilo. He's going to be making a presentation to us tonight about efforts undertaken on the Hale to measure fog drip. Do you need the lights dimmed? Would that help?

Dr. James Juvik: Alright thank you Commission. My name is James Juvik. I'm a professor of Geography and Environmental Studies at the University of Hawaii at Hilo. I was asked to say a little bit about my credentials here. I have both a Masters and PhD degree from the University of Hawaii at Manoa. I was there in the 1960's and my mentor was Paul Eckern who's name is closely associated with the fog drip studies on the Hale. I did my PhD on fog on the Big Island, and co-published that with Paul Eckern. I should also mention that even though Eckern is closely associated with the 1950's study, we should give credit to Wendell Morty who was actually the scientist in charge at the Pineapple Research Institute in those early days, and Eckern came on a bit later but actually finished up the study.

I do work in cloud, water and cloud forest ecology and water resources all over the world. I've developed a gauge that you'll see in just a little while that's used in different parts of the world, in Costa Rica, in Africa, and South America. So I'm pretty much aware of what's going around in the world in cloud research, cloud interception, fog drip. I organized an international meeting on the Big Island a few years ago that brought all the cloud-water experts of the world – if you can imagine there are such people – together for a big conference. We published a book some years ago, and another one is coming out soon. I also do a lot of other work in wildlife conservation around the world. I'm working on tortoises in Madagascar, lizards in Fiji, and reforestation in different areas, so it's kind of interesting here in the Hawaiian Islands, I even teach courses in restoring native ecosystems. But tonight we're dealing with an alien species, the Cook Pine or Norfolk Pine, I could never tell them apart, and I've been studying them for quite a while. Anyway, so I wanted to just acknowledge my other collaborators, Kealoha Kinney, Eric Hanson, Ethan Bogar, and Kim Oyama, your own valedictorian from Lana`i High School this last spring. She's a student now at UH Hilo.

Let's get going. I want to talk about the research project at the Hale. It turns out that the north-east trade winds zoom in between Molokai and much of them go over – let me back up one, I think I skipped one – it's interesting that, as we'll see in just a minute, yeah, I

would be very interested in water if I was living on Lana`i because virtually all the other islands have two or three hundred inches rainfall in their upper head waters of their various mountain areas. And here we're talking about a situation where the actual rainfall on the Hale area is only about 40-inches a year. Above Hilo it's 200 to 300 inches a year. The top of the Koolau's, it's about 200 inches a year. So yeah, there's some definite water issues on Lana`i that we hope to touch on. It's interesting because the trade winds – one of the reasons that Lana`i is so dry is of course a lot of that air goes West Maui before it gets to Lana`i and at Puukakukui on the summit of West Maui, about 700 meters higher. I want to apologize for another matter. I'm trying to use mostly English units here, but some of the slides will have some metric things. I'll try to convert those to English units for you. You know, we're like the last country, America and Liberia and somewhere else are the only country that uses the Queen's system. Even the Queen doesn't use it.

Anyway, 10,000 millimeters is how much it rains at Puukakukui. That's 400 inches a year. It just across the water there to West Maui. Do they have fog up on top of West Maui? Yeah, they have lots of fog up there. Do they care? No. Because they've got 400-inches of rainfall, so it's not the same issue. Also, I want to say and ask the Commission and even the public if – I'm going to show quite a few slides, and if you to interrupt and ask questions during the presentation, that's fine with me because otherwise you'll forget what slide and I'll have to go back and look for it, and it's a little more complicated. So don't hesitate to interrupt. And if the Commissioners have questions, I'm happy to deal with them as they appear.

Ms. Kaye: Hold it just one second please Dr. Juvik. He's indicated that not only we, but the public. I was thinking that we can do that, but the public should probably speak after he is finished or is that okay?

Dr. Juvik: Whatever your protocol is, I'm fine with it, you know.

Mr. Hopper: Again, yes, testimony is at your discretion. So if you wanted to, for this, allow the public to ask question, you could.

Ms. Kaye: Terrific.

Dr. Juvik: All right, so you're in the game too. So, just showing that there's choke rain fall on top of West Maui. Lana`i Hale is only 1,000 meters, 3,300 plus feet, and the annual rainfall there is 1,000 millimeters which is 40-inches. One-tenth of the rainfall on the top of West Maui, 40-inches. One of the concerns here and one the things that prompted the original fog research in the 1950's was, was this 40-foot inches of rainfall really what was being seen by the plants by the aquifers up onto of the mountain? That was the question. And that prompted the Pineapple Research Institute to launch that original study in the 1950's. I do consulting around the world, mostly for government agencies, occasionally for

private sector. But when this opportunity came along, I said, yeah, I've got to do this because my guy, Eckern, I've got to follow up and see what happens 50-years later. And I would also like to say that I'm doing science here. It's for the public. It's for the community to decide how that science is used, or how to interpret it, but no one has suggested any conclusions that I should raise and I just wanted to make sure that you understand I'm just doing a fog drip study and how it plays out. Because where ever there is water shortages, there is water politics. And so I'm trying not to be involved. I'm in water politics all over the Big Island. I'm in various politics all over the planet, but this is your kuleana. I'm just throwing out the fog drip here, and you can deal with it as you see fit.

All right, so the question was then, is something else happening on top of Lana`i Hale that isn't being captured in just standard rain gauges set out in the open? And that was a question asked. When Castle & Cooke asked me to do this study, they said can you replicate Eckern's study? So I looked at Eckern's study and I looked the earlier studies. I've already seen them. I've cited them in my dissertation. That was a very limited study. It had some duration to it, about three years, but it was one or two trees at one site. And so I told Castle & Cooke, first of all, you can't replicate that study because those trees until a few weeks ago were completely buried in a new forest that had grown up around those trees where the picnic table is over the last 50-years. Plus when that study was done, the trees were 12-inches in diameter and 30-feet high. Now they're 25 to 30 inches in diameter, and 60 or 70 feet high, so you're not going to get the same results. And I also suggested if they're interested in water recharge to their aquifer, they want to know what's happening all along the ridge, and the entire watershed and try to extrapolate from several sites to capture what's going on at the watershed.

Now we all know and I'm not going to spend a lot of time about the deforestation erosion. I mean, I'm impress that you can turn a massive erosional feature like the Garden of the Gods and do a tourist destination area. That's great. Taking advantage of adversity. But obviously the erosion has taken place and the deforestation on this island is well known to most people here, so I'm not going to spend much time there, except to say that in spite of the fact that we have very low rainfall on the island and maybe only about 40-inches on the summit areas of the Hale and along Munro trail. The aridity of this island is supplemented apparently from the capture of cloud moisture as documented back in the 1950's. Now it's amazing to me that there's still native plants up on the Hale in addition to the Cook Island and Norfolk Pine trees because this place was 10 times worse 50 to 100 years ago than it is now in terms of deforestation. And some native forests have survived and the Hale has recovered to some degree as we'll see. After the introduction of pineapple, things changed. The over grazing was seen as a threat to the water supply which was now needed for pineapple. So there was more interest in water. This has happen all over the State. In the 19th century, early 19th century, nobody cared about the feral animals – the goats, sheep, pigs, cattle, whatever – but then as soon as sugarcane or some agriculture came in that needed water, then all people started talking about

watersheds. They weren't necessarily talking about native forest. They were just talking about watersheds.

So huge amounts of water have been used on this island for various purposes. Maybe now the emphasis is on tourism and development. 50 or 40 years ago, I was here frequently on the islands since the 1960's when it was still plantation days. So water has been a key to agriculture, to urban development, to all kinds of things. Water was obviously a key to early Polynesian settlement of this island. Very interesting, the Hawaiians have many words. They always say the Eskimos have 80 words for snow or whatever. Well the Hawaiian have lots of words for rain, fog, blowing mist and so on and so forth. Ua is rain, but Oahu is fog. So we know the Hawaiian settlements and ahupua'a's of this island relied on moisture that was probably more abundant in the streams because of the less erosions in those earlier days.

Anyway, just to quickly summarize, someone else is going to be talking to you sometime in the future about the hydrology and ground water situation. I'm going to be talking about how water gets into the ground up on the Hale. But one of the issues here is that the Hale has dykes. Dykes are hard volcanic rocks trapped in less dense volcanic rock, where rock came up to the surface, cooled, a volcanic rock cooled inside rather than outside the ground, cooled slow, made dense rock, and those are called dykes. There's other things there. You can see stocks, basaltic and so forth. But those dykes after they form are dense and they trap water between them. And that's what happens up on the Hale. There's dykes, rocks and impounded water underground. And that's the water that's recharged from rain or fog or whatever is going on up there at the Hale. Now how that water moves underground is much more complicated. You have to have a lot of subsurface geological knowledge to understand how that water is stored or moved around. Thank God I'm not going to talk about that. But I'll tell you how it begins to get in there.

Now of course Munro was the manager of island during the critical periods of the 20th century, and I missed meeting him by about two years when he was living down at Kapiolani Park in Honolulu. He died in 1963. But - question?

Mr. Rabaino: . . . (Inaudible. Did not speak into the microphone.) . . .

Dr. Juvik: Yeah?

Ms. Kaye: Gerry, on the mic please.

Dr. Juvik: Tell me it's not Munro right?

Mr. Rabaino: No, no. The background right there yeah, I believe that's the south side overlooking Manele Bay Small Boat Harbor. Would it make any difference if they plant a

forestry there to bring down more rain clouds? Because from the years that I've been watching, when we usually have storms, and when the airport gets fogged in sort of speak, we see that section gets covered with rain clouds, but actually it's not really rain clouds, it's just fog moving in. Would that make a difference if you plant vegetation in the forestry on low density?

Dr. Juvik: Okay, let me say one thing about vegetation. Vegetation is good. I'd like to think native vegetation is better than vegetation period. Vegetation is good, but there is a cost for everything. Plants are pumps, and plants are anchors. They anchor the ground. They conserve soil from erosion and so on, but they also pump water out into the atmosphere. That's what plants do. That's called evapotranspiration. So one has to consider the advantages and disadvantages. In almost situation you want something on the ground just for erosion control. Whether the forest will actually make more rain in a particular area is a debate that we can maybe discuss a little bit later. But certainly, for example, some trees like eucalyptus pump vast amounts of water out of the ground faster than it may be coming in compared with other species. I'll mention that a little bit later because we're looking at eucalyptus.

Also, as you go from the Awe side to Maunalei valley, the rainfall is decreasing towards Awe even on the summit area. So on that I'd guess I'd call the east side, east end, there's less rainfall to begin with which you'll see also in the fog drip data. Okay? . . . (*Changed cassette tapes.*) . . . dancing in the trees. No, the water is not condensing. The water is already condensed in the cloud. It's simply being intercepted by the trees and then dripping down. And that was sort of the magic point for Munro to begin to plant these in the Hale and other areas, which is quite understandable because as you saw before there was almost a total deforestation of that upper area.

For some reason the Cook Pine-Norfolk Pine, these belonged to a group called the Araucaria's. They are from the southern hemisphere – (phonetics) – and their leaf structure but more importantly their needle structure, but more importantly the architecture of the tree itself somehow is like better than better in terms of catching fog and horizontally moving moisture. It's better than just about any other kind of tree you can find. The reason is that in order to catch fog, it's a two part process. You have to let the air flow through the tree. If you make the air flow around the tree, you won't catch any fog. So you have to have the just right density of leaves and architecture to promote maximum interception. And these tall, relatively narrow, symmetrical Araucarias are ideal for this. And in their homeland like in Norfolk Island off of Australia, they also get a lot of fog so it may be an adaptation in their native eco-system.

So again, the efforts to replant the island beginning in the early 20th century – I haven't been on Lana`i for a few years, and when I came back and was looking at the Hale and looking at the ridge lines, I said a lot of those trees are beat up. I even remember when

they were happier trees. But there hasn't been a lot of replanting in recent years, and the trees do get beat up. They get knocked down in storms. They're pretty tough trees. But we'll see in just a moment, if one was trying to calculate how much the trees catch, are you talking about a good tree, a broken tree, a tree with only half the leaves on it, and so on. I'll talk about that in just a moment.

Also, of course, the Hale is home to certain endangered species and native wildlife that's been pretty much wiped out in most of this island, except for a small dry forest area. So we had to take into consideration – thanks to Jay Penniman there – we wanted to go down some of the ridges and put some rain gauges and things on some of the ridges off of the major Munro trail, but this presents ecological concerns because as soon as you start moving through the uluhe, you create trails for cats. And so we had to make some adjustments which I'll talk about in just a moment. But there are native species up in these areas still in spite of the long environmental degradation of this area. And there are current efforts that you are well aware of, the fencing and so on to try to preserve these areas. And obviously, they should be preserved whether there is any water coming out of them or not, simply because these are the last native eco-systems you have on this island. So there are all kinds of reasons to save this. I threw in the picture of the deer because in 1972, we were able to mobilize and stop that deer from being introduced on the Big Island. So we don't have that deer on the Big Island, which I'm pretty happy.

Anyway, getting back to the 1950's, Eckern published his paper in 1964 based on work done in the '50's. This is sort of the touch stone for cloud forest people all over the world. They know Eckern. This was a relatively simple study. It was the first one that anybody did, and quantified the contribution of cloud water in a particular situation. And subsequent studies have been done all over the world to try to determine the role of what are called cloud forest. And I think you could call the Hale a cloud forest as you'll see in a just a moment.

In that early study in the '50's, they really basically just used two trees. And they put some rain gauges under one – six or eight rain gauges under one tree, and they put a sheet metal roof iron underneath another tree and they read the results occasionally. They sent somebody up – manual rain gauges. If you read the paper actually, they lost a lot of data because they would only go up once a week, and sometimes the things were overflowing and they didn't know what was going on. But again it was the first quantitative study so it's impressive for that reason alone.

So now fortunately we have the advantage of electronic equipment. We have literally millions of bits of data from that mountain over the last two years in terms of rain, evaporation, relative humidity, fog drip, all kinds of stuff that I'll just give you some quick results. Let me also say this is a work in progress. I'm in the process of completing the two years. We initially were going to do a one year study of the data – collect data for a year,

but as typical in Hawaii, every year is different. If you're trying to collect some data and say this represents the average situation, you're obviously sometimes have problems. 2007 was a very dry summer. So I convinced them to just let the equipment run another year and upgraded a bit. So we actually have two years of data. 2008 summer was more representative of normal. Nothing is normal. Everything bounces around.

But here is a comparison between the Eckern study – actually it was 1955 to 1958 – they had one sample site. We have six sample sites, actually a 7th site outside the cloud forest there is a control. They sampled at 2,750 feet which turns out to be the wrong place to sample, and they got good results. Okay. We sampled between 1,650 feet and 3,350 feet which is near the summit of the Hale. They used one Cook Pine or two depending on what technique they used. We used five to 25 different trees at these different sites. They used eight manual rain gauges. We used 100 to 110 recording rain gauges. Now that sounds impressive, but you also have to realize that if you set up a rain gauge in Lana`i City, it probably captures what's happening a mile this way or two miles. You can extrapolate the results. But up in the Hale, if you move a rain gauge down the leeward side or over the windward side, even a 100 yards, you may get very different results and this makes it difficult to extrapolate. They were dealing a 30-foot Cook Pine. Those pines are now 70 to 80 feet tall – the ones we were dealing with. And they were like a foot in diameter and ours were 28 to 30 inches in diameter. So if nothing else changes, if everything was exactly the same, we should catch more fog because the trees are bigger than they were 50 years ago.

So here is our sample network. The red line represents the 2,100 foot elevation, 650 meters. Based on discussion with folks here and my own observations and knowing about what elevation air condenses as it rises in the Hawaiian Islands, that would represent pretty much the lower limit where you might reasonably expect to get fog consistently. Just the odd fog day is not that interesting because it probably doesn't contribute that much to the water system. So we strung out sample sites along that Hale. The star represents the location where the Eckern study was undertaken in the 1950's. We didn't sample exactly at that site because the site is over grown, but we bracketed that site with sites below and above it all the way up to the summit, and from west to east. Yes?

Mr. Rabaino: . . . (Inaudible. Did not speak into the microphone.) . . .

Dr. Juvik: No I don't.

Ms. Kaye: Gerry?

Mr. Rabaino: Kuakili Ridge, do you have any rain gauge located at that location?

Dr. Juvik: No.

Mr. Rabaino: Which is by Maunalei gulch. And another area is Awehi Trail going down to Naha?

Dr. Juvik: No. We had some rain gauges on the Awehi Trail. You can see those two yellow gauges on the lower right. But this is the extent of our sites in terms of access and ability. Partly, we needed to find Cook Pines or Norfolk Pines to use as part of the study. So there were some areas where we might have sampled but there weren't any trees. For example, station six is up near above – just above where the power line crosses, where the microwave stations are there. And we get some fog there, but there's no Cook Pines there. It's mostly Eucalyptus and Ironwood and so on and so forth. So this represents our sampling network.

Mr. Rabaino: The only reason why I'm asking you because back in the mid-70's under Koele Company, the nursery crew that we were together with, we planted some trees down there just to see how far the rain would go down by Kuakili Ridge and by Awehi Trail. Apparently those trees are doing well, which consists of Ironwood, Eucalyptus and Bottled (phonetics). And we noticed there is some difference there because it seems like under that soil there could be a water table.

Dr. Juvik: Yeah, there are all kinds of little variations in the landscape. I noticed Cook Pines out near the Garden of the Gods that seems to be doing alright in 20-inches, 25-inches of rainfall with no fog whatsoever. So it's a pretty adaptable tree. And of course, Ironwood and some of these other species can deal with even harsher conditions.

Alright, these were our sample sites along the Hale, along Munro Trail. This simply shows the elevations of these different sites. Eckern's site was at 2,750 feet, but we have sites over 3,310, even 3,300 feet. You say well those blue lines they all look not that different. Well it turns out they are super different. The difference between Eckern's site and slightly higher elevations in terms of fog catch is staggering when we get there.

So at each site, we set up equipment out in the open. This included this fog gauge on the left, and Jay Penniman's white tape to scare the birds away or not let them collide with our sky wires. And then the meteorological station, wind speed direction and so on. We were measuring a vast number of parameters, and we were also recording every hour so we can divide our data into individual fog and rain episodes which was not possible in the '50 study. So here's the open site, a rain gauge in the open, a fog gauge in the open, various other meteorological instrumentation, and then this is compared. Here's another site just showing some of the various stations along the Munro Trail.

Now you'll notice on the left here, this is a station at almost 3,000 feet on Awehi side. And you can see the forest is complex here. Yeah, there's some Cook Island Pine, Norfolk Pines – there's also Eucalyptus. There's guava. There's all kinds of things. So initially this

study was suppose to focus on Cook Pine or Norfolk Pine, but I talked to Castle & Cooke, I said look there's so many other trees up there, we better find out what they're catching because there are may be more of those than there are of Cook Island Pine. Even though the Cook's are clearly the winners in any fog catch study. So this allowed us to expand a little bit and put more sensors in different kinds of forest. Because ultimately when this project is finished, I'm getting lydar data which is a result of a few millimeters – remote sensing. We're going to map every single Norfolk Pine or Cook Pine on that mountain in these different elevations, and characterize their condition. But we're also looking at where the guava, where the Eucalyptus is and trying to make some spacial integration of water catch going on up there.

So this is (phonetic) fog screen that I said is now been adopted around the world. Eckern came up with the general idea. I modified it by putting a little lid on it to exclude rainfall. And now this is being used as a standard around the world at different sites including Monte Verde, Costa Rica where the golden toad has recently gone extinct, and climate change maybe threatening other places like Lana`i. We'll talk about that at the very end.

So we find the big trees. We set up a collection of troughs. These troughs you can see here, three sets of troughs dumping into rain gauges. The idea here is that one rain gauge under a tree tells you what happens right under that spot. If it's out in the open, it probably represents reasonable rain fall. But under tree, there's so much difference in dripping from one place to another. You have to expand the sample. And so you can see one rain gauge sitting on a bench there. That one has moved from place to place, every month or so to get a different sample. The troughs are rotated so that you change your sampling and randomize the samples. You also noticed we have some rain gauge over there next to the Cook Pine. In the '50's they didn't measure stem flow – how much water is coming down the stem. We're measuring stem flow as well. So these are again some of the samples underneath the tree.

Now I took a very conservative approach because even though we have a lot of equipment there's so much diversity up there that it's hard to extrapolate. So in all my calculations, I'm only talking about what's happening under the tree. And if there's some open area nearby, I'm saying that's not getting any fog drip. If you actually go up there, you'll actually – today I was up there sliding around on the road and it was really windy. And I could be 50 or 100-feet down wind of tree, a big tree, and I'd be getting pelted by fog drip from that tree just being blown in the strong winds. So I'm taking a conservative approach because at the same time on the windward side of the tree, there may not be much drip. So we'll talk about that more. And you can see there's a tree with about 30-somewhat inches in diameter with little samples where I'm sampling the water coming down the tree trunk. If I tired to catch all the water coming down the tree trunk, it would over flow my rain gauge. So I just collect a sample of it and extrapolate to the circumference of the tree.

Sometimes we just put rain gauges out by themselves in large numbers here under the Eucalyptus stand. Some of these were only short term to get a comparison with the nearby Cook Pine because we didn't have enough gauges to just put everything everywhere all the time. We also looked at guava. Here we're studying water flow under guava with troughs. There's also a little stem flow device there. And this is like near a Cook Pine that we were also sampling.

Here is the typical rain fall. This is the rain fall for Lana`i City. The red bars or brown bars or whatever color they are, is the long term average monthly rainfall. So it peaks in January and then it goes down in the summer, and peaks again the next January. So that's the same. That's just the long term average. The blue lines are the Lana`i City rainfall over the period of our study, from January '07 to July '08. And you'll notice in particular in April, May, June, July of 2008, there was more significant rainfall in Lana`i City than say in June, July and August of 2007, which was an unusual dry year in the summer time. We always had the big winter storms in November, December of 2007, and I'll talk about that. But the point is we got some better summer data in terms of average conditions in 2008 than in 2007, so I feel more comfortable about talking about the average fog situation having this two years rather than just one.

Here we see the blue is – now we're up on the Hale. One to seven are the seven stations I have along the Munro Trail. One being the east Awehi, and seven being in the west. And you'll notice the rainfall, the blue – this up on the Hale now, not in Lana`i City – the rainfall over that three or four month period was around 10-inches, 12-inches, 9-inches. It didn't vary too much along the Hale for those several months. That's a combined rainfall. But notice the fog gauge output, how dramatically different it is say between station #6, and #5 and #4. Now this is not dripping under the trees. This is the mechanical fog gauge. But notice where Eckern's site was in the '50's. The high elevation sites where he wasn't at were the one that were getting the incredible amounts of fog in the mechanical gauge. Now your question would be so what mechanical gauge, I want to know what's happening in the trees. Okay, here it takes just one station, station #4, which is about 3,000 feet. And again, I'm just showing you bits of the data. I'm not trying skew it in any particular direction – just to show you what's going on. This is more or less the summer of 2007. The dark brown is rainfall. The blue is fog in the open site fog gauge, the mechanical collector. And the lighter-brown is the Cook Pine thru fall right near where the open rain gauge is within 50-feet. You can see how dramatic, for example, in June of 2007, there's almost no rainfall, but there was 200 millimeters, that's about eight-inches of water underneath the Cook Pine. Many times, look at July. 800 millimeters is about 30-inches of water under the tree versus less than two-inches, or less than one-inch in the open rain gauge nearby. So you can see the dramatic differences far exceeding anything that Eckern found at this 2,750 foot elevation site.

Now again I'm taking an exceptional month here. Exceptional in that there was very little

rainfall. This is station five, October 2007, notice we have hourly data so we can know exactly when it was raining to the hour. What days when it wasn't. The rain gauge out in the open had rainfall two days out of the month. The fog gauge had fog in it, or water, 23 days out of the month. And the tree was dripping 21-days out of the month. Now the total rainfall for that month was 3.3 millimeters. That's just a little over a 10th of an inch. It's almost nothing. The fog caught 104, that's four-inches and under the canopy of the Cook Pine caught about 12-inches. 12-inches of water under the Cook Pine. 50-feet away there's a rain gauge that catches 10th of inch in that month. Under the canopy, 89.9, 90 times more water hitting the ground than in the open 50-feet away. This more dramatic. The best Eckern found in the '50's was in a low rainfall period. They got 13 times more water coming off the tree. Why? They were at the wrong elevation.

Now what we were trying to do up there was to build models because it's expensive and hard to measure all of this stuff. Tree limbs are falling down on your gauges. All kinds of stuffs are breaking down. They don't like it, it's so wet up there – the electronics are always going nuts. Anyway, if you take this month and you plot the rainfall for each day or each event against the fog drip for each day or event, well, then you get this. Here's rainfall plotted against what happened to the Cook Pine tree. There's no real useful relationship because there's only two days with rain. You can see the two dots over on the left. But there's a lot of days with fog drip. So what's the take home message here? The rain gauge tells you very little about what's going up on the mountains. But if you use my patented fog gauge. No it's not patented. My wife wonders why it isn't and why I give them away. That's another issue. Now this fog gauge out in the open during the same month, when you plot the fog from the mechanical gauge against the Cook Pine thru fall, you get a very good relationship and you can accurately predict what's happening under the Cook Pine. Of course you have to measure both for a while, but we get a very good relationship. So this is helping us to address the future up which maybe at least in some term putting a couple of more rain gauge so we don't have to do the elaborate study we've done now. But keeping a few things up there that can tell people what's going on in terms of fog and rain without doing all the detailed measuring because you've built a simple model. A mechanical fog gauge tells you what's happening under the Cook Pine.

Now here's really the take home message. This is actually the last slide of the presentation, but we're not at the end of the presentation yet. But let me show it to you again. The left hand side is the amount of water in the soil. This is what it comes down to. The water has to get into the soil before it can get into the ground water, before it can recharge. What can happen to it? It can evaporate away from the trees. It can run off during heavy storms into the gulches. The black line represents about a month, November 11th to December 11th, 2006. The black line represents the soil moisture under the trees, under the Cook Pine. You notice the value is like three, four, four and a half – four and a half what? – inches of water per foot of soil. If you think you have foot deep of soil, can you put a foot of water in it? No because it's taken up by the rocks and minerals that make up

the soil. But it has lots of spaces in between. The most amount of water you can put in a soil is about three to four inches. Those soil under that tree for that entire month was completely saturated. Like a sponge, it was completely full of water. What's happening? Water is dripping out the bottom of that sponge down into the basal aquifer – not basal aquifer – the confined upper aquifer.

Now look, right near by, 50-feet away, under some kiawe bushes or grass just in the open, you see these big spikes, that's when it rains, and the soil fills up. But notice it drops immediately because the water evaporates or goes into the ground water. So that tells you just in this one site the tree soils are saturated and they are continuously recharging. The open soils are evaporated into the atmosphere, running off – there's some recharge clearly during those spikes, but this just gives you some idea how these trees are just like a permanent faucet, dumping water into the soil and ultimately into the aquifer.

So what we did, we sorted all this out and took all kinds of measurements, which I'm not going to bore with 1,000's of slide. I'm already up to 100's already. But anyway, we took this area and we broke down the water shed into different altitude belts. Here it is – everything above 2,100 feet elevation. And then we broke that down to the 200 foot elevation. So 2,100 to 2,300, 2,300 to 2,500, 2,500 to 2,700, and so on. You can see where Eckern's site was, the red dot. But the really green area is where the fog is happening. Then we said, let's be really conservative so people don't beat up on us and think we're just producing whatever somebody wants. Let's take all of that watershed that's leeward of the summit ridge. Now there is fog in that area, but it's not very much compared to the windward side. So let's just dismiss it entirely and say it contributes to nothing. Now that's being super conservative. We know there's some fog in that area. But we're saying let's be conservative. Let's try get a number that is conservative in terms of fog addition. Now once we get this area, then we broke it down. You can see the left hand side the different altitude areas. There's 90,000 acres on this island. And this island only has 1,350 acres between and 2,100 and 2,300 feet. Anyway, let's skip across that over toward where it say the study area, and that's the percent of the study area at these different elevations. There's only 6% of the study area above 3,100 feet, the very top of the area. How big is our study area? 4,388 acres. That's 4.6% of the island. But of that study area, you can see 100% how it's broken down. Only 6% is above 3,100 feet. And then if we cut off the leeward side and only look at the windward acres, now we're down to 2,600 acres, 2,700 acres. And that's the percentage. Only 4% of that 2,600 acres is above 3,100. So the point here is that even though there may be tremendous fog in that area, it's only a small part of the water shed.

Ms. Kaye: Before you get too far along that, I want to ask you question on the slide.

Dr. Juvik: That one back there? Sure.

Ms. Kaye: Go back one more, one more. Okay. With the (phonetics) that you've eliminated correlate to the division in the aquifer itself between the windward and the leeward side?

Dr. Juvik: More or less, yes. But it's not that easy because some of those dykes and so on cut across windward and leeward, so it's not that quite that simple. But essentially yes.

Ms. Kaye: Thank you.

Dr. Juvik: So this graphically shows what was on that previous slide. Between 2,100 and 2,300 feet, there's 38% of the sample area, but there's only about 15% when you just take the windward side. So I'm reducing our fog input area to something reasonable. I'm not trying to extrapolate at the areas where I don't know anything like on the leeward side down slope. When air starts down hill it warms up. When it warms up, it doesn't produce as much fog and mist, so you're looking mainly at fog on the windward side and on the summit ridge. Now this is fairly important. This is just taking summer 2008. The pink line at the bottom is the rainfall through the summer at these stations going from east to west. As you notice, the rainfall is almost nothing at Awehi, station #1. The end was something like five or six inches for the whole summer. And then the black line is how much the Cook Pines caught for those same months. And you can see station #4, 40-plus inches compared to maybe five inches for station #4 rainfall.

Now this just takes one station, winter precipitation at station #4, we had 297 days in the winter and you're immediately saying there aren't that many days in the winter. Well, we have two years of winter, so we had 294 days, 244 events. So because we have hourly data, we have every event we can analyze it to death. And you can see during that period of 297 days there was 15 inches of rainfall at station #4. The fog gauge caught 103 inches and the Cook Pine caught almost 200 inches – 12 times the rainfall. You see that? That was winter, and winter is suppose to be the bad fog period. Now here's summer – nine inches of rain, 86-inches of fog, and 164-inches of thru fall – 18 times rainfall – Cook Pine thru fall. Now if you take that data and you plot it up, rain against fog, each event, it looks like nothing because the rain doesn't occur when it foggy. Sometimes it's foggy and there's no rain. Sometimes it rains and there's no fog. So the rain and fog are not closely related, which means the rain gauge won't tell you what's going on the mountain. If you plot rain against thru fall, rain in the open against the Cook Pine catch, no relationship, irrelevant, no model. But if you plot the fog against the thru fall, you can explain pretty much what's going on under the canopy, and that's what we've been able to do at these different sites.

One more to just trouble you for a second. This is station five. I threw this in because we're also measuring guava thru fall. So you can see left rain, middle fog gauge, blue Cook Pine catch, and in this particular winter season, it only caught about three times the

rainfall. But notice the guava was catching less than 100% – 80% of the rainfall – which is typical for plants that don't intercept fog. When rain falls on them, some of the rain sticks in the trees and evaporates back into the atmosphere until you typically get less rain under a non-fog catching tree. Here's the summer, and again, the same situation. I'm almost to the end here. Again, we can predict with great accuracy using the fog gauges and the rain gauges in the open what's happening under the Cook Pine. And r^2 of .96 means that 96% of the difference in Cook Pine thru fall can be explained by rain and fog measurements outside. We know we can predict what's going on under the trees, so you don't need to set up these elaborate systems under the canopy once you've done it for a while and built the models.

Now where are we right now? This is looking at the gulches from the north side. We've got some imagery which we're trying to do now is to map where the various Cook Pine areas are, how extensive they are – some areas you'll notice in the foreground, I've got a nice light on that flight, so you can see the shadow of the mountains. The trees are visible there on the ridge coming down from the Hale. But then if you look on the ridge itself on the background, you can see that the trees are pretty beat up. So you have to map these trees and also map some degree of the quality of these trees if you want to estimate what they're catching. Again, lots of good trees in the foreground, but they may be too low to catch as much fog if they were good trees on the summit ridge.

So we're now in the process of categorizing these trees. Are they good trees? Happy trees? Tall trees? Fog catching trees? Or are they dwarf, broken, bent, and otherwise unhappy trees? And because that will determine how much water they catch. Now here's sort of the bottom line. If you go up to the upper Hale and you take a Norfolk or Cook Pine tree, annual rainfall is about 40-inches. We're also measuring evaporation and transpiration, they send about 25-inches back to the atmosphere because that's how plants stay alive – they evaporate. When you perspire, you go in the shade. The tree is the shade. The tree can't go in the shade. So it has to deal by evaporating water, about 25-inches a year. Then there's run-off. And in rainfall, we tend to get big storms once in while with a lot of run-off. We calculated run-off at about 25%. Because of these big storms, we get a lot of run-off. That means up there, just based on rainfall, only about five inches goes into the ground on an annual basis under one of these trees if you consider those losses, the 25 and the 10. Now add to that up there, 600-inches of fog drip which we're measuring underneath the tree. Now, the nice thing about the fog drip, it doesn't have very much run-off because it's just drip, drip, drip, not torrential rains. You're saying well then how come you said 30-inches of run-off and only 10 for the tree? Because we're assuming 5% of 600 – 5% run-off that's the 30 inches – there's so much more as oppose to 25% of 40, the 10-inch run-off for the rainfall situation. So you can see here a tremendous addition of water in the right area on the Hale.

Now this will tease your brain for a while. But I just want to emphasize this is the same

thing taken before. Basically on the left is what happened in that tree that I just showed you when it's raining over a year. If you assume that we have 170 acres up there above 3,100 feet which is getting this torrential amounts of fog, that translates to about 62,000 gallons per day for that one little part, for that relative small area of 170 acres. Now if you add the fog drip, it comes to about 261,000 gallons per day, which struck me was what the hotel uses everyday just down at the beach from 170 acres up on the mountain. Now obviously not all that water is going to end up down at the hotel. But the point is there's a tremendous amount of water entering the system. Now where it all goes underground is for your hydrologist to explain and how much is stored. Because some of it can go down to the ground water and be lost out to sea and mixed in the coastal waters. But the difference here – now this assumes that there's a 33% canopy cover in that area. It isn't. This is potential fog from that area. I'm estimating. I just took this one little area because we have better data here. It looks like the tree cover is probably about 10%. So if you take 1/3 of 33, that's still over 60,000 gallons even with the low cover. I'm assuming 33% canopy cover. Let's cut that down to 10% and the 261 would cut down to 70,000 or 80,000 gallons per day for the existing situation which is still more than the rainfall. Now remember these are added. You add them together. You get the rain and the fog together.

Now just to finish, people are concerned about global warming. I've been working in Costa Rica. One of the concerns is as the earth warms up, the trade winds warm up, the ocean warms up, the cloud base may go up, the base of the clouds may rise because the warm air will have to go to a higher elevation to get cool enough to condense and form clouds. And that's what happened in Costa Rica. Basically as you can see there, on the top diagram, the clouds are forming at a low elevation. And the lower diagram, the clouds have moved up, and that's because of potential global warming. Can that happen here? Sure, it can happen any where in the world. Now this is just an example of what's happened on Mauna Kea on the Big Island. During the ice age, 20,000 years ago, there was a glacier on top of Mauna Kea, and it was colder. And all the vegetation zone, the Mamani zone, the Koa zone, the Ohia zone, they all went lower down the mountain. That's on the left side of that left hand diagram. But now they've moved back up to higher elevation. We can study this with pollen. On the right, you'll see a pollen grain. It looks like a waffle. That's a pollen of Koa. We did a sample in Kaau Crater in the back of Pololo Valley where we got 20-foot muck out of a swamp. And there we found that 20,000 years ago, there were lots of Koa pollen. So we know that the vegetation zones do move up and down during colder and warmer periods. The question is how is that going to affect the Hale.

In Costa Rica the famous case there in Monte Verde they have the golden toad. It was discovered in 1967, it's the logo on all the tourist's t-shirt you buy at Monte Verde. The only problem is it is extinct. Of course then that way they're like California with an extinct bear on their flag. But anyway, this thing went extinct, and the reason it went extinct is because they didn't have one of my fog gauges there. If they had known the fog was getting less, they could have saved these frogs by putting them in a higher location or whatever. But

they only had a rain gauge which didn't measure the fog, and the rain was staying about the same. But the fog season which sustained these amphibians during the dry period was disappearing, and they just didn't notice it. Just if you asked the average person how many days out of the year is there clouds up on the Hale. Most of us don't pay attention how many days. Well if you had logging devices up there, you could know if you're losing fog cover. And I think that's important here, just as it is in other parts of the world.

So my final slide again, just coming back to this. Under the trees, the ground is saturated. Saturated water is moving downward. In the open areas, you get spikes of rainfall, the water returns to the atmosphere. So in the case of the Hale, we're getting tremendous amounts of fog in certain selected areas. This is only a provisional - I got to extrapolate this to the whole watershed, and it's not going to be as great at lower elevations, than at these higher elevations, because there's less fog and there's less trees. Most of the Cook Pine are above 2,500 feet. But we know that there is a substantial amount of fog that reinforces. It looks like the situation has not changed much from the '50's because the water we're catching below and above the Eckern site represents comparable amounts that he found there 50 years ago. Thank you for letting me run on endlessly here.

Ms. Kaye: Dr. Juvik, could you just tell us when and what publication your results – when will you be finished and when will they be available?

Dr. Juvik: I'm expecting to have our final report for submission to Castle & Cooke within the next three months. Mostly now, it's just laboratory and computer work to finish the air photo interpretation and produce a spacial summary of our results. So I'm hoping to have that done within the next 90 days or so.

Ms. Kaye: Before I forget, you showed us a slide of guava with some gauges underneath it, and that was not dense. So I'm going to assume, per Jay Penniman and his appearance before us last month, that the denser it is, the worse it is in terms of–

Dr. Juvik: Here's the problem with guava. Every tree evaporates water up in the atmosphere. If you have a lot of thin stems, then a larger proportion of those trees are the active cambium that is actually taking water up. If you have a huge big tree like the Cook Pine outside of Koele Lodge, most of that is dead wood in the middle. It's just the edge that's drawing water up. So, yes, guava evaporates a lot of water. And any plant where you have lots of stems per acre is going to evaporate more. So, yes, and obviously the denser the stem, the less fog because the air can't get through it to bring new air and moisture into the environment of the leaves.

Ms. de Jetley: Doctor, may I ask you a question? Dr. Juvik, have you ever consider maybe doing a study at Palawai Basin because early in the mornings there's always a really, really dense fog bag covering the Palawai. And it's there almost year round, so it could be

potentially another source of water for the island if we could plant the whole interior of the Palawai with Norfolk or Cook Island.

Dr. Juvik: Now it's my understanding that the fog at Palawai Basin is a completely different kind of fog. It's called a radiation fog. I was born and raised in Sacramento, California, where during the winter we have these fogs that just sit there. They're not moving. The air isn't moving very much. Now you can have a very dense fog, but if the air isn't moving, you're not fluxing a lot of vapor through the system. And so a radiation fog looks impressive in sitting there, but simply building harps or putting trees there, unless the air is moving fast through that area, which I'm not sure is the case, I've never seen the fog in the Palawai Basin. Is it fast moving air, or is just sitting there?

Ms. de Jetley: When you drive through it, it's at least 10 to 15 degrees colder than the surrounding air.

Dr. Juvik: Well that's why it's there in the first place. It's like if you put a glass of ice water on the table, you get all kinds of – it took me years to figure out maybe the glasses weren't leaking – basically the ground gets cold, the basin gets a little cold in terms of air, and then the water condenses because of the cold temperature. But I don't think it's because the air is blowing through the area. Now that doesn't mean it isn't a potential water source, but I'm not sure that – because that's there usually in the early morning, right?

Ms. de Jetley: Yes.

Dr. Juvik: See the nice thing on the Hale is the fog is there during the afternoon when the hottest sun when most evaporation would take place. So it actually dampens down the loss of water in the atmosphere by having the clouds. When the fog at Palawai disappears in the morning, and it's still super hot there an hour later, and the plants, what are they going to do? Okay, they're happy during the night and the first hour in the morning, but I'm not sure that's the same kind of situation and whether you could capture significant water by planting trees in that area. I'm all for planting trees anywhere but I'm not sure that would greatly augment your water supply in that area.

Mr. Rabaino: Ever since they planted the Norfolk Cook Pine there, we've noticed that there's clouds there, but also the rain is starting to show up in the basin area on certain times of the week.

Dr. Juvik: There's a huge literature about the anecdotal comments about whether rain follows trees. If you plant trees somehow the water with rain will show up. I would say that all the water that falls on this island, comes off the ocean basically. I mean, in terms of the island size and the ocean size around it. That's not to say it can't happen, but I'm just skeptical because these statements are made by scientists, by everybody, who planted

trees and it rained more. Well maybe it just looks greener or something. I don't know. I mean, this is like people told me in south Kona it rained more when they were little kids. I say, well, maybe you're only three feet tall and the rain was up to here, and you thought it was a lot. So I'm not trying to dismiss your question. I'm just saying, there's no obvious reason in a small area. Now over the Amazon, as the air comes over the Amazon from the Atlantic, it picks up moisture that's evaporated from these vast forests, and it produces rain on the slopes of the eastern slopes of the Andes. But here, we're talking about tiny little areas. I'm not sure how much rain can be attracted by small bunch of trees. But plant trees. Yes sir.

Mr. Gamulo: So the Norfolk Pines are the best trees for catching water?

Dr. Juvik: Well, any of these are. As I say, people keep telling me Cook Pine, Norfolk Pines, but these types of trees all around the world seem to be the best at catching fog. You're right. We've done a little work under Ohia and stuffs up here, but these don't get tall. They don't have the right architecture. Now, one of my recommendations to Castle & Cooke because they have restoration efforts going up on the mountain, and not just planting more Cook Pines, their forest recovery plan does allow them to plant more Cook Pines, but they're also trying to re-establish some of the native species. We may be able to catch some water under Cook Pines and send it down hill, maybe 500 feet, with drip irrigators to irrigate some native planting, and native plants in slightly drier areas. So I think there's a potential in addition to just recharging the aquifer, to actual use some of this water knowledge to encourage restoration in the native eco-systems out there in conjunction with the Cook Pines.

Mr. Gamulo: So did you compare only the Ohia? What about Koa and some of the other forest trees that were there that are now gone?

Dr. Juvik: No, largely because –

Mr. Gamulo: You don't have those.

Dr. Juvik: Well, there's the odd trees. There's Koa trees up there. There's Ohia's, but they are lone trees buried in the mixed of guava and so on. So our role, our first goal here I think was to see what the water shed is catching. The water shed is primarily alien species at the present time. But I just gave your Chairman a book on endangered plants that I just published on the Big Island. So I do a lot of work on native eco-system restoration. Now I see some possibilities. Anytime you can catch water at high elevations, you've got so much going for you because all you need to use is gravity. You get it down to other spots for irrigation or whatever.

Mr. Gamulo: I've got one other question.

Dr. Juvik: Yes sir.

Mr. Gamulo: Your screen catches water pretty well.

Dr. Juvik: Yes.

Mr. Gamulo: Why don't you just plant screens?

Dr. Juvik: That was the plan at Kahikinui on the back side of Maui where the Hawaiian Homes were developing some sort of subsistant subdivisions. We were looking at the possibility of putting up giant screens to catch water. And then somebody said, why don't you just sell advertising on the screens? Well obviously putting screens across the Hale, I think, would upset a lot of people no matter how much water was collected especially with advertising.

Ms. Zigmond: I have a question. You said your report will be completed in approximately three months. Does that mean that your study is going to be done – all those gauges, et cetera are going to be going away?

Dr. Juvik: Of course academics and consultants always try to figure ways to extend their projects right. I am going to suggest to Castle & Cooke – there was a rain gauge up there for 50 to 60 years, and the rain gauge isn't there anymore. It was just a manual rain gauge, and it's a shame. There should be some monitoring of rainfall and I'm going to suggest that they leave a couple of fog gauges. We don't need all of that elaborate true or false studies. I think we pretty much documented what's going on. But, I'm interested in, again, from the climate change, from the long term perspective, it's in Castle & Cooke's interest, it's in everybody who lives on this island interest to know what's going on. This stuff is now so cheap. I've got automatic weather stations all over the world. I just put one into Ted Turner's ranch in New Mexico. And students can log in. It feeds through a satellite, and it down loads to a website. I can see right now, if I've got my computer, what's happening at Ted Turner's ranch. And it's like \$200 a year for the satellite link up. So I would argue that Castle & Cooke should want to know what's going on in that watershed. And there's no reason they shouldn't be completely transparent and let everybody go to the website and see what's raining or fogging up there because I think it's in everybody's interest. And if things start to change, you want to know that as soon as possible. Not one day you wake up and all of sudden the cloud is not there, and you say oh well it's just clouds. Well we're telling you the clouds are what's producing significant rainfall in those areas. And there are other places in the world that have already that have been impacted.

The situation in Monte Verde, Costa Rica is a little complicated because they cleared all the low land forest on the windward side of Nicaragua near Monte Verde, Costa Rica. And so part of the charge may not be global climate, but must be local terrain issues, heating

because of different vegetation. So these things are always complicated by multiple factors. But global climate change is something that could impact . . . (*Changed cassette tapes*) . . . keep track of what's going on the water shed would seem like a reasonable thing to do.

Ms. Zigmond: I would hope we would continue. I think it was Gordon Tribble who said that our climate is getting less certain, yet we're losing the ability to keep capturing information because of lack of funds for continuing studies.

Dr. Juvik: On the Big Island, we had hundreds and hundreds of rain gauges that were on the Big Island 50 years ago because of the plantations kept all the rain gauges. They were really interested. But then they disappeared and their rain gauges disappeared and nobody replaced them. I know foresters who were working in the '20's, they rode on horse back all day to get to rain gauges onto of Walaai. Now if there is no road there, people don't go there anymore. So we're losing information – you're right – all over the place. All over the world and all over Hawaii. You're right.

Ms. Zigmond: And one more. I think we've heard a couple of times that the layer of fog keeps getting higher.

Dr. Juvik: It has gotten higher. I have no documentation that says it's getting higher here in Lana`i. I think the results from this study are consistent with what Eckern found at that elevation where he was working. So I can't say that anything is changing here. But I can say that there is concern about change all over the world, and that we should be concerned about it here. Because as I say, if the cloud belt rises 200, 300 or 400 feet, is that going to affect West Maui very much? No, maybe they go from 400 inches of rain down to 300 inches of rain. That's not much very difference. But here, if you go from 40 inches of rain and a lot of fog, to 30 inches of rain and not much of fog, you're going to feel it super big. So it's all about the relative change and the absolute amounts of precipitation we're talking about. This is the only inhabited island – we'll Niihau – where the rainfall in the highest part of the island are so minimal – the actual rainfall. As they say, Moloka`i you've got 200 or 300 inches of rain up at the summits there and so on and so forth. I can out last you. More questions?

Ms. Kaye: I have a couple.

Dr. Juvik: Sure.

Ms. Kaye: I think one thing that Gordon Tribble said from USGS when he was here was that to really be predictive you need to have a five to ten year period.

Dr. Juvik: I would agree.

Ms. Kaye: Okay.

Dr. Juvik: Could I just make one point. I don't think you need five or 10 years of measuring what's happening under the trees. I think you can establish that relationship pretty quickly with the fog gauge and the thru fall. But you're right, we definitely need better data up there. I mean there's no consistent data being collected up there except for the study at the moment. So, yeah, absolutely.

Ms. Kaye: So having said that, my question really is that if climate change does raise the inversion level.

Dr. Juvik: Cloud base level.

Ms. Kaye: I'm sorry, cloud base level. And I know anecdotally that many of us who have been, over long stretches of time, have found far more dry Kona days, which is just didn't happen back in the '70's. I'm going to wrap this up, do you think that what you have done when you're finished will be more of a guide book for how to maximize the fog drip up there than it is to predict how much there would be going forward?

Dr. Juvik: The terms of my contract were not only to do these measurements and come up with some estimate of the current water yield coming out of the system, but also suggest restoration efforts on where it might be good to plant more Cook Pines or where it might be good to do something. So certainly, I'll do that. But also because of the interest in restoring that upper area in terms of native eco-systems, even though those native eco-systems might not be as good fog catchers, they are still important to the cultural and biological history and resources of this island. So I'm going to make some suggestions as I've said about possibly using Cook Pine water for irrigating native eco-system restoration. And I would definitely make some suggestions about long term monitoring up there which is not particularly expensive for a few automatic rain gauges and so on. So yes, I think I'm going to suggest that they put two monitoring places in. One at the top just to see how crazy amounts of water come in, but also one at this area between Eckern and the next site where that's where you'll start noticing in change first, at the lower elevation so that you can sort of compare the ratio of those two over time.

Ms. Kaye: And if this was so helpful and very instructive and I should've stopped you, but at one point you talked about different elevations and where your stations are, is it appropriate question to ask is there an elevation range that was more efficient?

Dr. Juvik: Absolutely.

Ms. Kaye: Which one was it? I'm sorry.

Dr. Juvik: I emphasized the top of the mountain. The 178 acres above 3,100 feet as the winner. And the fact that it was so ridiculously more fog output than Eckern's study, that you could say well the clouds are better now than they were 50 years ago. But remember, they were measured at different elevations. I'm just getting warmed up. Yes?

Ms. de Jetley: You know I've lived on Lana`i a very, very long time, and when I was a little girl back in the '50's it seems as if the town itself was always filled with fog in the early evenings and into the night. And now, we're losing a lot of our trees through the town. Do you think the reason it's not as foggy is because we may have lost too many of our trees? Last year alone, you know, over the last two to three years, more than 300 trees have been removed, from what I've heard. And as you go through the town.

Dr. Juvik: Are you talking the pines, right?

Ms. de Jetley: Yes. All through the community now, we're losing all of our trees, so is that having anything to do with it?

Dr. Juvik: One thing you have to be careful with here is there is something called cohorts and essence. In other words, if you plant all the trees at one time, 50, 80 or 100 years later they all start dying at the same time which may have nothing to do with -. Now if you're talking about seeing more fog 50 years ago. I'm not sure. In other words, were those trees like in the park or near the shops there - were they dripping water all the time and they're not doing it anymore?

Ms. de Jetley: It's just that you couldn't go out at night without having all of the streets just filled with fog.

Ms. Kaye: And I would agree with Alberta.

Ms. de Jetley: And that's not happening now.

Ms. Kaye: Even in the '70's that was true.

Dr. Juvik: Well that would suggest something is changing obviously. But I don't think - that fog should've been there whether there was trees there or not, I would think, just like at the Palawai Basin, right. I'm not sure. I'm uncertain of what's going on in that situation. It suggests that there is something has changed. The temperature has changed, so the water isn't condensing at least in this lower area. Something is happening in terms of air coming over the mountain perhaps. I'm not sure. But you have the benefit of appreciating these changes that have taken place. And my only concern is I'm not sure that things down here in the lower areas and in the basins, for example, are manifesting the same process as that are operating on the Hale. And I don't know exactly what's going on down

here in terms of temperature change and so forth. We could certainly look at – excuse me – there’s a lot of temperature and other data for Lana`i City itself. One could look at trends over time in rainfall, temperature, solar radiation, and so on and try to see if something is changing. Maybe it’s pretty subtle, but enough to –. Remember it takes a ½ a degree or so to change something from condensing to non-condensing, so it may not take that much.

As far as the death of the trees, I don’t know. It could be again just lack of water. But again, remember, the trees are taking up the water through the ground. Even though the leaves are dripping, that’s not where they get their water. They get it out of the ground. I mean people try to convince you to spray your house plants with nutrients and water and so on. The leaves aren’t taken up anything. It’s all coming up through the roots. So I don’t know. I can’t offer a clear explanation of what you’ve seen over the last 50 years or so in terms of fog or tree death here in Lana`i City itself. Sorry.

Ms. Kaye: Any other questions from the audience or Commissioners? Thank you Dr. Juvik.

Dr. Juvik: Thank you.

Ms. Kaye: Is it possible to get a copy?

Dr. Juvik: Absolutely.

Ms. Kaye: Wonderful.

Dr. Juvik: All to the Commissioners.

Ms. Kaye: Well, actually, if you send to me, I’ll forward it to everybody, but the Planning Department tries to keep a copy.

Dr. Juvik: I don’t think there will be any problem. I mean, this is material I’m preparing for Castle & Cooke. But the fact that I’m giving this presentation is public, so I’ll just make sure that is alright.

Ms. Kaye: Actually, the Planning Department is the proper recipient, and they make copies and send it to us.

Dr. Juvik: I certainly have no problem.

Ms. Kaye: That would be great. Thank you so much.

Dr. Juvik: Thank you.

Ms. Kaye: Next, we're on communications. I'm sorry, Department of Health. I didn't know we had someone. I was not informed. Great! Why don't we take a five minute break.

(The Lana`i Planning Commission recessed at approximately 8:40 p.m., and reconvened at approximately 8:45 p.m.)

Ms. Kaye: We're back in order. Next we have Stuart Yamada from the Environmental Management Division, State Department of Health, who's going to give us a presentation on safe drinking water.

Mr. Stuart Yamada: And I promise to be brief because I know how exciting it is talk about regulations, especially this time of the day. Thank you for having me. Basically, I want to explain what the role of the Department of Health so you understand our involvement with water. Essentially we ensure that public drinking water supplies meet all applicable drinking water quality standards. In other words, we enforce the safe drinking water act which is federal law. What are the water quality standards? Well there are approximately 85. It depends who you talk to. Talking to EPA is kind of like talking to IRS. You sometimes get different answers, depending on who you talk to. Most contaminants have what they call maximum contaminant levels. In other words, this is a not to exceed level above which its normally considered to have some sort of adverse health effect. On the other hand, other contaminants are addressed to what they call treatment techniques because they're too difficult to actually test for. To strain your eyes and to test everyone's eye site, this is the list of contaminants. You can pick out your favorite. You know, they're quite different – there are microbiological. There are inorganic. There are what they call organic compounds and radio-nuclei. So like I said, you can pick your favorite, but bottom line, it covers quite bit. But as you know, this barely scratches the surface of the compounds that might be out there. But basically this is what the federal government has deemed as the most significant.

Ms. Kaye: So if we added all those up, that would be the 85?

Mr. Yamada: What's that?

Ms. Kaye: If we added all those up, that would be the 85 you were talking about?

Mr. Yamada: In general yeah, but you see what happens is – what I'm saying it's vague. They say certain rules address certain contaminants, but it's indirect. So for certain systems, like on Maui, they use service water. They say it addresses a whole spew of contaminants, but you don't actually monitor them.

So on Lana`i, you basically only have two systems – Lana`i City and Manele Bay – obviously both are run by the Lana`i Water Company. The obvious question you would ask

the Department of Health is does the drinking water meet standards? And you know the answer is obviously yes. If not, by law, they are required to notify you, as their consumers as well as the Department of Health. And the way they do this primarily is through consumer confidence reports. These reports sums the quality of drinking water for the proceeding calender year. Community water systems like Lana`i City are required to provide this report by July 1st of each year. They are also required to distribute. I believe they mail it to all of the consumers, and they also post it in public places. Unfortunately, I tried to scan their report, but it didn't come out, so please forgive me. I had to take the excerpts. Basically, this is an outstanding report. We don't grade. Understand, we don't grade water. You either meet standard or you don't. In the case of Lana`i City, it easily meets standards. The consumer confidence report is responsible for notifying you of whatever has been tested.

Sorry. Amateur. Chromium – this is barely above detection level. I think it's found only in one pump right now. But this is not a big deal. This is commonly found throughout the State. The most significant contaminant typically is nitrate. This is naturally occurring, but can also be exacerbated by past agricultural activities. But I'll show you another chart, but this is actually very good. Chlorine and these other goodies, tri-helomethanes, celocyclic acid, are basically a disinfection products. So chlorine is something that's added by Lana`i Water Company, like most water utilities, basically to control bacterial levels. But all of these are low, and I'll try to illustrate this for you. I did this for a recent presentation for the Water Resources Research Center. Essentially this is a pot of the most recent nitrate values throughout the State. So for Lana`i, you're even less than one. The majority of sources are less than one. And this really shows that in this area, this is only natural nitrate that is occurring. When it starts getting towards this side, you can be pretty certain that, you know, there's heavy ag activity in the past that raised the levels. But thank God, no where in the State, is it at the maximum contaminant level which is 10. But that's just to give you an idea. The Lana`i Water actually is a very high quality. When you look at it, this is the most common contaminant that we regulate that's found, you know, throughout the State. And thank goodness, in Lana`i, it's quite low.

So, that's why my presentation is really short because actually in Lana`i water, we don't really find much. So I'll be open to any questions that you may have. You know, a lot of people think our job isn't very important because a lot of times we don't detect anything. But, you know, it's important that the water supplies be monitored. You can not assume it's always going to be the same. And so that's why we do this, and also Lana`i Water Company also does testing too. So testing is the only way to verify that your water quality is safe. So I think you can feel very comfortable with what you have here. And really, that's it, and I'll take any questions.

Ms. Kaye: Commissioners?

Ms. Zigmond: Yeah, I have a question. How often do you test and what do you test for?

Mr. Yamada: Good question, and unfortunately, a very complicated question. It varies depending on contaminant. It depends on the occurrence. The most typical is chloroform bacteria. That's tested on a monthly basis for every system. Things like nitrate that we focused up on there is monitored annually. Most of the other chemicals are monitored typically once every three years, but it can be spaced out. But, you know, if you have higher detection, then you increase it. You would go to quarterly. But obviously on Lana`i, with almost nothing detected, it's not very frequent in general. But, you know, I know that sounds like a real gibberish answer. You know, water testing is very expensive, and the Federal government recognizes that, and they recognize that when you work with ground water, as you have here on Lana`i, it tends to be much more stable. So in other words, the necessity of continually testing everything all the time is not really cost effective or necessary. I hope it kind of answers that.

Ms. Zigmond: I remember a while back, we attended a presentation that talked about the quality of the water, and I know myself and I think some others were surprised to find out that the numbers on that report were really old, like it wasn't reflecting the current status because various tests haven't been done for a really long time.

Mr. Yamada: That's a really good comment. In terms of that consumer confidence report that Lana`i City puts out, and all water utilities point out, they're required to put out the most recent data. So in some cases the data could be three years old or so because that was the most recent. But, you know, it does, the most common things that are reported are the chloroform bacteria because that's monitored monthly.

Ms. Kaye: Can I follow that up with a question? Very specifically, the gentleman who was in charge of the Water Company here two years ago came to the Planning Commission, and gave a presentation and we only discovered we had our annual report that in some instances some of substances were tested once in the life of the well. And so while they were reporting the results, year after year after year, it wasn't until that evening that many people in the room understood that in some cases the results were 10 to 15 to even longer. Is it in your – and we were told that's all the EPA requires. But in your experience do other reports, annual reports, indicate that so that you're aware of which ones are tested for an annual basis as oppose to those who are not?

Mr. Yamada: I think by law, they're not required to necessarily to report their frequency of testing. But, you know, that is a good point. And part of the report is that the water system has to offer a contact that you can ask questions. And that's a valid question. I believe the longest, legally, that you can go without testing is like nine years, and that's for the so-called radio-nuclei because there's something that generally doesn't change very much. And unfortunately, he's also very expensive. There's technically no in house state

capability to analyze radio nuclei. Basically water systems have to ship them out. But not to make cost a total excuse, but the EPA looks and figures those kinds of things don't change dramatically year to year. And that's where they're doing it. You know, things beyond 10 years, 15 years, that's a little hard to stomach. Quite honestly, that's hard to believe.

Ms. de Jetley: I have a farm near the airport, and I've using untreated potable water for six years, and part of a food safety study one of the requirements was that the water had to be tested. And I was really, really pleased to hear that the water that we are getting untreated is absolutely the purest, cleanest water that you can find in the State. And then I was told that that particular well that I'm getting my water from was voted as one of the top, best tasting waters in Hawaii. So I was really, really please to hear that. But my test was done at the University of Hawaii as a totally independent of the Company.

Ms. Kaye: Can I ask a question based on that? It made me think, when you say that the sampling shows very, very good water, who's collecting them and who's conducting the tests?

Mr. Yamada: Excellent question. It's a combination. Hawaii is but a handful of States that actually – the regulatory entity which is the Department of Health does the bulk of sampling and analyses. It's very rare in this day and age. Under the State Drinking Water Act, the utilities bare the responsibilities. In other words, other States say show me your results. They don't do any testing. So Hawaii is a little bit different. We hope it doesn't change, but like I said, it's a combination. We're limited by budget – what a surprise – on what we can analyze. And therefore, where we don't have capability, Lana`i Water Company has to contract out and have done most likely on the mainland. So they collect those samples and ship them out.

Ms. Kaye: Another thing that was told to us a couple of years ago when we had a water workshop is that the Department of Health really is only required to come here once every three years and do a sanitary survey. Is that correct?

Mr. Yamada: Technically because it's a ground system, I believe the maximum it could be is five. But I think the new rule – understand the Feds don't fool around with drinking water. They keep changing rules. But I think the up coming rule that the maximum would be every three years that they have to go by. But mind you, the sanitary survey is an inspection of facilities. The sanitary survey, what you're referring to, is an inspection of facilities. But beyond that, there's always going to be testing on water.

So, you know, I think the thing everybody has to realize is there is limitations. We collect the samples at one point in time. The assumption made under the law is that you hope there's consistency in that. You can not monitor every bit of water all the time. It's

impossible. No one can afford it, and I don't think anybody would want to pay for it. But, you know, with that said, I think things work pretty well, especially in a situation where we have ground water. I can tell you, it is pretty stable. The opposite extreme of that would be surface water supplies like on Maui. Surface water is terribly flashy. What can you say? It's open to anything and everything that flows into the stream. Therefore, quality is much more questionable. And that's why what the Feds do is too difficult to monitor. They enforce higher levels of treatment. So there's real differences in the water supply. Yes sir?

Mr. Rabaino: My question to you is when you use the term sample water, where is the water collected on Lana`i? And where are the samples that have been submitted to your department?

Mr. Yamada: Excellent question, and you're going to think I'm giving you gibberish. Depending on the contaminants, most contaminants are measured at the source or what they call after treatment, entering into the distribution system. Other samples are collected in the distribution system. The primary example of that is chloroform bacteria because they want to make sure. Bacteria can be introduced not necessarily from the source, but within the distribution. So that's why different contaminants have different objectives. Lead and copper is collected from people's homes. It's the only contaminant that's done that way. So yeah it runs a gamut, but most, the majority would be close to the source.

Mr. Rabaino: Okay, your definition is close to the source, yeah, but I'm trying to find out the source that they're getting the sample water and they submit it to you because it's usually put on Expedition going to Maui or flown out from Lana`i Airport to Honolulu – my source is are they getting from a particular well or just a certain source/sample from just Lana`i City or are they getting it in other areas of this island where they are taking water samples? That is what I'm referring to.

Mr. Yamada: In general, Joe, you can correct me if I'm wrong. Is Joe still here? No he's not. I was referring to Joe Kaakua. But chemical samples are collected by our Maui staff person. He comes here and if I recall from the latest consumer confidence report, they refer to a well #6 and a well #8. Sorry. I don't know more specifics than that.

Mr. Rabaino: You said well #6 and well #8 is where the water samples are sent to your folks department.

Mr. Yamada: Correct.

Mr. Rabaino: My next question to you is if well #6 and well #8 – or was it #7?

Mr. Yamada: #8.

Mr. Rabaino: Okay, these are the two sample areas where they are collecting water and giving it to you folks. What about the other wells that they have on the island because they're suppose to be 14. I want a break down because these wells are located in different locations on the island. You're only saying two that has been sampled. Have those other wells been sampled to see the consistency of the different types of as you say chemicals in those water wells?

Mr. Yamada: I think I understand where you're trying to go with this. Basically, you know, by law, we can only monitor what's in operation. If I understand correctly, a number of wells were taken out of service. That's my general understanding of the Lana`i system.

Mr. Rabaino: Understood. I'm not taking about the wells that is out of service.

Mr. Yamada: Correct.

Mr. Rabaino: The wells that's in service which the two that you have mentioned are the samples that they send to your department.

Mr. Yamada: Or and we collect it. Yes.

Mr. Rabaino: Yeah. There's no other wells that they take samples from and submit it to your department for any – to be analyzed?

Mr. Yamada: At this point, no, because unless they activate –. I wish Joe was here. I believe they reactivated one of their sources that had been off line for a while. But, you know, I don't want to make excuses, but I'm not an expert on the Lana`i Water Company. So out of respect to Castle & Cooke, I would like them to explain their system.

Ms. Kaye: Maybe I can help out here Gerry a little bit. #1, 9, and 14 are considered non-potable, irrigation purposes only, so it's not drinkable. Well it is, but it's not being used for drinking water. #3, 5 and 7 are collapsed. #3 is being re-done, and we learned today it's probably going to be another year before it's in operation. I think that's what they said. So #6 and 8 is what serves the city. And the only other two wells are #4, which goes down to Manele, and #2 which I think just recently came back in operation. So that's probably a question we'll have to save for Joe for next month.

Mr. Yamada: Thank you Chair.

Ms. Kaye: Thank you Stuart. Any other questions? We'll say thank you very much.

E. COMMUNICATIONS

- 1. Letter from Steve Bumbar of Castle & Cooke Resorts LLC requesting that their Water Workshop presentation be postponed from the November to the December 2008 meeting.**

Ms. Kaye: Okay, next on the list is communications on our agenda, and the first is a letter from Mr. Bumbar of Castle & Cooke just requesting that the water workshop which was scheduled for tonight from the Lana`i Water Company is going to be postponed to December. And in light of the time, that was a really good move.

- 2. November 7, 2008 Semi-Annual Report submitted by Castle & Cooke Resorts, LLC regarding the project irrigation demand associated with the Residential and Multi-Family Development at Manele, TMK: 4-9-017:001, 002, 003, 004, 005, and 4-9-002:049, Manele, Island of Lanai. (95/SM1-015) (95/PH2-001) (D. Dias)**

Ms. Kaye: The second thing on communications, I would like, given the time that it is, to suggest that we postpone this item. It's a communication. It's a non-action item. I know I have many comments about what we received and some discussion will probably ensue. So if there's no reason why we can't do that, then I'd like to put that back for December – move that to the December agenda. Is that acceptable to everyone? Okay.

- 3. Letter from Chair Sally Kaye to Planning Director Jeff Hunt objecting to the withdrawal of the Land Use Commission Special Use Permit (SUP 2007/0011) to Lanai Sustainability Research, LLC for the solar array project.**

This item is for discussion purposes and deciding on the next step, if any.

Ms. Kaye: Next on the list is the letter that I sent to Mr. Hunt who is with us this evening. We're very pleased to see him. It is for discussion purposes. And actually, last month, the way we left it was the ball was in the County's court, and I'm assuming that's why you're here tonight, Jeff, to talk about this.

Mr. Hunt: Thank you Chair. Yeah, I'm here to talk about this and then there's another item and we'll get to that later hopefully. But a little bit of background. The application for the solar project initially was interpreted as a major utility facility. When it came to the Lana`i Planning Commission, the State law required a Special Use Permit. And in talking to my staff, they felt that given that it needed a Special Use Permit from the State, there wasn't much analysis as to whether it was a major or a minor. Subsequent to your decision – and I believe that was in April of this year – the State laws were changed so that it no longer

requires a Special Use Permit. And based on that there was a request from the applicant that the County take a fresh look at that interpretation that it was a major. And the Department's staff did that, and their determination is it really does, given the additional information and given a more thorough analysis, they felt that it is a minor utility facility. It's also consistent with the trend which is at the State level and even at the County level to facilitate and streamline the permitting of alternative energy sites. It reduces the costs. We want to facilitate alternative energy to get us away from our dependence on foreign oil. So consistent with that trend, consistent with the State change in Legislation, that's what the Department did a re-interpretation on. And I hope you'll see it more as streamlining and being consistent with the State Legislature rather than a slap in the face or a disrespect to this Commission. I think we need to look forward and say okay. If this hadn't come to the Commission, and they just came in today, what would we do? And in all likely hood, that's what we would do is we would consider it a minor utility facility. If an application like this comes in the future, we'll likely consider it a minor, assuming it meets the same criteria. We will likely consider it a minor utility facility.

Ms. Kaye: That –

Ms. Zigmond: I was going to say I don't think that's so much the issue is two things. One is that we heard it sort of through the great vine and not from you all. And the second one, and maybe even more important, is that when that issue came before us we negotiated. We seriously negotiated with the applicant. I mean, they agreed. They negotiated with us on certain conditions. And those were good faith conditions. I mean it was done, and now it just goes away. And that's where mine, and I think others of us have issues with this. It's not because all of a sudden now they don't need that permit. It's what happens to this. This was done in good faith.

Ms. Kaye: You have no comment?

Mr. Hunt: The laws often change. If a permit is issued for a project and there's conditions put on it, and then the laws change so that type of permit is no longer necessary then whether it was a lengthy negotiation and a good faith or whatever, if the conditions are no longer applicable, then we don't hold them to it. Essentially, they're sending in a letter saying we're withdrawing our application for the State Special Use Permit. So they're kind of saying we want to start over.

Ms. Kaye: Okay, two things then. We understood from Joe Alueta that they had not submitted a formal – the applicant – had not submitted a formal letter asking for withdrawal. Is that still the case or have they done that?

Mr. Hunt: As I understand it, their consultants submitted a letter and we responded saying we'd like a letter from the applicant. So technically the applicant has not submitted a letter.

Ms. Kaye: Okay, and given that, Joe told us that you folks would send a letter to the applicant requesting them to honor those conditions. I know there's no enforcement, but he said you folks would do that.

Mr. Hunt: I wasn't here. So Joe indicated that we would send a letter to them, and ask –

Ms. Kaye: If you get a letter seeking withdrawal of the permit, that you would reference the conditions that we did negotiate with them. That's why in my letter I suggested you guys read the minutes because we really bent over backwards to give them what they said that night they really needed, and see if they would honor the few conditions put on it.

Mr. Hunt: So it would be a voluntary honor system or something? Well I can certainly request that they honor it. Again, I don't want mislead or have a mis-interpretation that the conditions would still be applicable and they would be subject to enforcement, non-compliance with those conditions.

Ms. Kaye: We understand that, but we think just that one extra step given the way in which this was handled and how badly we were informed. I mean, if you kept us in the loop all the way along, I don't think that the reaction would be quite as surprising to us.

Mr. Hunt: Well I'll certainly apologize for not keeping you in the loop. I think that's a legitimate criticism that we should have communicated with you better. In response to the request to ask for voluntary compliance with those conditions, I have no problem with asking them to do that.

Ms. Kaye: Thank you. And that's what we had was on the agenda was to discuss and decide the next step. Is that a satisfactory next step to everyone on the Commission? Okay, thank you.

F. DIRECTOR'S REPORT

1. Past Commission Chair's request to discuss the following:

The feasibility of changing the zoning of the remaining 65 acres of land donated to the County of Maui by Castle & Cooke for affordable housing. The change would go from its current zoning to the appropriate type of zoning that would make the land ready to be improved.

Ms. Kaye: Okay, next thing on the agenda is a request to discuss the feasibility of changing the zoning. I don't think any – I know I have nothing new to report on that, but I'd like to

see it still there. And the open Lana`i application report. Is that you Danny?

2. Open Lana`i Applications Report.

Mr. Hunt: I believe that's just in your packet as a general rule, and this is your opportunity to ask questions about it. And going back to the first one, I believe – F1 on your agenda – I believe they're requesting to hold that discussion with you in January or February. JoAnn Ridao with the Housing Department.

Ms. Kaye: Wonderful.

Mr. Hunt: So we'll be coming back next year with that.

Ms. Kaye: Thank you.

Ms. Zigmond: I have a question on the open applications – the land court consolidation. I don't know what that is. It looks like a 170 sub. What is that? Could you explain that please?

Mr. Hunt: Which item is it? I'm sorry.

Ms. Zigmond: Okay, there's two of them and actually Danny I think those are both yours, yeah? It's one, two, three, four, five, six – number six and number eight – land court consolidation.

Mr. Dias: To be honest I can't really talk about the specifics because I don't think I've really started processing these yet. But I think I do recall sort of looking at these and it's basically – and maybe Castle & Cooke can jump in on this – but there's certain land areas where they're basically just consolidating lots for whatever reason.

Ms. Kaye: Could you – I don't think there's anyone left here who can answer that so could we get that question answered next month please?

Mr. Dias: Yeah, I'll look into it.

Ms. Kaye: I have a question of the first one, EAC. You know, we got a legend. Joe and Colleen were very good to get us a legend so we could figure out what all these letters meant, but EAC was not on it. What is that?

Mr. Hunt: EAC is an environmental assessment, and the "c" is comments, so we're making comments on an environmental assessment.

Ms. Kaye: Danny with respect to the two, I had those flagged too. The land court consolidation would be interesting to know where. Where on that island that is. Okay, any other questions Commissioners?

Mr. Rabaino: You know some of these stuff has been – you have the entry date – I think it's only fair for all the Commissioners to have another column that says when they're going to start, on these listing of the projects, their estimated date of starting. These would be helpful. This thing has been repeating for the past, what, three months that I've noticed with some addition on top here. So it says entry date. It was told the entry date is, for example, 4-21 which was submitted from the applicant. But we would like to know when – another column should be put in there when construction going start. Because the submitting date or the entry date is when they inform they inform you folk by application.

Ms. Kaye: Gerry, excuse me, but the ones you're referencing aren't – they're not construction. They're not permits. They're changing in zoning and that's a process that goes through the Planning Department. I'm not sure it's possible to do what you're asking. Is that fair?

Mr. Dias: I agree. That would be pretty hard to do. You know, the entry date is when the application comes in and depending on work load, priorities and so forth and so on, it's really hard for us to know exactly when the planner is going to start and where it goes from there.

Mr. Rabaino: Let me say this then. You have over here Kanepu`u, yeah? You have the date, 9-6-2007. This is 2008. So the other column is wide open under completion date, and being that Kanepu`u where the company for new apartments is already completed, and we have residents already living, or employees living in there.

Mr. Dias: CO, that's Certificate of Occupancy. I'm not sure why that's on here because that's not really a Planning Department permit. That's Development Services Administration, so I'm not sure why that's on there. But even the last two, gas and plumbing. I'm not sure why it's pulling it up but –

Mr. Rabaino: Yeah, because if you want everything current for 2008, the 2008 should be existing on this paper. The other rest should be trashed.

Ms. Kaye: Any other questions or comments?

3. Public hearing on the following application scheduled for the January 21, 2009 meeting:

CASTLE & COOKE RESORTS, LLC requesting land use changes for the Miki Basin Industrial Land Use Changes. (J. Prutch)

4. Future Water Workshops

Ms. Kaye: . . . *(Changed Cassette tapes)* . . . going to be on our January. Correct? And future water workshop, to my knowledge, we have none scheduled. I'm sorry, besides from the Company – besides from Joe who was suppose to be here tonight. Right, Joe is going to be – well he's not doing his presentation until next month. Does anyone want to add anymore or suggest anyone for future? Okay, I would like to invite Brian Plunkett from the Conservation. I think he's doing really good work on the Hale, and it would compliment with Jay Penniman and what Dr. Juvik told us tonight.

Ms. Zigmond: How do we make that happen?

Ms. Kaye: Well actually usually there's somebody from Castle & Cooke.

Mr. Jim Johnson: Jim Johnson, Castle & Cooke. Joe will be presenting next month along with Brian Plunkett.

Ms. Kaye: Good. Brian is going to be here.

Mr. Johnson: Brian will be presenting as well, and there will be one other person I believe for the golf courses. So it's like a three part presentation.

Ms. Kaye: Terrific. Thank you.

Mr. Johnson: Okay.

Ms. Kaye: That saves us some work. Anybody else anyone can think of that we've over looked? Okay then Mr. Hunt, I think you've got the next one then. It's revised budget situation which can't be good news.

5. Revised Budget Situation as it affects the Lanai Planning Commission. The Department will inform the Commission of the current fiscal situation faced by the County due to declining revenues and increased costs.

Mr. Hunt: No it's not. And I'm sure it's not a surprise to anybody and it was reported in the paper. We've been making the rounds and we're not picking on Lana`i. We've down the story with everybody. And essentially, our budget was produced in a rosier time before the

economy really took a down turn. So our projection to revenues for the existing budget were a lot higher than what are coming in. At the same time the costs are coming in higher than what we had budgeted for. So what we've been directed to do to make our existing budget come in at budget – again this is County, we can't do any deficit spending or anything – so we've been directed to cut our existing budget by 16%. And so for the Planning Department that equates to over \$900,000, so it's not an easy task. Fortunately we had a number of master planning projects with consultants that we can basically put on the back burner or not do this year and that will alleviate a lot that budget cut or account for a lot of that budget cut. But at the same time, it won't amount for all \$900,000, so at the same time, we are having to scrutinize other expenses including staff travel. And that's one of things we wanted to let you folks know. Joe Alueta was suppose to show up tonight and we just said we've got to start cutting back. So you can anticipate seeing fewer staff. You can anticipate staff covering for each other. And frankly we don't like to do because the person who is covering invariably doesn't know the project as well as the other planner, but, you know, we've got some tough decisions to make. It's a challenge, and we're going to have to deal with it.

In terms of logistics, what we told Moloka`i – they meet twice a month and we were talking with them about maybe only meeting once a month or the second meeting being optional. That doesn't really apply to you folks because you only meet once a month already. But we may possibly consider a meeting – do we really meeting – that kind discussion just in the back of our minds. We may be questioning every meeting. Maybe we can skip one now and then. Probably a bigger factor is the Lana`i Community Plan is going to be starting up in the near future. And rather than having separate meetings and coming over here for a separate meeting, we're probably going to ask that we do it on the same day as the Planning Commission meeting so staff only flies once. Those logistics, and we understand it's not ideal. It's not what we'll all like. But the County has a budget just like everyone has their home budget. And when times are tough, we've got to meet the challenge.

Ms. Kaye: If I could just react to that, I would like to say that in the two plus years I've been on this Commission, I've never met anybody from your Department that did anything but give us wonderful advice and service, and I have no problem at all with if we have to do without. Everyone who has shown up have been ultimately very capable so we understand.

Ms. de Jetley: Madame Chair. I would have a real problem with combining the Lana`i Community Plan with the Planning Commission meeting because we've been here for 3 ½ hours. And if we were doing both. Pardon?

Ms. Kaye: We can't do that. The Lana`i Community Plan is not our meeting. That's separate group. They just mean they would just do it on the same day.

Ms. de Jetley: It's like before when we were –. I'm sorry. It was when we were doing the General Plan – because our meetings are so long as it is now.

Mr. Hunt: I didn't mean to be ambiguous. We would just want staff to fly over once a month rather than twice. And maybe it won't work, but those are the kind of thought process that are in discussion that we're having – just be up front. You know, we didn't communicate as well as we should have on an earlier item, and we're trying to communicate ahead of time on this one.

Ms. Kaye: We really appreciate it.

Ms. de Jetley: So I have another question. In some of our previous meetings, we've had questions for Corporation Counsel. So if Corporation Counsel doesn't come with staff, that person will be available to us by phone?

Mr. Hunt: Corporation Counsel is a different Department and I'll turn it over to Mike Hopper so he can talk about that.

Mr. Hopper: I don't know all the details about what our Department is going to do. We are separate from the Planning Department. We're not a part of their budget. We're separate. And as I understand it, we're going to continue to travel to meetings, Moloka`i, Lana`i, and staff all of the Commissions because I think that is something that Council has said they want to continue. Not only the fact that we're available if needed, but also to monitor the meetings as they're going along, to advise if necessary. So I don't see there's any change in us coming. Occasionally we may have to miss a meeting and be on call, but that's been pretty rare I think over the couple of years that I have been here. So I don't think we'll be cutting back from our end on that.

6. Agenda items for the December 17 meeting.

Ms. Kaye: Last is #6, agenda items for December 17th. So far we have the permit I mentioned earlier for the Land Use changes for Miki Basin and the Lana`i Water Company presentation. I'm sorry, that is going to be January. So the only thing we have on our agenda then is the Lana`i Water Company. Right, we're going to transfer the communication item, #2, to next month. Does anyone know if they're not going to be here? Anyone have anything else they'd like to add before we close? Okay, thank you all. Meeting is adjourned.

G. NEXT REGULAR MEETING DATE: December 17, 2008

H. ADJOURNMENT

There being no further discussion brought forward to the Commission, the meeting was adjourned at approximately 9:28 p.m.

Respectfully transmitted by,

LEILANI A. RAMORAN-QUEMADO
Secretary to Boards and Commissions I

RECORD OF ATTENDANCE

PRESENT:

Sally Kaye, Chair
Stanley Ruidas, Vice-Chair
Dwight Gamulo
Beverly Zigmond
Alberta de Jetley
Gerry Rabaino
Leticia Castillo
Darlene Endrina

EXCUSED:

Matthew Mano

OTHERS:

Jeffrey Hunt, Planning Director
Danny Dias, Staff Planner
Suzette Esmeralda, Secretary to Boards and Commissions II
Michael Hopper, Deputy, Corporation Counsel