

WATER RESOURCES COMMITTEE
Council of the County of Maui

M I N U T E S

Council Chamber

September 5, 2018

CONVENE: 9:18 a.m.

PRESENT: VOTING MEMBERS:
Councilmember Alika Atay, Chair
Councilmember Elle Cochran, Vice-Chair
Councilmember Stacy Crivello
Councilmember Kelly T. King

EXCUSED: Councilmember Robert Carroll
Councilmember Yuki Lei Sugimura
Councilmember Mike White

STAFF: James Krueger, Legislative Analyst
Stacey Vinoray, Committee Secretary

Ella Alcon, Council Aide, Molokai Council Office (via telephone conference bridge)
Denise Fernandez, Council Aide, Lanai Council Office (via telephone conference bridge)
Dawn Lono, Council Aide, Hana Council Office (via telephone conference bridge)

ADMIN.: Jennifer Oana, Deputy Corporation Counsel, Department of the Corporation Counsel
Eva Blumenstein, Planning Program Manager, Department of Water Supply

OTHERS: Art Medeiros, Ph.D., Auwahi Forest Restoration Project
Pomaika'i Kaniaupio-Crozier, Pu`u Kukui Watershed Preserve
Jim Smith
Faith Chase
Plus (7) other people in the gallery

PRESS: *Akaku Maui Community Television, Inc.*

CHAIR ATAY: . . . *(gavel)* . . . Aloha and good morning. Welcome to the Water Resources Committee meeting this Wednesday, September 5, 2018. It's about 20 minutes past the hour of 9:00 a.m. I'd like to ask that this Chambers come to order and folks silencing their cell phones. Moving forward, the Committee voting Members, I want to introduce myself Alika Atay as Chairman. Vice-Chair Elle Cochran.

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VICE-CHAIR COCHRAN: Aloha. Good morning, Chair.

CHAIR ATAY: We have Robert Carroll excused, Mike White excused, Yuki Lei Sugimura excused. In attendance Committee Member Kelly King.

COUNCILMEMBER KING: Good morning, Chair.

CHAIR ATAY: As well as Stacy Crivello.

COUNCILMEMBER CRIVELLO: Aloha, Chair.

CHAIR ATAY: Okay, good morning. Members, this morning we have bare quorum so if you do need to take a break and leave the Chambers, please indicate to me so that we can go into recess. However, we have enough Members to move forward with this meeting. I'd like to recognize the Administration, with Eva Blumenstein representing the Department of Water Supply.

MS. BLUMENSTEIN: Good morning, Chair, Members.

CHAIR ATAY: And representing Corporation Counsel we have Jennifer Oana.

MS. OANA: Good morning, Chair.

CHAIR ATAY: I want to say good morning to Committee Staff Stacey Vinoray, James Krueger; on the satellite offices out in Hana, Dawn Lono; on Lanai Office, Denise Fernandez; Molokai Office, Ella Alcon. I want to also say thank you to my policy and legislative advising staff in the office, Trinette Furtado and Brian Bardellini. This morning we also have our guest presenters, I want to say good morning and welcome to Art Medeiros with the Auwahi Forest Restoration Project. And also good morning to Pomaika'i Kaniaupio-Crozier representing Pu'u Kukui Watershed Preserve this morning. Staff, we...we have one item on today's agenda and today's agenda is WR-5, Watershed Management and Protection. This is a fairly large area of, that this Committee oversees. Primarily the Department of Water Supply administers grants in the area of watershed management and watershed protection to several entities as grantees. Because it's such a large group I wanted to break the groups up and allow the groups ample and opportunity time to educate every one of their specific watershed that they're working on, about their agency, about their efficacy of their accomplishments, and what is needed moving forward. I'm hoping that this process will allow all the grantees ample enough time prior to our County Council setting the next budget so that we understand our role in protecting our watersheds. And so with that before we go into the meat of the meeting I'd like to open it up to allow public testimony. For individuals testifying and giving public testimony here in the Chambers, you are welcome to please sign up at the desk in the lobby. And if testifying from a remote site, please sign up with that District Office Staff. Testimony will be limited to the item listed on agenda today, as well as pursuant to the Rules of the Council, each testifier will be allowed to testify for up to three minutes per item.

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When testifying, please state your name, state any organization that you may be representing. Staff, where we going to go? Check in on a...visiting...okay. I'd like to check in with the District Office, Hana Office, do you have anyone wishing to testify?

MS. LONO: Good morning, Chair. This is Dawn Lono at the Hana Office and there is no one waiting to testify.

CHAIR ATAY: Thank you. Lanai Office, do you have anyone wishing to testify?

MS. FERNANDEZ: Good after...good morning, Chair. This is Denise Fernandez on Lanai and there is no one waiting to testify.

CHAIR ATAY: Thank you. Molokai Office, do you have anyone wishing to testify?

MS. ALCON: Good morning, Chair. This is Ella Alcon at the Molokai Council Office and I have no one here waiting to testify.

. . . BEGIN PUBLIC TESTIMONY . . .

CHAIR ATAY: Thank you. Staff, you want to call...

MR. KRUEGER: Mr. Chair, we have two people signed up in the Chambers to testify. First up is Jim Smith testifying on agenda item WR-5, to be followed by Faith Chase.

MR. SMITH: Aloha, Chair, Members of the Committee. My name is Jim Smith. I'm here to testify on the item W, I guess, WR-5. You know this is sad. I've reviewed the agreement, grant agreement for Waikamoi Upcountry, and in that it says that the, that there shall be a contributed grant of \$200,000. Okay. When you look at the requirements set forth by the administrator of this fund, you find that it's impossible. You would need to hire an executive to execute the agreement. It gets down and down and down. It takes the idea of formality, of surface and dominates with that. And yet it leaves on the side the great work that this is supposed to be accomplished. Okay. We must know that this water feeds Kihei and as you take water from the ditch you're taking it from Hawaiian Homes. And what is happening is this water is being diverted. Now, the recent, there was a water tank issue that came before you that fueled a subdivision, an agricultural subdivision. The tank was transferred from Haleakala Ranch to some other place, to County and then it satisfied a subdivision agreement. We're going to have this happening, we have to stop this. Okay. But this has to be looked at in a bigger perspective, because there's more than one watershed, there's...and it's happening in a structural way so that the weeding is insignificant when it comes down to what is actually happening, and that is diverting water to fuel development, diverting water to Kihei. That's the ultimate goal. But this is not to be done. Water is our resource. I live in Haiku, we get water from Central Maui. We've got to protect this human community. Auwahi right there, it tells us, and it's being removed from the formula. This community is being removed by formality and they should be censored for this. There should be an act saying no more, this is wrong,

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don't be taking a Council appropriation and making it impossible to apply by the detail of what they must do by a certain date. Even in the agreement it says do this by 30 day, that's ridiculous. Please take this under your consideration. Aloha.

CHAIR ATAY: Thank you for your testimony, Mr. Smith. Members, do you have any questions for clarifications? Member Cochran?

VICE-CHAIR COCHRAN: Chair? Thank you. And good morning, Mr. Smith. Thank you for being here. So, sorry, I'm just...you were speaking about Waikamoi or Auwahi?

MR. SMITH: Well, there's...what I'm talking about is the ditch that is reached by the watershed. Okay. The water collects by different streams into this and then it goes into the flow. That's how we use the water. Okay. So, the Auwahi reference is to the kuleana, it is to this human condition that is reflected in our political structure, in our government, in our community. And as you approach this you gotta consider the people in Haiku and the effects of diverting water away from our aquifer --

VICE-CHAIR COCHRAN: Yeah, okay.

MR. SMITH: --and away from the watershed.

VICE-CHAIR COCHRAN: Thank you, Mr. Smith. So, Auwahi. Okay. Anyway, all right, thank you.

CHAIR ATAY: No, thank you. I think clarification for Member Cochran, the agenda item WR-5 is Watershed Management and Protection, so just in general. I think the item that Mr. Smith referring to, Waikamoi grant is an overall...it's within the agenda; however, that item would pertain to the East Maui watershed and we will get folks from that area present in a future meeting. But thank you for that, it's duly noted and prepared for that.

MR. SMITH: If you might, this is also related to the budget as it relates to the \$200,000 so would you please keep that in mind as going forward? Thank you so much.

CHAIR ATAY: Thank you, Mr. Smith. Staff?

MR. KRUEGER: Mr. Chair, the last person signed up to testify in the Chambers is Faith Chase testifying on agenda item WR-5.

MS. CHASE: Good morning, Chair. Good morning, Committee. I know it's...I need to address...I'm supposed to address the Chair but actually I would like to just address the Committee because I want to talk about the Chair. This weekend, Hawaii Organic Farming Association had a resource recovery event and your Chair was a speaker. And while I can't speak on everybody that was there, well, I've been getting tons of feedback and reactions and the presentation that Chair Alikea presented included this wellhead protection overlay and it was well received and there was applause and comments from 40 of the 43...I'm still waiting for feedback. But it was very well

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received and everybody was very proud of this. Certainly I am being interested in the water concerns. One fact I wanted to share with you was that Oregon Watershed Council, mimicking...they mimic the ahupuaa, the konohiki, the watershed management of old Hawaii. Certainly the Hawaiians had it figured out a long time ago. But Oregon Watershed Council appropriates 150 million a year to protect their watershed, so that was an interesting fact. Just wanted to share that and just say that I applaud this WR-5 effort, I think it's great. I've looked at each map and thank you.

CHAIR ATAY: Thank you for your testimony. Members, any questions, clarifications? Thank you.

MR. KRUEGER: Mr. Chair, there's no one else signed up in the Chambers to testify.

CHAIR ATAY: Okay. Seeing that there is no one else wishing to testify if there are no objections, I will close public testimony.

COUNCILMEMBERS VOICED NO OBJECTIONS. (Excused RC, YLS, MW)

CHAIR ATAY: Thank you.

. . . END OF PUBLIC TESTIMONY . . .

WR-5 WATERSHED MANAGEMENT AND PROTECTION (CC 17-79)

CHAIR ATAY: Members, today we'll be discussing the matter of the Watershed Management and Protection. Committee is in receipt of Communication 17-79, relating to the watershed management, specifically the watershed partnership grants the County supports. For Fiscal Year 2019, the County appropriated approximately 2.116 million for grants for the various watershed partnerships in the County through the Department of Water Supply. And since the County provides such a significant amount to these partnerships I would like to receive presentations from the different partnerships to allow the Committee to review the partnerships' works and to also see how these County grants are being utilized. The Chair's intention is to receive presentations from two partnerships today and to schedule presentations from other partnerships for future Committee meetings. Before I turn the floor over to them, I'd like to turn to Department of Water Supply and, Ms. Eva, if you have any comments on this?

MS. BLUMENSTEIN: Thank you, Chair. Just want to say we appreciate that you're allowing Art and Pomaika'i to come and present on their projects today and that you intend to have all the other grantees present their projects as we go into the Fiscal Year '20 Budget. We fund 11 individual grants and I just want to emphasize that again this is water rate funded projects. All these grantees do a variety of active water management and restoration work. Some of them impact directly the water systems that the Department manages and our customers, and some do impact

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privates systems or there are other benefits, ecosystem benefits. So, we always just keep that in mind, the big picture but also the portion that we can justify being funded with water rates from our customers. So, just appreciate that you're having them here today.

CHAIR ATAY: Thank you, Department. So, Members, this morning today we have with us Art Medeiros from the Auwahi Forest Restoration Project and Pomaika'i Kaniaupio-Crozier from the Pu'u Kukui Watershed Preserve to give presentations on their respective organization's work. Starting off this morning we have Art Medeiros. Art, you have the floor.

. . . BEGIN PRESENTATION . . .

MR. MEDEIROS: Thank God for Pomaika'i. Thank you for the opportunity, you guys. Can I stand? Is it possible to turn the lights down maybe so you guys could see a little bit better? That's only a suggestion. So, my project is Auwahi and I wrote this title this morning actually, creating a model for rebuilding Maui's watershed forests and reinstilling a sense of kuleana in Maui's human communities. I have to show this picture because I kind of...Hawaiians all say nana i ke kumu, look to the source. I want to say a little bit about me and I don't want to go too much into but this a picture, this isn't actually me right here but this a picture 41 years ago believe it or not investigating rumors that a weed had been found, Clidemia had been found in Nahiku and I was with Forestry people. It was my...I was a young man. First time I think I was on Maui without my mother I told people. And we looked all day and we didn't find any. Okay. That weed became actually a subject of my PhD dissertation and now it covers two-thirds of Haleakala. So, but then I worked for the Park Service for 34 years and then to USGS. I made more money back then but I retired to try to do something that I thought was meaningful, a project that I really believed in that was kind of different than the other projects, that was kind of gaining momentum in terms of restoring native forests. I would just say that people in Hawaii don't know that internationally Hawaii is renowned just for many things--I won't go into them too much--and that we're kind of gifted at this point. I think sometimes when you're in a generation you don't understand the gifts you have, that we have native forests here that stretches miles and miles and miles of Ohia forests, places that fundamentally look the same as when Hawaiians arrived, and filled with all kinds of different culture, not only cultural but biological kind of treasures. And that's the source of a lot of water as Pomaika'i is going to talk a lot about that. But we also have some real troubles and that's actually, I think most people don't understand that the leeward side of the island has almost nothing left on it of native and the watershed forests have been kind of torn away. This is above Nu'u and kind of every time it rains hard the waters come red with the topsoil that's being removed off of portions of that. So, we're kind of trouble in some areas though you don't see it from the road. This is actually right between the new national park and Department of Hawaiian Home Lands and Division of Forestry, but you can see that the forest is actually been ripped away below this point. I just thought I...I had to show you these guys. This is Molokai before humans arrived and then the next picture, non-native vegetation will be shown in red, a story that's pretty much the same for Lanai. And this, the yellow is not actually, not

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really very accurate, they're shrublands. I would only look at the green and maybe this yellow over here, Kanepuu.

COUNCILMEMBER KING: The forest in green?

MR. MEDEIROS: I'm sorry?

UNIDENTIFIED SPEAKER: . . .*(inaudible)* . . .

MR. MEDEIROS: The green is native, yes. That's the Lanaihale watershed forest. And then Maui, Maui's kind of shocking, you know. And so I used to say that before...the forests used to come all way through here and in fact the Smithsonian I always saying that it gets such abundance of birds down here that they're thinking that the forests in here were probably the most productive on Maui. And we're doing a lot to try to...to protect them, but like I was telling Pomaika'i, we're kind of in what Australians call no analogue systems, we don't really know, no one's ever tried this before. We've been doing fencing and it's kind of working, and there's still places like this above Hana. This is Hana Airport down there, I think, yeah, Hana Bay. But I was saying that this is the kind of...actually to talk about Ohia. Ohia is an interesting species because it makes up a lot of our native forests and is dominated by one tree species so biologist call this a keystone species. This is the keystone here, it makes the whole bridge stand up. And so the worry here is that first of all the forest is being invaded by weeds, but that Rapid Ohia Deaths is starting to move...these two species of fungi that actually came...developed in Hawaii and are now threatening, the dead Ohia on Big Island. And you can all the reports now, spreading, and the wind direction, when the wind reverses the wind direction comes towards Maui. Switch over to Auwahi. We know a lot about Auwahi because of this man Joseph Rock. He said Auwahi was one of the two richest forest districts in Hawaii islands, most tree species. It's certainly the richest area left on Maui. And these are the pictures that he took which actually form a lot of my restoration strategy looking at these pictures. And I threw this picture in because this Hawaiian man down here is "Bill Malie." His actually real Hawaiian name is William Kaiakamalie Sr. but everybody knew him as "Bill Malie." And he was the one that with his son they knew all the trees. And actually when the Erdman family bought the land, he talked to Pardee Erdman, he said you got something really special there . . .*(inaudible)* . . . Pardee said I always remembered that. So, it's actually because of this man, and his son, his great grandson works for me now or with me now so I just had to show this picture of him. It's about as close as you can ever get to "Bill Malie." Dry forest, a wahi pana. That's my kumu, Isabella Abbott and she just says that if the oceans are the refrigerators, the dry forests...because of all their types of trees, 50 different types of trees, that's what makes it distinct and hardwood species. So, they're...ethnobotanically they're very important. I think the most important thing probably for this group is that there's more species of native tree species than other forests in Maui County. This is Iliahi, native Sandalwood. So, this is an interesting series of pictures. This is the first aerial photograph taken on Maui and this is Auwahi. You can kind of keep track it by this bare area. This area has always been bare. I think a fire came in there. But if you keep track of that you'll see the trees are all over here and then the next photograph the trees are going to be

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declining. So, '65, that's '50 to '65 to '77, and now we switch over to my pictures. This picture was taken by my professor Dr. Lamoreux in the '60s, and this is my picture in 2005 when I first started the project. So, I always say that, you know, forests like this are always a question, is it...are these turning into pastures or are these forests? And can they be brought back? When I first started this project 20 years ago, people even...there was...people didn't really talk about the word "restoration" and we didn't know where the forest could be brought back. I invented a technique and I'll just say that I'm proud of it. It kind of came back with this idea of building habitat for species, getting rid of weeds, and building habitat for species. So, this, I put this ecological restoration definition in: the practice of renewing or restoring degraded, damaged, or destroyed ecosystems and habitat by active human intervention. And I threw...these are my own thoughts. In ecological restoration, there are few tools in the toolbox. Pomaika'i can say that, we don't have that many tools, we have like six or seven. We don't...every time we add a tool, a single new technique like the one that I helped develop is a game changer. And that in this case working smart is a lot more effective than just working hard. So, this is the technique when we first started. And we got to a square quickly. As a scientist, you almost can't make up data this good. These are non-native species, the grass, dropping from 80 percent down to nothing and then staying nothing, and then native shrubs and leaf litter becoming...replacing them. So, you can see that from the air they start to be really dramatic. I wish the color was a little bit better on this, because it looks a little hot but they're pretty amazing, these pictures. So, that was our first area. Twenty years ago, 15 years ago, this is our 15-year-old area. To me it's mind blowing that even when I brought my friends in from New Zealand, they stand at the corners and say how old is this? I say 15 years, they say no, you made mistake. I said how old is it since it started, 15 years. I said you're lucky. A lot of people talk about field to forest restoration but we're doing it. That's the third area, the biggest area, and that's looking back on them. The ranch which I'm...all this is on Ulupalakua Ranch. Pretty amazing actually that it's on ranch land. Ranch has kind of dedicated it into perpetuity. They've given me all this area here and they told me, Art, when you're done with this, we will give more but we don't want to give until we're sure that it's going to work and go into perpetuity. I threw these pictures in only 'cause they're drone pictures and the color isn't really good on them, but they're amazing, to think that these areas were identical. This one's the 15-year-old one. These areas were identical 15 years ago. Okay. And then these are just some...just...it's showing the natural...when you talk about...I'm going to talk a little bit about resilience coming in. Forests are right now not very resilient so like the hurricane that just came, if we could get a direct pass-over, the question is what will happen after the pass-over. And that's not what people are thinking about with invasive species. How much resilience is there in the forest? So, you see resilience starting to come in with more species. The greater the species occupation, the thought is the greater the resilience. And then stem counts go through the roof. But the most important thing for me, I don't know if you get this picture here but it's that the keikis come. Tree keikis like this, this is olopua keiki, you won't find another one outside our areas and probably there haven't been tree keikis, natural tree keikis in this area for like 2 or 300 years. Papala, the last one was olopula, this is Papala. But for me that two-thirds of the tree species are now reproducing by seed, so it's kind of like you jumpstart the engine a little bit. It's

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kind of like you put it and it actually catches. The species in yellow are ones that I have never seen reproduce outside the enclosure. Some of them like...this is hala pepe. There's more babies in the ten acres of the first enclosure than probably in the rest of Maui County. But that's what happens when the fire catches a little bit, that's not hard to get. So, for me a big question is does forest restoration, does that equate to aquifer restoration? And right now I think the Water Department is actually checking does forest composition, how does that relate to. But this question of when we bring it back, does it help? We did a lot of studies earlier on with USGS looking at, first at hydrophobicity, that's how does the water act at the surface. And then when we got results that said hey, there's a real difference here, that's when we did our drenching experiments where we simulated Kona storms for two, four, eight hours to see what would happen when we dump water inside the forest and then out in the grass. This is the results. The results are actually highly significant. This is velocity. Basically the water in the forest accelerates down to a quick depth whereas in the grasslands there's a...that was actually what the hydrologists said, as important as the forest was in bringing the water down, the grass seemed to be actually blocking the water and actually not letting the water penetrate. And he said that's not just a physical thing, that's an electro...electrical/chemical thing. So, I threw this in. Basically it's just that the...at restored depths, it's just what I said and that native forest restoration altered soil water properties on a decadal time scale. This is brought up by them. The effect was happening in two...in 20 years and they were saying that they were shocked at that, that there could be changes in 20 years. For them that's a small amount of time. And then this is non-native kikuyu grasslands elsewhere are blocking downward water. These are the two publications, I can get you copies of them. They won awards. They won a highlight award. It's not...there's very little literature in the whole world, kind of that documents the connection between forest and hydrology and Maui has some of it. The work that we do is mostly here but it applies for where kikuyu dominates which is in all the ripped-up forests from here but probably most important all the way to Makawao. This is an area where this whole technique could be used. I threw this in because I like it, it's kind of a restoration model in that where this is a non-forest, this is where we started, this is a non-forest and we're trying to get back here. We do it by controlling pests and doing translocations, but it's basically a, kind of a conceptual model, whenever you lose a species you can't get back to the reference forest. You have to have reference forest, what are you aiming at. I threw this in, it's a long quote but I'll pick the first, maybe the first line and the last line. Native forests and grasslands worldwide have been converted to developed lands or invaded by exotic species due to human activities. These pressures are predicted to increase with human population growth and climatic stress. I'll move down here. Restoration can provide a strategy for enhancing ecological resilience, given escalating problems associated with invasives and climate change. Change in climate, excuse me. Two really good quotes but I'll let them go. So, kind of what we've done to do this, to put resilience back into our ecosystems and certain, kind of in for specifically for almost hurricane is that if we have a hurricane strike, we want lots of trees in our understory. So, that's...and that kind of gives us an angle here to work with the public. And so I threw this picture in. Restoration requires many hands and this, I just, I wrote this morning but when beginning the volunteer tree planting program over 20 years ago, a decision was made that this was

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an important opportunity for the public to actually participate in and witness an important watershed restoration effort. And that was gold to be honest, in my life. Because since then we...okay, I'm going to probably...this is a lot of the volunteer and outreach work we do. We do and we go out every other Saturday and for me they've kind of become...as I said I worked for government for 30 years, 34 years before I retired, I never saw such kind of profound events as our every other Saturday. It's kind of the momentum that we built up over all the years. I keep a strategy of one-third people are newcomers, one-third people are old-timers, and one-third people are kind of people I've seen before but not often. So, I kind of rotate people through. We haven't had an empty seat going up in probably four or five years. And all the boots get washed. It's partially just to show people that things are changing now, that it's not just okay to scrub your boots a little bit. That Rapid Ohia Death is kind of on the move. If you've been on the Big Island, you can't use those same boots. But we...everything gets scrubbed and we put 'em in isopropyl, 70 percent isopropyl alcohol. Not only for ROD but for any other disease because forest success shouldn't be jeopardized by moving people in and out. So, this is what we do every other Saturday. I threw in a lot of these group pictures because I think you can talk but there's a kind of sincerity here. These are all...this is all that happened this last two or three months, none of these are old pictures. This was four weeks ago. So keiki, this is a keiki we planted that's ten years old, actually aiea, one of the rarest of Hawaiian trees but just showing that when they get into this...when they...this a plant that you can barely grow it in your yard but when you put it back into a Hawaiian forest they grow like weeds in a way. Ae. So, it's always amazing for me to take kids out there. They're so...and that's like, I'm going to talk a little bit about this, they're so far away actually from the mountains so oftentimes their first experiences. And sitting out in the grass and just talking story, I see it all the time. And we started outreach events too, this is Kamehameha. This kid, this young boy, I was telling him that this what the birds ate, the birds ate the Lehua and he said I can taste? So, this started a whole tasting episode and them telling me oh, you know what, the red ones taste different than the yellow ones. Out of that project came this. Okay. Out of this whole need is that Auwahi Forest Restoration Project. So, we've been running trips for the last 20 years. We've had 4,500 people up there. We've planted 113,000 plants of 42 different species. We go every other Saturday. All our seeds are gathered from within one mile of the enclosure, and that's how you can be on our volunteer list is by e-mailing at us...at volunteer@auwahi.org. Okay. I threw this in because education is the most powerful weapon which you can use to change the world, 'cause I see it all the time when people come up, they come in the morning, they don't...often a question I hear is are we going to stay here all day? And then at the end of the day it's the same question is are we going to...why do we have to leave now? You know. Okay. My staff, this is Kanoe, she just passed through our group, she's now at the Hawaiian Studies program at University of Hawaii. This is Robert, one of our people. The young kind of interns that we run through are an important part of our program. Kanoe is incredible, she's...she also has probably the best oli voice, chanting voice I've ever heard personally. This is our org chart. We have basically me and then Erica helps out with...and I brought on Amy. Amy is one of my ex-students from UH and then I've got a field crew now, a growing field crew. Forgive the shades, it was an early morning, it was an unplanned shot, I just said eh, you guys, give me a shaka. We're

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just about to head up. So, that's our group there. We're kind of important because all our people are what I call a give-a-rip crew. All our people have been trained to kind of care about everything, learn what...learn the name of everything. I say that Chinese expression, beginning of wisdom calls...is calling things by their correct names, so they teach each other the plants. And that we occupy an important place because weeds cross from east to west and west to east, kind of Auwahi is a good important blockage where we put native forests there. And this is the great grandson of "Bill Malie." Ainoa Kaiakamalie, okay, who I'm really proud of for what he brings. He's a gift to Maui. This is his daughter Kalau. So, he...she's one...two...three...four...five, she's fifth generation botanist. And she says her job, she told me her goal is to run the Auwahi program and I told her I'll help her. I threw the picture in of Kealii because it is important that people come and say something's important. We were in the *Hana Hou!* magazine and that brought us a lot of good PR, brought a lot of good PR for Maui too I think. We got a lot of support for it. The last time we did something like the *Hana Hou!* magazine we did a TED, I did a TEDx talk and the Frost family, the woman who invented the Ergobaby carrier who lives in Makawao. But they've given generously to our program since then, kind of being enthralled at the whole effort. So, for me it was really good value added to what we brought. And then I kind of showing where we were. You probably have seen this a lot of times, it is the human population. We are here. This is a little low, we're here now, 7.4 billion people, and these are the three projections of the UN. This is the, actually the red one is the one we're on. This is the do-nothing scenario. My only thing here is that things are changing in Hawaii. And I threw this in because I like this one, because this is the kind of the Hawaii that I grew up in. It was more plantation. But that's not the Hawaii that we're developing into. I took this picture at the Convention Center I think and just all the different people. Some of them, I don't...I know they weren't born here. Some of them were from Asia, some of them were from the mainland but it was a different community. And this is my sister's apartment building. I often...I show this picture to kind of remind myself that that's why people need experiences like this. So, I'm going to put this thing in hookuleana, to foster or promote a sense of responsibility. That's kind of what we do. So, kind of a synopsis of what we do. I think the strongest thing that we do is we involve and we educate the community in the steward...it's not the strongest but it is a strong thing to do in the stewardship for native forests and their care. As arguably the leading restoration project Statewide. Most people think we're the best restoration project in the State and it's hard to say what's the best, but I've heard that from people I really respect so I take it to heart and I take it as a good compliment. But Auwahi has for decades been developing regional ecological restoration best practices for Maui County and Hawaii as a whole. The green squares that people always talk about that you can see from the Aloha Airline flights, the forest restoration areas offer the most compelling proof positive in the Hawaiian islands that reforestation with native species is feasible. And that globally, quantitative evidence linking restored forests and aquifer function is...should be are rare, not is rare. I am honored to have contributed to that global database with our hydrological publications and research at Auwahi. And this is kind of a subtle point but ROD is threatening our forests and so in a way, you know, I said what's a botanical garden? Botanical gardens you have a collection of plants but these are actual multiple individuals that are centuries old. I told people these trees saw Cook

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passing to the south. Almost all of them, they're hundreds of years old, and they bring all their biotas, all their associated biotas with them. So, in a way it's...calling them a living botanical garden is almost an understatement. It's kind of a treasure to me that you won't find again. That's pau for my presentation but I just threw the picture in to show this incredible kind of contrast and hopefully...my thing is that this a model project and can be...because everybody...originally this idea was that every moku would have their own Auwahi and every group would invite other moku to come take care of their forests because I've never found a lack of people willing to help. So, anyhow, thank you for your attention today, you guys.

CHAIR ATAY: Thank you, Art. Members, do you have any questions for Mr. Medeiros in regards to Auwahi Forest Restoration Project? Member King?

COUNCILMEMBER KING: Thank you, Chair. Thank you for that presentation, Art. That was really good. I have...I did have some questions. You talked about the...nurse shrub technique as being a unique that was developed here. Can you give us some details about what makes that technique different than, you know, traditional techniques for reforestation? Or what is that technique? What are the specifics?

MR. MEDEIROS: Yeah, the technique is actually one that I...and if I'm going to be...it's one that I kind of developed in frustration because people would often use herbicides to be honest and they wouldn't...they would use it almost like a repeat thing. They would do it again and again and again, and I was...the nurse shrub technique was actually based on world literature but had never been tried here in Hawaii as a way to occupy resources and minimize herbicide usage. So, that was originally the idea of putting in native shrubs that start to grow and the word in science it's called biotic resistance. It means that...and that's what happening with our exclosures now is that they don't allow...there's one or two weeds that are an exception but they don't allow weeds to invade anymore. Our forest is complex enough that it repels weeds now and so that's kind of what the nurse shrub technique is, is it almost jumps by adding in a lot of plants at the beginning, almost jumping starting a forest engine to the point where it almost self-protects, if I could use that word.

COUNCILMEMBER KING: Okay. And you're able to do that without herbicides?

MR. MEDEIROS: I'm sorry?

COUNCILMEMBER KING: You're able to do that without herbicide?

MR. MEDEIROS: We used herbicides once at the --

COUNCILMEMBER KING: Okay.

MR. MEDEIROS: --beginning. Without the herbicides we probably couldn't get rid of the grass. We've tried...I've tried getting rid of it with various techniques, so my idea was to try to use it once.

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COUNCILMEMBER KING: Okay. And then I have another question, Chair, if I may? So, what is your level of funding for the project on an annual basis? And does the level of funding keep you from moving at a faster rate? In other words, is the funding...is there a ratio there between how fast you can move or can you just...there's only so fast you can move regardless of funding?

MR. MEDEIROS: I am funding limited in a biological way of looking at it. At that forested is in the middle is available at this very moment but it costs \$200,000 every 20 acres about is the scale. And we don't have those kind of resources, those kind of financial resources aren't coming around in Hawaii. I get frustrated because I think somebody brought up an example, my New Zealand colleague just got a million dollars to help manage Kiwi. You know I mean that's just one bird species but there's more money. But I at the...I don't mean to...two years ago or last year I had to...I almost had to lay off staff, right? I hit the ten-month mark and we ran out of money. And so but it was actually and when I told that to the ranch, the ranch said we'll...they...no...they just said here's a check, we don't want you guys to stop working.

COUNCILMEMBER KING: Okay, thank you.

MR. MEDEIROS: So...

COUNCILMEMBER KING: No, that's...yeah, I think that's an important point because if you could do, maybe do ten times as much with ten times the funding then, you know...

MR. MEDEIROS: As I get older I just wish, you know, my opportunities are limited. I just wish that there was the money here to start to do something really grand. That's what I would say.

COUNCILMEMBER KING: Okay. And what scope of funding would that be?

MR. MEDEIROS: You know I really don't know. I mean it's just a...it's in the millions for what you need to do, but for me it's to go progressively because to take it all in one big chunk isn't the way to go anyhow and it's probably not a fiscal year way...it's not fiscal year friendly but it's also not ecological friendly. You kind of...you should do in chunks opportunistically. It's almost like, I tell people it's almost like surfing, you pick the wave, you pick the day, you pick the opportunity and you go. If you pick the wrong day, it won't work or you pick too big an area in this case.

COUNCILMEMBER KING: Okay.

MR. MEDEIROS: But there's tremendous opportunities out there. I mean think future generations are going to have to do this. I mean or they will suffer the consequences of it.

COUNCILMEMBER KING: Yeah, no, I totally agree, I think we have limited time where we can actually affect change in our generation.

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MR. MEDEIROS: I know I always say they keep on making more people but they're not making more watershed so just it's almost like a math thing after a while, it will become more precious, so.

COUNCILMEMBER KING: Okay, thank you very much, Chair.

MR. MEDEIROS: Thank you.

CHAIR ATAY: Thank you. Member Cochran?

VICE-CHAIR COCHRAN: Thank you. And thank you, Mr. Medeiros. It's actually a real honor to have you here. You know what you showed us today is, it's real touching, it's very moving and it's a passion that I've always had and Pomaika'i knows as I live in Honolua and, you know, started the Save Honolua Coalition. And that was about protection, preservation, restoration, the key points that you're doing up in Auwahi. And back in the day when I had a lot more freer time, I have been up there and to see the growth, I'm sure one of those little dibble, a few of those dibbles I put in are now shrubs, bigger trees today. And so I'm also very touched and honored to have been there.

MR. MEDEIROS: Mahalo.

VICE-CHAIR COCHRAN: But, you know, it's also it's inspiring presentation yet it's also a scary presentation to think that if we don't continue this what can happen. And all the lost that has already occurred and become extinct as we have been noted as the extinction capital of the world, you know, and it's...that's the other part to it. So, I thank you so much and all the efforts of all our watersheds for what you folks are doing, because as you say, you know, this is...the history in these trees and our forests that exist have seen what once was and we're looking to bring it back. I know down in Kealia Pond, I was visiting and Sonny, as he's taking away the invasive as you folks are, below thousand-year-old seeds are still there waiting, wanting to come back to be and live like they once were. So, these are the efforts. But I wanted to say the original cause of all those erosion spots, I, you know, every time I look at the mountains and I see those, the deep-red scars and erosion spots and I'm noticing it a lot more in West Maui where I live. What are...what's the...what were...what are the main causes or what have been the main causes of those occurring?

MR. MEDEIROS: Bio...there's a...I call those drivers and so the drivers for that kind of erosion are animals, feral animals because it's not used to that, and then weeds and fire. And the three of them act together. So, first the animals come in and then the fire-adapted plants come in, and then the fire comes in running on the fire-adapted plants from Africa and burns the trees. So, it's kind of like a team effort by those three things that's taking, actually taking apart our forests. And a terrible thing for me is that no one's, is no one's making any money off of it, no one's...there's no profit, there's nothing, there's no reason that it would even be occurring except that it's just like falling downhill. Anyhow, thanks for your interest.

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VICE-CHAIR COCHRAN: Right. And so you mentioned that no one thought of this type of restoration in bigger, you know, the efforts. But if I recall, you know, when you see patches of pine, patches of ironwood, Formosa koa, those invasive trees, were those not attempts to do what you're doing at one time in certain areas of our islands to try and bring back rainfall and...

MR. MEDEIROS: Absolutely.

VICE-CHAIR COCHRAN: So, can you share a little bit about that and are we...so I think that's another...that created another issue. I think the intentions were good and for the thought, but then now I believe we're learning that it was...the effects are not...

MR. MEDEIROS: Yeah, before in the old days people thought that native plants were not going to ever form good forests and so it was the job of foresters to bring in plants as quick as they could, and they would try to bring the ones in that were the quickest growing and sometimes that brings really weedy species. So, we've been kind of a product of that. And I kind of...that's the only point I would like to make in the talk is that there's an opportunity this generation has whether they realize it or not. I tell people this generation didn't ask for this, they didn't ask to say hey, can we be the stewards of the last native forest left to see if it was possible? But that's what we have right now, so they're the best watershed forest we can get. They're kind of going...we're going to find out that when weeds invade they make bad watersheds. They're the best watersheds. And then they're the storehouses for all the things that native forests bring. So, I think we're kind of right at that edge now. I say one thing is that if we fail with native forests, they will bring back non-native species again. They will...somebody in the future is probably going to make a decision to reforest those slopes with something which is going to be what I call a rough boy, a rough boy species, invasive that they will leave no room for any other plant and may be only a semi-efficient watershed but is easier to get if we lose the opportunity we have now.

VICE-CHAIR COCHRAN: Yeah, and thank you very much. And also I recall the, I guess the vision, the dream of this whole restoration, the Auwahi area is yes, to bring back more water, more rain, you know, and then with the prevailing winds which blows towards Kahoolawe. So, is that still the thought? Are we seeing any...I know it's...a lot of work has been done and a lot more needs to, but with what has been restored, is that starting to trigger I guess a little more, you know, water heading that way?

MR. MEDEIROS: The idea of restoring the ao loa

VICE-CHAIR COCHRAN: Your microphone.

MR. MEDEIROS: I'm sorry?

VICE-CHAIR COCHRAN: You gotta speak into...

MR. MEDEIROS: Oh I'm sorry. The idea of restoring the ao loa, the long cloud is a really powerful one. I mean I had something to do with starting of the Leeward Partnership.

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I think the Leeward Partnership was a little bit more of that. Have we seen cloud restoration? I would say no, not at this point, we don't have enough forest. Is that still a part of it? I definitely...it's a huge part of it for me, right? You know and you see the...anyhow, I won't go into it but the anecdotal evidence shows the storms stopping at Ulupalakua, right? Kind of they come across, they stop at Ulupalakua and the traditional way would be that they would go across to Kahoolawe and pass on Kona rains or heavy trade winds to Kahoolawe. So, it's still the dream. Hydrologists will say we don't really see the evidence, you know, they don't like to, but on...they were shocked at what they have here, they're very careful people and you don't blame them for being careful. So, if we weren't going for a dream like that I would say that this wasn't...this won't be worthwhile to future generations.

VICE-CHAIR COCHRAN: Right. So, again thank you so much for what you're doing and just appreciate all your work.

MR. MEDEIROS: Thank you, Councilperson.

VICE-CHAIR COCHRAN: And education is key like you said.

MR. MEDEIROS: Thank you, Councilperson.

VICE-CHAIR COCHRAN: Yeah, thank you.

CHAIR ATAY: Thank you. Member Crivello?

COUNCILMEMBER CRIVELLO: Mahalo. Yeah.

MR. MEDEIROS: You're very welcome.

COUNCILMEMBER CRIVELLO: Mahalo for taking care of our kuleana.

MR. MEDEIROS: Yeah.

COUNCILMEMBER CRIVELLO: Yeah. So, if I think back home where you had showed very few native plants and the dryness of the vegetation. So, in my mind that's the ungulate and the invasive species of the feral animals, whether it's the wild pigs or the deer and what have you. And thinking back on when a group of us tried...formulated our first East Watershed project and the importance of, you know, taking care of mauka you take care of makai. And in...and I notice that you've been able to just expand or grow and protect the fragility of the ecosystem that you have. So, what techniques do you use to rid of or control the invasion of the ungulates or the feral animals? Is this just the fencing or do you have management with hunters or...

MR. MEDEIROS: Well, the hunters are...

CHAIR ATAY: Mic.

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COUNCILMEMBER KING: Your microphone.

CHAIR ATAY: Your mic.

MR. MEDEIROS: E kala mai. Our hunters patrol the outside but not inside. You know I just think it's actually the wonder of adding different kinds of species because every species grows differently. If you can imagine your yard, if you plant one kind of species it grows one way, but if you plant 50 kinds of species they grow 50 different ways.

COUNCILMEMBER CRIVELLO: Right.

MR. MEDEIROS: And scientists believe that what they call niche occupation so in every niche is occupied. It's stronger shoulders to tell the other plants that maybe you're not welcome here as much. And so that's what we see in all our exclosures is that first they're very weedy at first and then as they go by, they almost require no weeding because they're strong. So, the technique I would actually say is from the plants themselves --

COUNCILMEMBER CRIVELLO: Right.

MR. MEDEIROS: --the characteristics of the native plants themselves.

COUNCILMEMBER CRIVELLO: Okay. Chair? So, have you observed the improvement on our streams as far as the flow of water? Because obviously that's where it comes down and, you know, the wai meets with the kai and then --

MR. MEDEIROS: Yeah.

COUNCILMEMBER CRIVELLO: --you know then we have our limu again, try to get that forest restored in our ocean. So, would you...I'm sure you would but I'd like to hear your opinions on all that kind of improvements that come with watershed projects and management.

MR. MEDEIROS: You know our site is one that is only intermittent stream so I don't really see the effect that strongly. I think if there were other sites, especially I think actually some of the sites where the sedimentation is a real problem, that's, that needs to be really targeted in that way. I think, I mean it's the only way. Just like I said all the plants can work for you.

COUNCILMEMBER CRIVELLO: Right.

MR. MEDEIROS: We're kind of environmental engineers, right?

COUNCILMEMBER CRIVELLO: Right.

MR. MEDEIROS: You can use the plants to do your bidding in a way --

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COUNCILMEMBER CRIVELLO: Yes.

MR. MEDEIROS: --that we can kind of use the plants to slow sedimentation. We don't really see it at our site but it's a powerful weapon. I think it's probably the most powerful weapon in our quiver, the most cost-effective weapon in our quiver.

COUNCILMEMBER CRIVELLO: Well, I know I see that back home, the sedimentation that, the erosion and all that creates. And then our reefs become unhealthy even if you have the longest reefs. So, it's...thank you. Just to bring back the balance in our system and mindful of how our ancestors, what they cherish with the ahupuaa system. And to me your...our story is real, you're documenting it. And thank you for also educating our young people. They're the generation that will actually be having other lepo under their fingernails --

MR. MEDEIROS: Yeah.

COUNCILMEMBER CRIVELLO: --because they're doing the work. Yeah. So, I'd like to mahalo nui you and your organization.

MR. MEDEIROS: I just had one last thing to maybe report is that I'm so stoked as an older person that young people are really interested in this. And when you actually show them, they want to come back, they're so...can you teach us more, what's the name of this? When they actually find there's knowledge to be had, actually that's Hawaiian knowledge out there that's unique, they become so interested in this stuff. And for me if they didn't care at this point, I would be like, you know what, if they don't care then...

COUNCILMEMBER CRIVELLO: But they do.

MR. MEDEIROS: But they --

COUNCILMEMBER CRIVELLO: Yeah.

MR. MEDEIROS: --do and that's powerful for all of us to know --

COUNCILMEMBER CRIVELLO: Right, yeah.

MR. MEDEIROS: --our young people care.

COUNCILMEMBER CRIVELLO: Thank you. Thank you, Chair.

MR. MEDEIROS: Thank you.

COUNCILMEMBER KING: Chair?

CHAIR ATAY: Thank you, Member Crivello. Member King?

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COUNCILMEMBER KING: Thank you. Yeah, I wanted to follow up on the previous thought about the invasive four-legged species, you know, the ungulates that we have on the island. And so I'm assuming that's what we're fencing against with the...okay. And so is there an attempt to coordinate with trying to eliminate some of those ungulates on the outside of the fence so that eventually the fence could either be pushed out and then add more room, or is there any thought about eventually we won't need these fences or are they always going to be there?

MR. MEDEIROS: I think we're always going to need for fences for our...for this period of time. In New Zealand they're trying to address this of fence like predator-free New Zealand is a big deal now. They've become so successful with their small fences that they're starting to look at whole islands. I don't think we're at that level of sophistication or economic support. So, could we reach that? Yes, we could definitely reach that.

COUNCILMEMBER KING: Okay. That's kind of what I wanted to know is that like are we beyond being able to fix the problem with the invasive --

MR. MEDEIROS: No.

COUNCILMEMBER KING: --deer and goats and some of the...and the pigs that we're seeing?

MR. MEDEIROS: I don't think we're beyond that level.

COUNCILMEMBER KING: Okay.

MR. MEDEIROS: I think the current funding and support doesn't allow that.

COUNCILMEMBER KING: Okay.

MR. MEDEIROS: But is that feasible?

COUNCILMEMBER KING: Okay.

MR. MEDEIROS: Absolutely, so that fences could be...

COUNCILMEMBER KING: Yeah, just you don't hear much about that anymore. I mean years ago we used to hear about it all the time, rounding up the goats inside Haleakala, and there was big, I'm assuming some Federal money, Federal funding in that too but you don't hear too much about that --

MR. MEDEIROS: Yeah.

COUNCILMEMBER KING: --recently. So, I'm just kind of looking long term at what the plan is to connect these regions that you're working on --

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MR. MEDEIROS: Yeah.

COUNCILMEMBER KING: --so that we can go all the way across those areas like you're talking about. And so it's amazing where you've gotten to today in 15 years. I mean I keep hearing you talk about since I retired and I know you're not retired, you're doing some amazing work and, you know, the island really owes you. I hope that we can bring a greater understanding to what you're doing island wide so people understand the need for that kind of funding.

MR. MEDEIROS: Yeah, it's gotten to the point where we almost...it's our responsibility to share the success story so more people --

COUNCILMEMBER KING: Right.

MR. MEDEIROS: --want to copy it.

COUNCILMEMBER KING: Right, exactly. Yeah, so anyway, thank you very much.

MR. MEDEIROS: Thank you.

CHAIR ATAY: Thank you. Mr. Medeiros, can you take me to the slide that you had of Maui going from the green to the red?

MR. MEDEIROS: Yeah. It's going to have to go back.

CHAIR ATAY: With interest, you know, for here the Chair acknowledges your project's success with the forest. And with interest Chair holds a deep interest of addressing, improving, and increasing our watershed as well as increasing the water catchment in our aquifer. And so I saw that slide where you had Maui...yeah, the green, that's native forests, yeah?

MR. MEDEIROS: Yeah.

CHAIR ATAY: And then the next slide the red is where we are today?

MR. MEDEIROS: Yeah.

CHAIR ATAY: And so go back to the green.

MR. MEDEIROS: Yeah.

CHAIR ATAY: And you can see the slope area that is the Central valley, you know, looks like the region of Haliimaile, the Makawao region coming down, yeah, all the way down to Paia, yeah, towards Spreckelsville, Haiku like that.

MR. MEDEIROS: Yeah.

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CHAIR ATAY: That's the green.

MR. MEDEIROS: Yeah. This is probably koa forest coming across here, then bands of dry forest.

CHAIR ATAY: Yeah.

MR. MEDEIROS: Two different bands.

CHAIR ATAY: So, koa was all the way as close to --

MR. MEDEIROS: Haiku.

CHAIR ATAY: --Haiku --

MR. MEDEIROS: Yeah.

CHAIR ATAY: --or Hookipa looks like.

MR. MEDEIROS: Yeah. Kokomo.

CHAIR ATAY: Yeah.

MR. MEDEIROS: Many people believe Kokomo is koakomo, the beginning or the entrance to the koa.

CHAIR ATAY: Yeah. And Haliimaile, yeah, that area.

MR. MEDEIROS: Yeah, maile...

CHAIR ATAY: Okay. And then now you go to the red.

MR. MEDEIROS: Yeah.

CHAIR ATAY: This is where it's at right now. Here's another project or another dream is can we same like how you have worked with private entity from the ranch, can we have a government and private entity collaboration of reforesting those areas such as Makawao, Haliimaile, Haiku, Kokomo all the way down so that we also then increase the catchment of our watershed to increase our aquifer?

MR. MEDEIROS: There's a problem here that there's non-native trees in this area that are hard to fight with. So, I actually talked about that is almost you'd have to do what they call or what I call koa acacia replacement technology, you're going to get rid of one acacia and put another acacia in, ours. The acacia that's out there now, wattle and those are almost worthless. I've always believed that the way to develop a koa forest back in the, especially the mauka areas 'cause that's where koa is going to do best is in the mauka areas and that would almost sustain itself with some sustainable

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harvesting. I don't like to harvest woods unless it's going to...but koa can be harvested really sustainably and fed into local industries, that this is sustainable koa from a watershed. So, but whatever it is I think that there is a vision that in future...we have to reforest this.

CHAIR ATAY: Yeah.

MR. MEDEIROS: I mean we have to reforest this some way even if we just allow the old trees to come back in. But eucalyptus and these plants, they don't make good watershed. They have bad systems, they're not adapted for our systems. So, but the vision would be to bring this...and that's what --

CHAIR ATAY: Yeah.

MR. MEDEIROS: --the Leeward is trying to do here, but there's...because there's scraps here. But it's this area here that it's important for Maui and there's so much potential. And this is area that I'll throw in here, the Smithsonian Institute, when they did a survey of the Hawaiian islands, they called Kula the epicenter of extinction in the Hawaiian islands. They said no place in the Pacific has probably been modified more than Kula. So, but the idea of bringing back forest here I think is...

CHAIR ATAY: So, where you're standing there, can you put your finger of where your Auwahi forest is? Okay. And so we have that opportunity going north from where you're at where it's all pink, let's try to reforest going towards Makawao --

MR. MEDEIROS: Yeah.

CHAIR ATAY: --Kula, reforesting that. Members, with interest, that's why I have interest in the issue of sequestration of carbon, in the interest of increasing our watershed and increasing our aquifer, we must also be open towards entertaining the possibility of encouraging people to be planting trees. And so with interest I'll be looking at possibility of giving credits, you know, towards people...for people to plant trees. All along that slope, let's, you know, grow food. Grow food, grow trees, increase our watershed, increase our aquifers, gotta just keep on reminding people that we live on an island. Thank you, Mr. Medeiros. Do you have any final words, parting?

MR. MEDEIROS: I just think it would be great if they were native trees, because I think people will plant non-native trees and that might become part of a problem too so that would be my only...if you're going to get the credit you should probably do the right thing here.

CHAIR ATAY: Yeah.

MR. MEDEIROS: That would be my only thing. Thank you.

VICE-CHAIR COCHRAN: Chair? Before you...sorry, Mr. Medeiros. That one where it shows all the uses of our native, that whole list, bullet-pointed list that you had up there I

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think is really interesting, from medicinal to tools to canoes to shelter building. There's just multiple, multiple uses in what we can grow and the uses of what's grown. And we can cultivate and do that right here as you say, Chair. Yeah, I mean I think that's an awesome list and to look at what are those --

CHAIR ATAY: Yeah.

VICE-CHAIR COCHRAN: --and in reference to what we can --

CHAIR ATAY: Yeah.

VICE-CHAIR COCHRAN: --utilize them for. And be...that's sustainability right there.

CHAIR ATAY: Yeah.

VICE-CHAIR COCHRAN: You know and but we need to grow and cultivate and restore to make that happen and not rely on the barges and all the outside world as our ancestors did. So, we can get back there and I think, Mr. Medeiros, to be comforted I think we all can be comforted that this generation...these new generations are the most environmentally aware generation ever.

MR. MEDEIROS: Yeah.

VICE-CHAIR COCHRAN: So, that's I think the light at the end of the tunnel and the, you know, the spark of hope in all of us --

MR. MEDEIROS: Yeah.

VICE-CHAIR COCHRAN: --that the kids come and they're like, we're going to stay here all day? But then they're like hey, why do we gotta leave? So, I think that's just wonderful and really, you know, gives us all hope for the future. So, but thank you for the efforts you've made. But that, I love that list and I think those are the kind of things we should strive for and that the forest restoration...

CHAIR ATAY: Thank you, Member Cochran. And I think, Staff, that's food for thought to --

VICE-CHAIR COCHRAN: Yeah.

CHAIR ATAY: --consider future legislation giving tax credits on or --

VICE-CHAIR COCHRAN: There you go.

CHAIR ATAY: --planting credits if you plant these native tree species.

VICE-CHAIR COCHRAN: Right.

CHAIR ATAY: So, I think that's moving --

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VICE-CHAIR COCHRAN: Yeah.

CHAIR ATAY: --forward.

VICE-CHAIR COCHRAN: Yeah, awesome.

MR. MEDEIROS: Can I just say it and I'm really sorry, we keep on talking.

VICE-CHAIR COCHRAN: No, go ahead.

MR. MEDEIROS: But I would just say the quality of the young people is incredible because when I grew up people used to say who do you think are? And they used to...as kind of you can't do anything attitude, you know, I grew up with that and you kind of had to...the kids nowadays are...the young people nowadays are really empowered by a new world and so some of them are really big dreamers. Some of the dreamers...some of the dreams may fall flat but some of them are going to run. Some local people in our community, young local people are going to have dreams that are going to affect future Maui.

VICE-CHAIR COCHRAN: Yeah.

MR. MEDEIROS: So, it is really bright.

VICE-CHAIR COCHRAN: Yeah.

COUNCILMEMBER KING: Chair?

MR. MEDEIROS: Thank you.

VICE-CHAIR COCHRAN: Very good. And --

CHAIR ATAY: Yes.

VICE-CHAIR COCHRAN: --sorry.

COUNCILMEMBER KING: Sorry.

VICE-CHAIR COCHRAN: The other thing is we talk about koa and my, I think my favorite wood scent anyway is sandalwood and, you know, we hear so much about it in our history. Oh, is that sandalwood right there?

MR. MEDEIROS: Yeah, sandalwood.

VICE-CHAIR COCHRAN: And so where...I mean are we putting focus on iliahi? 'Cause we...a lot of us talk about koa, koa. So, where are those efforts?

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MR. MEDEIROS: I plant a lot of iliahi but I'm a little concerned about iliahi because some people like to take iliahi and so that's my only thing is that some people will tree nap.

VICE-CHAIR COCHRAN: Right, okay.

MR. MEDEIROS: Tree napping.

VICE-CHAIR COCHRAN: Right.

MR. MEDEIROS: Tree napping sandalwood is unfortunately a very sad thing but they cut them down all the way to the base and they'll throw grass and stuff over the base because people want the heartwood. So, could it be grown? It's a very good companion species with koa but kind of has to be managed a little bit like gold with it because people have a funny attitude towards sandalwood. It is an incredibly beautiful smell.

VICE-CHAIR COCHRAN: Yeah. Okay, well, thank you.

COUNCILMEMBER KING: So...

CHAIR ATAY: Member King, I saw your hand?

COUNCILMEMBER KING: Yeah, I just wanted to point out, so you've got this... 'cause it... because it says of the 50 species of trees. So, you've got... a lot of these trees have multiple uses 'cause obviously that's more than 50 --

MR. MEDEIROS: Yes.

COUNCILMEMBER KING: --uses --

MR. MEDEIROS: Yeah.

COUNCILMEMBER KING: --or 50 specific species. So, that... and it would be really interesting to see too the multiple uses of some of those trees. But the other thing I wanted to say about just following up on Ms. Cochran's comment about the next generation is it's really important to get the young kids... I applaud you for getting them to put down their cell phones and to actually come out and do some physical work. Because that's the other part of what we struggle with, with the level of technology is getting the next generation away from technology and back into these kinds of physical activities. So, thank you for doing that too because we need them to also understand that this is their generation, this is what, you know, sorry that we've let it get to this point. But I'm I think of the generation of parents who came into parenting telling our kids you can be anything you want to be. And what I've seen lately... 'cause my kids were born before the cell phone age, they didn't have cell phones at five years old but what I've seen is we have to get to the point where we prioritize this kind of activity over some of the other things that have become automatic parts of their life. So...

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MR. MEDEIROS: And I'll just repeat the same thing that when we invest in them, they engage.

COUNCILMEMBER KING: Right.

MR. MEDEIROS: That's the good thing; otherwise, I probably wouldn't be spending my time.

COUNCILMEMBER KING: Right.

MR. MEDEIROS: Whenever I do it, I see the same thing about really? Or you get the, sometimes you get the nah, nah? Nah? You know, yeah, that's the way it is.

CHAIR ATAY: Yeah.

MR. MEDEIROS: Nah, really? All over? Yeah, that's how it is, we gotta do something. Well, so --

COUNCILMEMBER KING: Yeah.

MR. MEDEIROS: --that's, that makes it worthwhile for me.

COUNCILMEMBER KING: Yeah. I think you wouldn't be doing it if you didn't get that kind of feedback.

MR. MEDEIROS: Yeah.

CHAIR ATAY: Okay. Member Cochran?

VICE-CHAIR COCHRAN: And lastly, Mr. Medeiros, so and I love that you're engaging the young, you know, and the schools I know, you said Kamehameha and stuff, but what about our visitors? You have outreach to the visitors as our growth and our visitors and I'm always looking towards the management of versus let's keep marketing, marketing, marketing. I really would love to see huge efforts on everyone, all watersheds, parts to engage the visitors 'cause that's why they come here to see rainforest and waterfalls. So, what efforts are you folks doing there?

MR. MEDEIROS: Only to be honest peripherally. We had...we've had some visitors who come repeatedly for our trips because they hear it, they're in kind of the grapevine. And we have done some outreach but I'll be honest is that we don't have that much funding. And I've...and I made a decision to prioritize local people and I don't mean to say it that way. If I had one more horizon I'd be saying there's international people out there who are really interested, it's what they've come here to see is our project. I don't currently have that ability to reach out or I'd be offering special trips because I believe that visitors who come here that are interested in these things are one of our most valuable allies. If we can't use them we're just we're talking among ourselves, right? But if...the more people that we show this, they'll go off and tell ten and ten

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more. So, I'm interested, I'm very interested in that, I just don't have the money or staff.

VICE-CHAIR COCHRAN: Okay. Well, thank you. I know the Mayor's doing budget --

CHAIR ATAY: Yeah.

VICE-CHAIR COCHRAN: --sessions right now. Thank you.

CHAIR ATAY: Thank you. Thank you, Mr. Medeiros. And I applaud your work and your staff at the Auwahi Forest Restoration Project.

MR. MEDEIROS: Thank you.

CHAIR ATAY: Members, it's --

MR. MEDEIROS: Thank you all very much for caring.

CHAIR ATAY: --10:30, it's time for our mid-morning break, especially when we're operating on a bare quorum, but it will also give us a chance for our next speaker to set up his presentation. So, we'll stand in recess. . . . *(gavel)* . . .

RECESS: 10:27 a.m.

RECONVENE: 10:39 a.m.

CHAIR ATAY: . . . *(gavel)* . . . Can I ask that this Water Resources Committee meeting here on Wednesday, September 5th reconvene. Once again, I want to say mahalo to Mr. Art Medeiros from Auwahi Forest Restoration Project for his earlier presentation. Now, we're going to turn things over for a second presentation to Pomaika'i Kaniaupio-Crozier representing Pu'u Kukui Watershed Preserve

MR. KANIAUPIO-CROZIER: *...(Spoke in Hawaiian)...* You know for me as a Hawaiian the best I can be is a Hawaiian so to greet you in our own olelo and give you my aloha from my ohana and all the kupuna before as well as all the staff who's out there in the field really comes from our naau. Mahalo for the invitation. I wanted to thank Chair for the invitation and give us ample time today. We're just two partners. It really allowed the rest of our partners to take care other kuleana. I had to choose to be here or the Rapid Ohia Death Containment Committee, and so by having two of us, it was like all right, Nature Conservancy, Alison, you got there, you take care that one, we meet after and we'll brief each other. And so sometimes in previous years when we had all of us here, we're kind of strapped who can take care other committees that we're on as well as the time for Q&A so I really appreciate that. And there's no difference between which watershed is more important, they all important. It's kind of like asking which one of your keiki do you love most? Nobody asks that, you love all your keiki, you know. And to all of our partners who is going to come after us, I'm only going to speak on behalf of Pu'u Kukui. I kind of wanted to say a big mahalo to

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Dr. Art Medeiros. He talked about that younger generation, you know, he started, he showed his picture 41 years ago. At 46 I am the younger generation, you know, but mahalo nui because it's a great honor to stand amongst our local heroes and our intellectual memory and maverick that have paved way for us to learn all of the techniques, learn all the success, and learn from any failures. You know sometimes people only want to know good stuff. For us guys in the field we want to know what went wrong too so that we don't do that, because if you forget the tool in the truck you gotta walk eight miles back go get 'em. You like to know certain things. But the success is really what moves forward the cart. Yeah. And mahalo for sharing that. It's always an honor to hear Uncle Art share. And not just the more management, I always get the management...manger lens on, but even in the naau and the inspiration of can, all right, you know. And you saw that, I saw that picture of the restoration, the before and after. Ho, you get _____, you get chicken skin. So, mahalo nui. Pu`u Kukui Watershed Preserve is on Mauna Kahalawai. So, formerly Uncle Art was talking about Auwahi here on Haleakala. We're going to be focused now on Mauna Kahalawai on the aka West Maui Mountains. And the summit is Pu`u Kukui here and these 9,000 acres makes it the largest private nature preserve in the State. And so I'm going to just be shifting us different mauna. And it changes, you know, for us in Hawaii you go from California to Washington in a ten-minute drive. So, what works for one place may not always totally work at the other place. It may have to be tweaked, adapted, changed, altered a little bit, and that's where I really, I wanted to share what we're doing and say mahalo to the Department of Water Supply staff, Eva and Robert and our Director Baisa because a lot of times it's a call, hey we need this, we need to amend something, we need to change things that we do our best to forecast everything but the world is real. If you asked me two years ago what do you need? I didn't see Hurricane Lane, Category 5 when I gave that budget two years ago. Did anybody else see it? No, that's why everybody was at Costco buying water, right? And so for us we take it home like the rest of you folks. But Pu`u Kukui Watershed Preserve is one of those heartbeats and so for us to take care of our fragile biodiversity and water resources, you cannot separate the two like we heard earlier. If you want to take care of water, you have to take care of the biodiversity that captures the water. How water's going to be divvied up and through irrigation, pipes, to which subdivision, to homes, thank God I'm not into that conversation, we into catching water. You gotta catch it first before you can figure out how you're going to use it. So, hats off to our staff at Department of Water Supply because they do an awesome job. And so our focus is really how do we keep this picture with all of the cousins in that picture playing together nicely in the sandbox to capture as much water? And in the back of Honokohau Valley which is our longest perennial stream on Mauna Kahalawai, this is a thousand-foot waterfall, plunge pool and whatnot. I've gotta watch the radar all the time to know when I going deploy my guys at that plunge pool and not get stuck and not put them in danger to take care of an endangered species, to take care of whatever. And this goes out through other parts of the forest and through every watershed partnership. We all have our challenges. It might be foggy, it might be...is limited to access. But when you look at this picture, you can see water bleeding straight out of the mountains. It's a beautiful sight and we hope to keep it that way. And so that's always the goal. Not now, not this appropriation but forever in perpetuity so my moopuna and moopuna kuakahi and all the grandchildren and great

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grandchildren for generations to come will still be drinking the cleanest water on planet earth, will still be talking about these kinds of things. And so some of the things that I'll share is Pu`u Kukui rain gauge, the average rainfall is about 400 inches of rain. You can see sometimes in the, in 1983 we surpassed Waialeale. We had almost 700 inches of rain, 700 inches of rain in one year. Wow. That's a lot of rain. That is tremendous. And you can see where our average is, what the mean is. But most people don't realize that 50 percent of our--somebody get another clicker--that 50 percent of all our freshwater comes from fog drip. Yeah. So, even when you see the clouds passing through, our native plants are able to grab that moisture and eventually create those droplets to give it time to trickle down to the aquifer. And that's an important because we're always looking at rainfall, what are rainfall rates. And a lot of times we'll also focus on where is the highest water recharge area. Us at Pu`u Kukui in the second wettest spot on earth, you're one, ain't nobody gonna refute that. Data says it all, right? You've got multiple wells in the area, you got County water treatment plant at Mahinahina, on and on and on. But from a Hawaiian perspective, every piece is important. If we're thinking of Maui nui and all of our ohana in Maui nui and visitors alike, if I'm on Kahoolawe then Auwahi is the windward side and Kahoolawe is the leeward side. So, if we focus only on and compartmentalize just one place being important, we may not see and protect all of our watersheds and biodiversity on the windward and leeward side. So, I challenge everybody to keep that biodiversity and that holistic ecosystems throughout Maui nui intact. You lose Pu`u Kukui, Lanai gets worse because they in the rain shadow. And so if we're thinking about Lanai's watershed, we gotta focus on Pu`u Kukui and vice versa. And so keeping that and our Ohia lehua, we heard about Uncle Art talked about the Rapid Ohia Death. Yeah. When you look at a landscape like this, Pu`u Kukui was formerly known as Na Hono a Piilani and you hear hono as those harbors, Honokowai, Honokeana, Honokohua, Honolua, Honokohau, Hononana. All of these hono, is Piilani the king. That was one of the treasure places was Na Hono a Piilani. And so when we look at it and we making management plans and management decisions, you're looking at a whole ahupuaa from the summit all the way down. You're not looking at little gardens and special ecological areas only, you're looking at a large perspective. Today we call it a ridge-to-reef initiative, yeah. And so we're always constantly going back to that traditional Hawaiian concept of the ahupuaa. And the FONSI, yeah, not like Fonzie, you know, the TV show but FONSI, the F-O-N-S-I, the finding of no significant impact. Well, the best stewards of our natural resources and our watersheds in the world for Hawaii were Hawaiians. We gotta go back to the way they took care of it when reefs were not damaged, when streams were clean, and so forth. So, I cannot just come up with new ideas, I gotta go back to the FONSI of how they did it. You take care of the upper watershed and sponge. You have loi as micro basins all in the valley floor to keep everything in situ, in place. You filtrate throughout the entire valley, and so by the time it gets down to the bottom, we picking limu and eating fish. And so when we have a Hurricane Lane we're not panicking. Where is my net? Where is my scoop net? Where is my ipu to walk to the spring and get water? That we can feel safe because our kupuna, we as Hawaiians we're the evidence. For 2,000 years we lived here in Hawaii. They had storms in 2,000 years, we're still here. And so I look to kupuna for a lot of these things that they might have put in place, that I can uncover and relearn as a young Hawaiian, because

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they've proven they've worked, yeah, and they're still there if we pay attention. But there's also new approaches and you heard Uncle Art talk about the new approaches. Hands down, those of us in our tree hugger world in conservation, it's an honor to learn from Uncle Art and the things that they've done, because people all over the world is trying to just get a minute of his time and what restoration has been done at Auwahi. Up at Pu`u Kukui in the higher elevation, it's prevention, we're just trying to stop anything from going bad, right? Below the preserve is restoration, something went bad and you're trying to restore it. Restoration always costs more. It costs more to restore a house than to just keep the house that's already there, and so we experience both prevention and restoration up at Pu`u Kuku Watershed Preserve. And but if you notice that picture it was fully covered. What you don't see is creatures here. You see canopy, all Ohia, you see understory, you see ferns, right? And on that shrubbery will be kahuli and other creatures, yellow-face bees or Hylaeus, the meli, right? All of these pollinators, if they're...the kahuli and pupu kani oi are eating off all the moss so that the trees can be absorbing sunlight and photosynthesis, right? We kind of overlook that, like a snail the size of your fingernail. Whoop-de-do, we gotta talk about water, get to it, Pomaika'i, and I like to use the analogy of a helium balloon. One little pinhole, you're going to have an upset keiki tomorrow, because it's going all be deflated. All of these things matter when we talk about biodiversity in a rainforest right down to the big canopy trees and the small trees. Ohia lehua as we saw earlier and heard Uncle Art talk to, we lose Ohia, this picture will not exist. Yeah. You lose your keystone plant across all Hawaiian watersheds, streams, water resources, we'd be DEFCON 4 immediately. What do we do? Well, it started in Puna, this Ceratocystis and now it's gone all over Hawaii. It's in Hilo, Hamakua, Kohala, Kona, Puna, Kau. How do you contain that? Now, there's two different ones, the lukuohia and huliohia. Huliohia is found on Kauai. Now, we got pressures from two ends of the State and we just had a Category 5 hurricane. So, I gotta call Eva up and I gotta call Robert. I never projected that forecast. Should I do post Hurricane Lane storm assessment and check Ohia trees if we had damage? Did we have landslides? Do we have stream curtains and fences down? Did trees...that wasn't budgeted for a Hurricane 5 storm, but these spores could be Statewide and so rapid response is really, really key in being a good manager. When we look at watershed management practices, rapid response is the key. Pig, get the pig. We pull weed. To wait in anything means it compounds exponentially. Now, that the Rapid Ohia Death or ROD as we refer to has puka 115,000 acres and spreading spores exponentially, where do you start? Thank God I live Maui. We're trying to work to contain it from getting to Maui. We'll do the same decon practices of cleaning boots, alcohol. We just had an outreach all the way at Andaz and everybody in Kaanapali too to say hey, what if we had little bit broom cleaners here. Boom, you clean your shoes, you walk through a dipping station then get in your valet car, because if you tell them at the trailhead, they already at the trailhead, right? And nobody's monitoring at the trailhead, right? And so things that we can do with guests, with locals, with our kids, we have over 2,000...I'm sorry, 200 interns that come through us and we service about 3,000 people. I believe Councilmember Elle Cochran was on Hokulea when this happened and Ola `o Maui Nui. When Hokulea sailed around planet earth and came back to Honolua where it left in 1976, there were 1,200 Hawaiians from Kamehameha Schools on Friday. There were about 700 that came the next day. We all walked up the hill

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and we planted a whole forest in half hour. Kainoa Pestana, one of our crew members, when he...after Uncle Nainoa Thompson had given his speech and Councilmember Cochran had spoke, he said as he held the koa tree, today we going plant koa canoes. Not for us, we not planting that tree for us, we planting that tree for generations down the line. We going take care our water, we going plant canoes. And so Hokulea went around talking about malama honua and how we take care planet earth where we're doing it here in Hawaii, yeah, and they could feel good that they were, and so all the canoes kind of encircled. So from us at, on the Mauna Kahalawai at Pu`u Kukui, we'll go from the summit of Pu`u Kukui all the way down to the bay and even get in there with snorkel and mask and monitor coral reef. Why is this shot in there with WR-5, water resource management? Because if we go to last week's newspaper, it's not in the preserve but it's brown water advisory. Right? That we can't just look terrestrial or marine, we have to look at the whole stretch because it affects one another. Yeah. Helicopter operations to build and maintain fence, everything that goes up is pressure washed. It's a dangerous job. You know my heart goes out to all the crews and my crew out there at Pu`u Kukui. I asking these guys to stand under one helicopter, hook up one 400-pound load, sling up gear, walk eight-ten miles, get deployed on Tuesday, get pulled out on Friday, no see your family all week, and I no even pay them great. And it hurts as the manager because if you don't think that's dangerous, something wrong with you. It is dangerous, and so it requires a lot of training. And if you don't pay well, you can't retain crew and so you have to train the next one and it costs you more money. And so recruitment and retention kind of go hand in hand. I loved the discussions, you know, that we had the last time in multiyear funding, in release funding so that you could plan out and project things deeper. Most of us do six-year management plans. And so contracts and so forth to do multiyear is possible, and we leverage funds for helicopter and staffing and all of the operations. Some of us one to six, some of us one to ten, some even 1 to 15. If you could guarantee that every time, I'd go to Vegas every day. Yeah, that's great odds. But that's really what it takes. Sometimes...we were talking about ungulates and any hoofed animals, pig, goat, deer. We see the scars being ripped up. They need new techniques sometimes, yeah. This is...I don't want to downplay it but your toilet paper roll, right? Creating the technique in our landscape, the valleys are a thousand foot down and you're thinking about crew safety that you don't lose a roll rolling down on your crew, right? Creating a toilet paper roll and being able to safely release fencing. This is the ingenuity that our crew members come up with in the field and the passion and dedication that we know. Well, going down the hill is difficult 'cause you're putting on the brakes, but coming back up the hill is even more challenging. So, you gotta keep the guys in shape, very similar to firemen. Us managers who have to do all the reports and meetings, we also gotta get in...stay in shape to be able to make sure we get home every day. Yeah. This is a hybrid fence because the eight-foot axis deer fence that we build, the valleys in our landscape is too steep so we have to make a hybrid, wire on the bottom, mesh on the top, yeah, with an apron, because the wire fence won't bend so much. Planting, yeah, and we talked about planting in outreach, in ecosystem but also as buffer. So, if you're creating a buffer below the preserve, you kind of minimize the threat right on the doorsteps of the preserve where it really is pristine. If we said hey, you stay within the fence line, don't do anything back there, just let the fire come right up to your door, don't have a firebreak. That may not be the best suggestion. You want as many

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buffers and as many tools in the tool belt that you can get. And access is far. At Pu`u Kukui everybody has summit fever. Pomaika`i, when can I get to the summit? You look and there's like you can't even walk ten miles and you want to walk five miles up the hill? Jump on the treadmill. When I see you can do ten miles on the treadmill we'll talk story, right? Because the access is limited, four-wheel drive, helicopter, far, and so forth. And so having lower elevation or restoration sites within the preserve as well as adjacent to the preserve allows that community buy-in, awareness, education, but also helps to get work done that you're not pulling staff away from to do something else and focus more time to being within the critical operations in the upper watershed. We had about 4,500 volunteers last year alone partly because our site is accessible. We have a lot of areas that is accessible so a higher volume, and Kaanapali. So, from Nanea and Kaanapali Beach Hotel and Ritz and those, we get a lot of those requests come our way. And for me if I can send one crew member with ten people to help him, I've increased capacity having 11 guys with only paying one guy, all right, and get...kick that can down the road a little bit faster. This was our January to September volume, yeah, just be about 230 over this past months. But notice in the picture where is the big spike? Right here in April. Yeah, when you see that rain gauge go up, it means a lot. So, this is April 7th to April 28th, yeah. On April 14th you're right at about 14 inches. By the time you get to April 18th you're just below 40 inches. That's a big deal, yeah. Why don't you see the damage like Hanalei? It's 'cause you have a good native sponge up above. You lose any part of that, we be doing more work with FEMA. Polipoli, I remember we had the fire up in Polipoli followed by a rain event, mud, Kihei. Yeah and so your upper watershed is the first place to start and you start working your way downhill all the way, but we do have rain events. And what we're seeing and why I wanted to point this out is because the storms are getting more intense, more frequent, and instead of having one inch every day for 365 days, you're having 15, then nothing, 10, nothing. During Hurricane Lane, Pu`u Kukui got 15 inches of rain. You guys remember Lao flood, September 2016? That was only 11 inches of rain. How much different does it make towards managing that watershed? Everything. Well, if you look at some of the pictures from NOAA in 2016, there were 14 threats that came our way, Flossy, Darby, da-da-da and they chart out the map. But I didn't want to show that because we were all watching about three days of NOAA and maps and threats. But these are becoming a norm and a reality for us now. The status quo and doing the great job of FONSI that my kupuna had done before, we need to incorporate that and learn and do things quicker and faster. Status quo not going make 'em, the storms are becoming too much of a threat. The first thing everybody went for was water. You know so when we think about budget, we have to think about what is our most precious resource? Yeah, water. The best time for us right now to talk about watershed management and resources that we allocate is right now after a hurricane. Supply and demand, right? Or fire, because it was real for us. We were looking at wind, damage, rain. We didn't see fire and that is some of the challenges that we encounter in watershed management. We're focusing on invasive species and whatnot and then a ROD comes, that's a game changer. That's a Hurricane 5. Okay. Do I collect seeds? Do I go to ROD containment meetings? Or do what I do what the deliverables said I was supposed to do? And so these are some of the challenges that we're experiencing now in these few years that perhaps weren't such a big deal 10-15 years ago. So, one of this...this is a picture of hydromulching so

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I took...I read Uncle Art's literature, I learned from him, see what Auwahi doing, we planting by dibbles. But how do we do it faster, quicker, yeah? When you're the guy digging the hole, you want to do...dig less holes. If you're not digging the holes it doesn't matter but when you are it matters. So we took koa, aalii, Ohia, we put them all in one little slurry and we hydromulched and this is all aalii coming up here. And so had I been ready and I had pallets of this, that means you have to collect seeds, thresh seeds, winnow seeds, store seeds just to be ready. But had I been ready with pallets, this fire happened of Hurricane Lane, we could have flew out the next day, hydromulch 2,000 acres, yeah, keep everything in situ and have native forests that we can become and be able to respond rapidly if there's proper appropriations. If it's five guys with a tarp and a rubbish can, good luck. It may not happen. Yeah, and these are the new types. Now, the Feds and the State are asking me as well as other partners like Kamehameha Schools, Pomaika'i, we want you to be a contractor, come over here and let's hydromulch this place. Hey, somebody else said you should patent this. No, you should Wikipedia this stuff, right? I'm trying to save my mountain, I want everybody to save their mountain. I'm not going to come over there and save that, then who's going to take care this mountain? That we all have to do our part in our site-specific place, but if we can share information and that's what happens a lot with us in the watershed partnerships is sharing of information, sharing of successes and that really help the next guys go forward. Who do we do it for? We do it for the keiki. Yeah. The water, we going have enough water for us, it's the next generation that we're really thinking about and how we assist them to swim lao, to drink water, to not worry when the next storm comes, and to be happy. We don't want them to survive in Hawaii and I say that again, we don't want them to survive in Hawaii, we want them to thrive. We need to look at our people and guests who are coming here, thriving in Maui nui not just merely existing. And so I wanted to say mahalo to all of you because Maui County we have been moving towards thriving. We have been pushing the envelope for years and have the most appropriations towards watershed protection that the rest of the State is following. But it may not be enough to take on some of the threats that are coming our way, we may need to appropriate more, whatever we have, because the remnant forests are shrinking. And so you need the castle wall, the fence, you need the archers on the wall, you need the moat. You need an array of defenses. Even for us in ungulates it's a hunting program, it's a fence, it's ungulate management inside, it's live traps, it's planting. There is no silver bullet that is going to solve all of this, and I wish I didn't have to say that, I wish I could make everybody feel good and say I got the answer. We have partial of the answer. But I hold maikai ke akua because there's always hope, you know. I try to go through \$400 million worth of paperwork with our West Maui Soil Water Conservation District and Kahoolawe Island Reserve Commission to learn all the things that Kahoolawe did good. Because there was \$400 million appropriated to dealing with that and learning all the things that went wrong so that we... 'cause we may not get the 400 million. But I think of the day when every tourist gets here and they have already paid a certain amount. How much water you going drink? How much you going flush? How much you going use that they've invested that amount of money towards our local families here to ensure that they're going to thrive? Because whenever I travel, I don't want to make a place bad, I just like check it out, I just like look, and I believe that they come with that kind of heart too but we haven't invited them to the party. Because this past

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weekend all the outreach, it was how can I help, how can I donate, how can I learn, and I realized oh, nobody's invited them to the party. I've been cooking the luau but I've been so busy kalua the pig I never invited them to the party. It's time for us to invite any and everybody who can assist taking care of these fragile watersheds to help out. So, mahalo . . .(spoke in Hawaiian). . .

. . . END PRESENTATION . . .

CHAIR ATAY: Mahalo, Pomaika'i. Members, questions? Member King?

COUNCILMEMBER KING: Thank you, Chair. Again, you know, just so many questions. It was a great presentation, and thank you for your heart and bringing in your youth as well because right, this is your generation. You were talking about bringing in the tourism sector and I think some of us here are really concerned with trying to get them to collaborate with our environmental sector and not have these sides, but what...so there's a huge emphasis right now going on on ecotourism in the agricultural world. There are farm tours have started up and in the past we had the County...I don't know if they're still doing it but they even had business tours, you know, they had the Tour de Trash where they took people around and showed them some of our recycling businesses. So, do you see a potential...because it's such a fragile ecosystem that you both are working on, do you see a potential for ecotourism in the watershed and a way to manage that so that, you know, we're not spending all the money we're collecting just managing that but we actually can put something back into the projects?

MR. KANIAUPIO-CROZIER: Yes. I present at the Maui Hotel Lodging Association on the 12th of this month, September 12th. I met with nine of the GMs and they were all interested and supportive, how can we help? I give you one example, Kaanapali Beach Hotel started growing out plants and they actually on site their staff growing plants and then bringing them out and they just came out to plant. Versus us trying to pick the seeds, grow the plants, dig the hole for them so that they can come out like eh, we did all the work, you know. But that they can gain that awareness on site too. We had Andaz, they had their...they came up with us and, you know, you're holding bag and you're picking seeds and said oh, what about this idea? So, that we took old pillow cases and old hangers and we developed seed bags so that we can pick with two hands. Well, when the seamstress came out, she says oh, I notice you put some seeds in here and so yeah, because I need Ohia seeds to be in this pouch, I need koa seeds to be in this one and the Aalii. If I throw them all in one bag then I gotta go back to the baseyard and sort them all. So, they developed a new bag for us, a multi-pouch bag. I'm not a seamstress, I'll never think of that. I'm the tree hugger figuring out when that seed...when it's flowering, when it's seeding, it's mature, when to gather. And so they started developing bags and we had several of the staff and visitors come out to collect. We collected about 400,000 seeds. With my five guys, they gotta build fence, rare species camp, where do I get that kind of capacity? So, it seems to be moving forward, a lot of them came up to me Saturday evening at the outreach event and want to further efforts. So, I think on the 12th we'll know a little bit more. And that is from Andaz all the way to the Ritz and many hotels between that, Nanea and

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Westin and Hyatt and so forth. But a lot of times people have to figure out how they can help. If their heart is moved they'll figure a way to malama, yeah, and take care of it. If they're not interested, whop, whop, whop. You may not get them to come up with new innovations, more just what do you want? You know and we have a great punch list. I heard a question earlier how can we restore all of those fallow fields, how can we bring the forest all the way down? We can do it, we put people on the moon in the '60s. Far away, no oxygen, no water, we got there. Took a few Apollos but we got there, you know. Hundred million every year we could get there. Maybe we can't get to the 100 million, let's get to 10 million, you know, and the faster we move, the less we'll actually spend down the line. I think we're right on the bubble now where...

COUNCILMEMBER KING: No, I agree with you on that. And I went to the Big Island and attended the economic impact of invasive species, a presentation that the Chamber over there put on. And because they weren't willing to spend that kind of money upfront, just even talking about an individual industry like coffee, they're losing \$300 million a year now they figure because they didn't put the money in upfront to get rid of the coffee berry borer. So, you know, we have a lot of industries that are at the cusp of that. And what they shared with...well, you know, I don't know how many people were there from off-island and I came because I wanted to see what we're in for if we don't spend that kind of money upfront. But there's a point of no return and so they're talking about coqui frogs and little fire ants reached that point of no return where they can't even get funding now because it's seen as well, there's nothing you can do. It's so widespread, why even try to do that? And that's what we don't want to get to over here, we want to, you know, do the prevention and save...you know if we put 10 million in this year and we're not losing \$300 million a year for one industry for the rest of all time, I mean that's what we're looking at so upfront. So, my follow-up question on that is where are we at, what kind of a threat for Maui is the Rapid Ohia Death? Do we have that on the island widespread?

MR. KANIAUPIO-CROZIER: Currently, we don't. The Statewide ROD Committee meeting is happening right now, it started at 9:00. We don't have any confirmed sites. We started to put Roto, they're like little vacuums out there in strategic areas throughout the island that pick up any spores, boom, and we collect to monitor if any winds are bringing any over from Hawaii island. We don't have any confirmed cases on Maui or in Maui nui at this time. But, you know, the type of winds that we just experienced a week ago could have been a game changer, we don't know. Luckily though, we have great staff at, within the Department of Water Supply and the communication, being able to say hey, Robert, can I get your thoughts on this? Hey, Eva, what are your thoughts? Like, you know, that these things are happening real time. To have that kind of relationship doesn't keep us isolated here only in Maui or in Pu'u Kukui Watershed Preserve but connected to CTAHR and Forestry on Hawaii island. But what you're saying is there is a threshold and I think that's the proper word, the threshold of point of no return, right? You lose so much, you know, it becomes restoration. Yeah and so, upper watershed there is a chance of keeping intact watershed there, but that doesn't mean that we shouldn't prepare for restoration also for the areas that have been degraded as well as pristine areas that could possibly be degraded by natural causes as well as unnatural causes. But I believe collecting Ohia

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seeds, so we started collecting at Pu`u Kukui Watershed, Ohia seeds that are in the bog, yeah. They're all one foot little bonsai Ohia trees, hundreds of years old and then other ones at 3,000 feet and 2,000 feet. And so we're already moving towards trying to be prepared for restoration in high elevation areas. We took some spores from Uluhe like you see on that picture and when you look up in the mountains all that light green is kind of Uluhe. We took some spores, sent that to tissue culture and we want to see how that does. So, when I fly after a hurricane and I see a lot of landslides maybe in the back of a valley that had happened, that we will be able to paint this and restore that before it further degrades. But new techniques, I think there's still possibility. Down the line it may be a little bit more grim if we don't act now though.

COUNCILMEMBER KING: Yeah. Thank you. Thank you, Chair.

CHAIR ATAY: Member Cochran?

VICE-CHAIR COCHRAN: Thank you, Chair. And thank you, Pomai, and your entire crew and everyone who gets up there like you said, you know, just days on end up in the bog and the wet and the cold and the...so I've yet to been able to get up there. I think I'm still not in much shape to make it up and down.

MR. KANIAUPIO-CROZIER: And don't break the leg.

VICE-CHAIR COCHRAN: But yeah, since my broken ankle time. But I love your description of the hydromulching and that picture of all the sprouts coming up. I mean as I see the landscape after the fire in West Maui, you see little film...little green coat already popping up. But I think unfortunately probably invasives, I don't know. But I think that this would be the opportune time to start if there was a way to just go shoot hydromulch everywhere and, you know, tamper down those invasives and have our natives pop up would be wonderful right now. So, is there any discussion about that at all with...and, you know, of course you're dealing with multiple landowners so they have to make the call that yes, they like the idea too?

MR. KANIAUPIO-CROZIER: Yes, there was discussion, the challenge is there's not...nobody's gathered enough seed or has them in seed storage, 'cause you want West Maui site specific seed so you want Aalii that was formerly from Kauaula or whatnot, you don't want to be taking Kauai seed and then throwing them here. That's not cost effective. And so there's no seed, nobody's collected that. I think we have the largest collection of native seed for West Maui with us. Our Maui Conservation Alliance under the Mayor's Office which is a lot of the partners, National Park and all of our watershed partnerships and so forth agreed that we don't put all of our seeds into one place, eggs in one basket, that we hold some, send some to Maui Nui Botanical Garden so that...and with a MOU, a memorandum of understanding if you deposit that you can withdraw too, right? That people don't put their seeds in and then tell them hey, give me the seeds, oh well, you need this policy or you need this paper, call Congress. You put it in the bank, you have access to withdraw when need, because you don't know when the time you need it, yeah? We've built greenhouses at low and high elevation to try to...you have to grow so many seeds so that you have baseline data. Right? If I

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take 100 seeds, you put them into the greenhouse, 85 grow, you got an 85 percent germination rate. Well, you take those seeds out of the icebox ten years later, don't think you're going to get 100 percent, it's going to be 85 and less. So, we need to get baseline data. Fortunately, because of the Hawaii Seed Bank Partnership we have a lot of that data already on most of our species. But to actually use for the fire in Lahaina, there's not much seed available. I think some people got some in a canister at home here and there, but there's no Home Depot and picking up a pallet of...can I have 400 pounds of West Maui Aalii. And I believe it's a good wake-up call for us that we can do that. If there's an appropriation to do that, we could be prepared for the next fire. 'Cause will it burn again? Hopefully not, I gotta knock on wood, hopefully not. But the opportunity is there, fire begets fire. Like Art was sharing is after you...everything grows back, there are now fire-prone weeds. And so before it used to be Maalaea to Ukumehame, it's now Maalaea to Wahikuli and we've expanded that region. And from a fire perspective, we need to look at our wild land urban interface. So, the West Maui Fire Task Force which I sit on also looked at how we can put in firebreaks, be prepared for response post fire, but it's funding that's really...it's not can we do it, how do we do it, it's who going foot the bill? Up until then the cart just stands right there.

VICE-CHAIR COCHRAN: Okay. Well, no, I think, I'm happy that there's plans in place and would like to definitely know more about that and what kind of figures are we looking at to implement it. Because I think after living through what we all did in the past several weeks, it's so important. You know and since it's fresh in everybody's mind, fresh in everybody's hearts and lives, this is the time to bring that to the discussion table to really hammer it out and figure out what are we looking at. Because again, it's not when...it's...I mean it's not if, it's when for storms. Let's pray and no more fires but, you know, we need to preplan. So, thanks for that. But definitely further discussion needed there. The other thing is I did attend a ridge-to-reef meeting the other evening and, you know, from day one and I applaud everyone's efforts, love that everyone gets out there, all the different nonprofits and you folks included. You know and I know this is a Maui Land and Pine initiative and they do put money in to, you know, leverage and all that, so that's awesome. But again, looking at the old fallow fields, right, behind my house and all that, it's the runoff, they're talking about the runoff, they're talking about the sedimentation piling up in the streams. And well, I can't help but think, you know, what was once there, the green that Mr. Medeiros showed, the sponge, you know, everything that was collected, the lois that were once there that helped filter before reach the ocean is not there anymore. So, due to cattle, due to monocropping, right? So, who did this? Who are the existing landowners and what part are they playing? I see this but it's that middle part that you were describing, Pomai. You know the upper regions still pristine, but it's that between that and that area that has been man scarred and now the runoff down into our ocean resources. I didn't see them at the table that night, right? All these other efforts were there, awesome, you know. Again so it's like, where are the landowners? You know they reap the rewards, their monies, their ag, and they pulled up, closed shop and walked, and we are sitting here facing all the opala and everything they left behind from the chemicals in that soil to the runoff from the old roads, fields, you name it. That's a, I think one of the hugest issues that we're facing. So, not to harp on you

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guys because you're doing all the best you can, but I would like to figure out, we need to, you know, take that next step and figure out more. You know and again I know it's money. But set that aside, what can we do? Because small kine Band-Aids they were presenting which is again great but it's, we're not getting ahead of it.

MR. KANIAUPIO-CROZIER: Correct. I sit on that ridge-to-reef working group so totally a part of all the discussions over the last four years and all the meetings and efforts. We just brought in 800,000 too, to try to address certain things like that. And EPA and DOH and NFWF, National Fish and Wildlife Fund. So, cleaning out sediment in legacy riparian areas that it's already in the gulches, yeah, it's one...the hydromulch is that new technique to stabilize the ridge areas and along the sides where you can't necessarily plant dibbles and do larger acreage. Then it's to manage the push piles and put in those micro basins and restore loi. So, we've already begun that in the upper reach just below Maunalei Arboretum of Honolua Valley and starting from the top and working all the way down. Erosion pins were set in and we needed baseline data of how much tonnage. And thanks to a sharing with Ed Misaki on Molokai and the great efforts that they did, ridge to reef there, we've learned a lot of lessons on erosion pins. So, we brought in USGS geomorphologist John Stock to give us recommendations on now that the baseline data is there, how do we stop the sediment and basically cut off the treadmill. You have to cut off the treadmill, if not, that treadmill is constantly rolling. And then create more efforts in the riparian. So, there are...doing our part. The challenges are real, you know, the damage that has been done, whether it be on Maui or any other island, they're large-scale damage and I believe we're making progress into solving that but it's not going to be an overnight. Bay was brown, tomorrow it's dirty. We see evidence in Kahana where after efforts were put in, Kanaha Basin and so forth that it went from brown to now it's kind of clear and clean, cleaner according to Wes Nohara. I wasn't around paying attention to that 20 years ago but made a difference. So, maybe some of the things that we're putting in now we'll see bright future coming up but going take time. You know once a coral is damaged, you can't really undamage the coral overnight no matter how much money you throw at it, it's going to take time. But we have other variables that is going on too with climate change and bleaching and so forth. So, it's not just solving the one issue, it's solving several more issues all at the same time, and it's very complex. But I believe we are making headway. The idea of loi restoration as micro basins, I had somebody ask me, Pomaika'i, do you think it can be done? Of course it can be done, that's why all the terraces is there, don't you see the walls? They were there, all we gotta do is pull out these Java plums and _____ versus finding 5 million to build a big basin down at the bottom at a hill. Keep the soil at the top of the hill and filter out. And so we're making that headway but we may not see the results till further down the line. It's almost investment when the child is born for his college fund but he's only six months.

VICE-CHAIR COCHRAN: Thank you. And then thank you for all your efforts with the hotels and utilizing the visitors. And I'm sure...and it is about their employees too, right? That I think Honokowai Restoration incorporates and stuff. So, I think everyone's heard me ask Maui Visitors Bureau, you know, how do you interact, and so are they? Have you...have they been a part of this, you know, outreach to the visitor industry,

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you know, as a whole? If so, in what ways? If not, have they been approached? Have they been asked? Have they offered? So, and I'm looking at the bigger picture, right? They're about promoting and marketing Hawaii, Maui, whatever, right? So, perhaps outside of our islands when...to the travel agents, to whoever the booking, you know, I don't know, Expedia, whatever. I mean or a form prior to even coming here they're asked the thing...give them heads-up, make them aware of our opportunities like you folks have, right? And so before coming, you know, they want to book a whale watch during the winter season, they can book some ecotourism, some, you know, farming, agricultural stuff ahead of time so they're aware and learn a little bit more, get acculturated to who we are as a people and our host culture. So, when they come here they can be a part of. Isn't that the unique experience that we bring to the rest of the world is who we are as Hawaiians and aloha and all of that? Well, this is what all you folks do is part of, that is the essence to me and the heart, yeah, of who we are is the aina, is the kai. So, just wondering how do they interact?

MR. KANIAUPIO-CROZIER: To answer you the answer would be yes, yes, yes, and yes. It was kind of a multi question.

VICE-CHAIR COCHRAN: Yeah.

MR. KANIAUPIO-CROZIER: Yes, they've been approached, yes they've been responsive, and now they're asking to share more information. So, a lot of their...after I talked to just nine of the GMs, they've asked to present to their boards and be at the Maui Hotel and Lodging Association annual meeting to let everybody know and get that voice louder. How much has been done before? I don't know. We're so deep in the forest. We don't...it's me, I don't have an outreach coordinator, you know, and these are some of the challenges that we have. Whether or not it's gotten to Hawaii Visitors Bureau versus Maui Hotel and Lodging Association, I don't think we're there yet. I think it's...is a possibility but it's the starting. They've all been very supportive. What I shared with them was everybody who gets their water from this mountain, take care of it. If you had an oasis in the desert and your spring, what would you do to take care of that spring? You'd do everything to take care of that spring. Well, you live on an island. Hurricane Lane kind of went wake everybody up, right? Everybody gets it now. They might have known but maybe didn't take action. I know for me and my family people filled the water bottles for drinking water and to flush toilet, right, and built the water catchment system. I mean it became real. But that people are becoming engaged in ways that they haven't. I try to look at not what we did before, I'm responsible for my action and not the reaction. So, inviting them, hey, come take care of your water source. We're doing our best. How they respond, hopefully it's positive but that's remains to be seen. But they have been invited and they seem very positive. So, the Andaz for example just had an event, they had a fifth-year anniversary event this weekend on Saturday and they supported proceeds. You know and so a lot of them are talking, and whether they support Auwahi, East Maui, West Maui, Pu`u Kukui, Nature Conservancy, wherever you're going to find, maikai, they all the same water sources, take care of it. This is not a PKW commercial, it's one for...we live on an island, take care of your water. If you have water there, you're not coming to my house for water, right? And it's not selfish or earmarked at a particular

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program funding capacity but more of whatever you gotta do to figure it out. Sew bags, collect seed, do fundraiser, invite guests. I don't know all the answers. We're busy. And but what I did say is please, we need help. The County is supporting, the State is supporting, but we won't be able to do it enough, it's going to take a collective effort. And it's been very positive, so I'm hopeful.

VICE-CHAIR COCHRAN: Yeah.

MR. KANIAUPIO-CROZIER: Yeah.

VICE-CHAIR COCHRAN: Excellent. You know one for all, all for one. And thank you for the outreach. I think that is extremely key. You know if you no ask, you no get, and so now you've been out there making it aware of the issues and that they can be a part of. Everyone wants to be...I was amazed at the visitors who came out to support the, you know, to Waiola when they came and they helped with the donations. And these were families, visitors, you know, monetary but they've got their hands in and helped, you know, like they...people feel good. And now they can go home and go wow, I was part of something good, you know, back, you know, on vacation. And I think that message to be spread out there is going to be, you know, catch on. And I think...

MR. KANIAUPIO-CROZIER: Yeah, aloha is contagious.

VICE-CHAIR COCHRAN: Yeah, that's right, there you go. So, that's...

MR. KANIAUPIO-CROZIER: You know our aloha to all the ohana in Lahaina who --

VICE-CHAIR COCHRAN: Yeah.

MR. KANIAUPIO-CROZIER: --lost their homes and their families that, you know, that's a good thing if we're sharing. It's not just the brochure, we're sharing aloha, we're sharing our resources and our water and our beautiful places. They want to help. And if we can find that, but not to run willy-nilly all over the place and we forget to take care of our local kids which are the succession plan, they the new managers and the ones who going take care too. You know people ask me, Pomaika'i, how long have you been into taking care of natural resources? I said I didn't sign up for this gig, my family's been taking care of aina for centuries. It's just my turn and if I complete 1 percent then my son only got 99 percent to do. But nobody signed up for it. So, that's that kuleana that Uncle Art shared, yeah. We just do our part.

VICE-CHAIR COCHRAN: Yeah.

MR. KANIAUPIO-CROZIER: Mahalo.

VICE-CHAIR COCHRAN: And mahalo for that.

CHAIR ATAY: Thank you. Member Crivello?

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COUNCILMEMBER CRIVELLO: Thank you, Chair. Chair, thank you for putting this on the agenda first of all, for us to be reminded of the work that's being done and what we have to continue to support. I also want to extend I think from far back the Department of Water Supply on their efforts to provide funding and how we can continue to leverage with support. Again, mahalo. Mahalo for your unselfish commitment. You know when I was listening to you how the clouds, you know, wets the plants and how it all, you know, I think of it's actually an impregnation, the dew and the plants it's like the clouds they're so low that, you know, they're impregnating so that the waters continue to flow for us. But to add further, I appreciate your efforts in the partnership with the private sector, whether it's the visitors, whether it's the landowners. Because government cannot do it by themselves, we know that. We know that there are funds that we hope we would get increase in, like for instance TAT, the tourism accommodation tax. As well as, you know, leave alone our real property tax. Things of that sort, I think those kind of seeds have to be planted in us so you can continue your efforts in your seedlings and your plantings or what have you. So, I think it's quite refreshing to know that there's this effort and partnership. I mean you have a hotel that talks about the culture always, and they actually is putting their story in place with their nursery. I guess that's how you would define it. And that being so, when you say you don't have the time to outreach and maybe that's something that the industry would be the one to outreach instead of you have to outreach to them. Maybe that's a consideration. My...so from just the County's perspective, refresh me, what's your budget that you receive from just the County, on the County level?

MR. KANIAUPIO-CROZIER: In Fiscal Year '19 is 285,000. In Fiscal Year '18 was 300,000. And it's been a tremendous heartbeat. because that allows to leverage funds with other grant appropriations and so forth. Keep staff and so forth. But for us for Fiscal Year '19 was 285,000 that was appropriated.

COUNCILMEMBER CRIVELLO: So, often when I think of native plants, I mean for me personally a lot of it is laau lapaau, you know, just being able to have that kind of...have it there for us. You know with development it makes it more scarce and you gotta pule like heck, man, to find it where it's located. And to know that our young people are having all of this exposure and how it's very accessible for us to gather, I want to mahalo because it's not that easy to gather with. You know back home we have our places where we go, but here, you know, you have plants of value makai side too, yeah, besides mauka, yeah. So, I think that kind of energy is helpful for us to continue on the...of what you mentioned, what is it that our ancestors valued, how they went malama, yeah, the ahupuaa so that generations to follow will have it. So, I think our investment maybe have to increase somehow in all of this efforts, you know. I don't have the magic wand for that.

MR. KANIAUPIO-CROZIER: Right, right.

COUNCILMEMBER CRIVELLO: But, hopefully we can make this very collaborative and collectively come together to see how we can work on that portion. I think for us as policymakers it's to making be assured that we have policies in place that this will be

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ongoing for us to continue to protect what makes our lands so value, all the way up to the clouds --

MR. KANIAUPIO-CROZIER: Right.

COUNCILMEMBER CRIVELLO: --you know. Yeah. So, mahalo.

MR. KANIAUPIO-CROZIER: And mahalo nui for that. You know multiyear funding helps so that we can kind of plan ahead, because a year just goes by so fast. As well as discretion so if you have a storm, you're able to buy a stream curtain or fix a fence sections which you didn't foresee. And those kind of discretion whether it be a percent of the budget or whatnot is kind of like the ones who take care of the waterlines. They looking at last year's actuals and how many break...breaches they had and how many they gotta fix, but they don't really know how many they gotta fix the next year. You kind of need a budget, say we going make sure that all the water runs to its designated place, and it's kind of the same thing for us in the watershed even though we're doing our best to forecast. The youth luckily they're so awesome. I mean gives a lot of hope. I feel like I'm the youth sitting next to Uncle Art, you know, he's the kind of old timer that look to. But they all...Instagram and FaceTime and Facebook and, you know, they're doing all of these things for social networking. So, you tell one inspired haumana and before you know it, there's a whole army there, and but you gotta feed them lunch or you gotta tell them hey, make sure lunch, you gotta have water jugs. You know that there's challenges that come with it that you didn't see because they mobilize so quick and so fast. It's also inspiring to get a lot of work done. So, trying to keep up with the learning curve, I usually ask the seven-year-old in church and he tells me how to do everything. But mahalo for your invitation and once again for the support from Department of Water Supply and you folks here in the Council to keep us at the forefront of water is important. Everybody needs water, everybody can buy into water. So, mahalo nui.

CHAIR ATAY: Thank you.

COUNCILMEMBER KING: Chair?

CHAIR ATAY: Go ahead --

COUNCILMEMBER KING: Can I just make...

CHAIR ATAY: --Member King.

COUNCILMEMBER KING: I just had a question that I had actually wanted to ask Art earlier. Because you mentioned about what you're doing up there with the reforestation that the ranch lands are...you want to expand and they're saying they want to make sure that it's proven, that it's going to remain in perpetuity. How many years is that going to take them to finally...I mean it's been 15 years, but how long is it going to take for them to...what's the time span they want to see that there before they say okay, now we believe it is going to stay?

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MR. MEDEIROS: I think the ranch is already there. I think the question is, is there funding to do anything?

COUNCILMEMBER KING: Okay. Okay. 'Cause it sounded like that was something that they were still waiting for to do.

MR. MEDEIROS: No, no, no, no.

COUNCILMEMBER KING: But then...and then my --

MR. MEDEIROS: Money is the...

COUNCILMEMBER KING: --follow-up question to both of you and I don't...I'm not looking for an answer today, but if you could come back to the Council at some point with what level of funding you would want for the following year to move in, at the pace that you think it's necessary to move. But I mean you can't everything done in the next five years but, you know, I understand about the flexibility and I understand about the multiyear funding, because that's how business operates as well. But what level of funding would be...I mean hopefully we can move in an upward direction and not downward. And then if we knew...if there was some...you know in business we call it ROI, you know, the rate of investment and the rate of return, and if we can get some kind of a sense of how we can move a little bit faster. Because one of the things that we're looking at, you know, we have this big report on sea level rise and adaptation to that, and so there's this idea of managed retreat along the coastline. But what you guys are doing up above at the top of the watershed to me is in perpetuity, because we don't have to worry about that, we...everything is affecting what's coming down stream. And we have other issues around the coastline, but we should be funding what you guys are doing because that's...it's...we're never going to get to a point where we're going to say that doesn't matter. So, if you can give us, you know, some...what level of funding that could...where we could be more effective, get more done, you know, in a realistic, you know, realistic, you know, next five years or whatever to give us a sense of where we're at now. And if we don't move at this pace, you know, we're going to at some point go backwards. So, that's why...that's just my request for you folks and I don't need an answer today but just...

MR. MEDEIROS: Thank you so much. Thank you so much for the healthy attitude, a healthy attitude of almost self-respect for our lands. Thank you.

MR. KANIAUPIO-CROZIER: Ditto, mahalo nui for even asking that question. I would say if there was an appropriation of \$1 million per watershed per year, that'd be a healthy start, because pretty much you would be tripling every effort that there is ongoing currently. If you give the same amount of money every year then you get the same amount of work done every year. If...

COUNCILMEMBER KING: Right, but realistically also, you know, do we have the manpower to do that much work every year? Because, you know, we're at like 2 percent

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unemployment, so, you know, how many volunteers or how many even employees could we get? So, that's just the kind of thing --

MR. KANIAUPIO-CROZIER: Right.

COUNCILMEMBER KING: --that I'm thinking about.

MR. KANIAUPIO-CROZIER: What we...and I say that is because most of us operate at that with matching funds from other places, that there is capacity. We can't house as many people with the current funding that we have. You know I'm sure that Ainoa and Art guys could have three more guys and West Maui and East Maui to do more work, because as fast as Chris Brosius might be building the fence, it just burnt down a section, you know. And so we're dealing with problems of not just moving forward, there's the tail that we gotta catch up as problems. So, the...as somebody moving forward, somebody maintain and somebody doing something else really kicks the can down the road. And if we're getting closer, maybe we're going to do 500,000, whatever pace we want to move forward, I believe the watershed partnerships can move at that level. We have, like I said, 200 interns. For me to find four more is not a problem. Most of them out of the 200, one of them is begging for that one position. So, part of that with Kupu and a lot of Kamehameha Schools, other natural resource management encouragement, the youth are hungry, we just don't have the funding.

MR. MEDEIROS: The only thing I would add to that is to repeat that is that even though there is...you don't see anything in the community now, there's so many young people that are interested in this kind of thing that if there was actually a training program that would help them, because colleges are sometimes teaching things that are a little irrelevant for their lives. So, if there's a training program that brought them credentials as well as doing something, I think a wonderful forest would emerge out of Maui that probably would be perennial, it'd be...affect the future.

CHAIR ATAY: Thank you.

COUNCILMEMBER KING: Thank you, Chair. And I just want to echo Member Crivello's, you know, appreciation for you bringing this forward and, you know, be able to hear the details of all the watersheds projects. Really, you know, hopefully we'll have a few more Councilmembers at the next meeting.

CHAIR ATAY: Thank you, Members. You know I'm sitting here I'm going like wow, this is just the two grantees and we've pretty much covered the entire three-hour allotment for our Committee meeting. You know so mahalo for the deep sharing of your guys' manao. The Chair's notation and I think this sharing that I notated is for either Department, Administration, or Council Services' Staff, here's my thoughts. We definitely need some projects or research projects. You know what are we going to do in funding for watershed management in addressing Rapid Ohia Death from the County perspective? You know it's going to affect...if it does come, it's going to affect our watershed. I know currently right now I think on the State level there is a request or an RFP for 70,000 for someone to come up with a anti-fungal approach in

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addressing the Rapid Ohia Death situation. I think we as County must be prepared with some kind of RFP of a research of what's our approach. The other questions I had was for Pomaika'i and Pu'u Kukui is how large of a Native Hawaiian plant nursery do you have? Because it seems like in preparation to take care of our watersheds, on both...people gotta realize that we live on an island that is consisting really of two separate islands, you know. We have Haleakala and we have Mauna Kahalawai. And in the biota and understanding the biodiversity, we need to collect seeds for each section of the island. So, West Maui has to have its own greenhouse and collection of seeds, and Haleakala has to have its own greenhouse and collection of seeds. That's for their own separate biota area. So, investing in our greenhouses, being prepared to strengthen our watershed. The question of the hydromulch, you know, if there could be a spreadsheet and an economic spread cost as to what would it cost for us to be prepared to hydromulch our watersheds. You know we want to entertain that but we need the, somebody to do that research. And then for Staff, you know, the economic research of the correlation of the tourist use of our natural resources. You know you brought it up, you know, how much water, how much drinking water, how much wastewater do each individual tourist. So, can we come up with the data from the economic perspective of the tourist industry's impact so that HSAC, our HSAC has data to take to the State level to argue stronger for the actual money on our TATs. So, these are works I think that, you know, just from this short discussion we have several projects that we can move forward in addressing how do we strengthen our watershed, yeah, and fighting for the funding. But once again I know Member Crivello has to leave very shortly so I do want to respect that. Once again I want to say thank you to all the Members staying here, holding bare quorum. And most especially with that, if there's no other follow-up, the Chair would like to just defer this matter. No objections?

COUNCILMEMBERS VOICED NO OBJECTIONS.

ACTION: DEFER.

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CHAIR ATAY: Okay. And I want to deeply say thank you, Mr. Medeiros, thank you to Mr. Kaniaupio-Crozier for your deep, you know, to understand the depth and breadth of the passion of your job. Thank you for your presentations today. Members, thank you once again for attending. Our next scheduled Committee meeting is Wednesday, September 19, 2018. There being no further business, this meeting of the Water Resources Committee is now adjourned. . . . *(gavel)* . . .

ADJOURN: 12:00 p.m.

APPROVED BY:



ALIKA ATAY, Chair
Water Resources Committee

wr:min:180905:ds

Transcribed by: Daniel Schoenbeck

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CERTIFICATE

I, Daniel Schoenbeck, hereby certify that the foregoing represents to the best of my ability, a true and correct transcript of the proceedings. I further certify that I am not in any way concerned with the cause.

DATED the 10th day of September, 2018, in Kula, Hawaii

A handwritten signature in black ink, appearing to read "Daniel Schoenbeck", is written over a horizontal line.

Daniel Schoenbeck