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IN THE CIRCUIT COURT OF THE FIRST CIRCUIT
STATE OF HAWAII

| | | |
|--------------------------------|---|----------------------------|
| SIERRA CLUB, |) | CIVIL NO. 19-1-0019-01 JPC |
| |) | (Environmental Court) |
| Plaintiff, |) | |
| |) | |
| vs. |) | |
| |) | |
| BOARD OF LAND AND NATURAL |) | |
| RESOURCES, DEPARTMENT OF LAND |) | |
| AND NATURAL RESOURCES, |) | |
| SUZANNE CASE in her official |) | |
| capacity as Chairperson of the |) | |
| Board of Land and Natural |) | |
| Resources, ALEXANDER AND |) | |
| BALDWIN, INC., and EAST MAUI |) | |
| IRRIGATION, LLC |) | |
| |) | |
| Defendants. |) | |

DEPOSITION OF GLENN HIGASHI

Taken on behalf of Plaintiff at 1001 Bishop Street, Suite
798, Honolulu, Hawaii on Tuesday, March 3, 2020 commencing
at 8:31 a.m. pursuant to notice.

Reported by:
Priscilla Gonzaga, CSR #127
State of Hawaii

1 APPEARANCES:

2 For Plaintiff:

3 DAVID KIMO FRANKEL, ESQ.
4 1638-A Mikahala Way
5 Honolulu, Hawaii 96816

6

7

8 For Defendants Board of Land and Natural Resources,
9 Department of Land and Natural Resources and Suzanne
10 Case:

11

12 AMANDA WESTON, ESQ.
13 Deputy Attorney General
14 Department of the Attorney General
15 Tort Litigation Division
16 465 South King Street
17 Honolulu, Hawaii 96813

18

19

20 For Defendants Alexander and Baldwin, Inc. and East
21 Maui Irrigation, LLC:

22

23 MALLORY MARTIN, ESQ.
24 Cades Schutte LLP
25 1000 Bishop Street, Suite 1200
Honolulu, Hawaii 96813

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1 (Reporter's disclosure is available.)

2 GLENN HIGASHI,
3 called as a witness, having been first duly sworn,
4 was examined and testified as follows:

5 EXAMINATION

6 BY MR. FRANKEL:

7 Q Can you state your name for the record?

8 A Glenn Higashi.

9 Q If my question is not clear, will you ask me
10 to explain myself?

11 A Yes.

12 Q Do you understand that your testimony is
13 being made under oath?

14 A Yes.

15 Q You understand that the answers you give
16 today can be used in court, particularly if you
17 answer differently in court than you do today?

18 A Yes.

19 Q Okay. Do you understand that you may
20 request a review of the completed transcript of this
21 deposition?

22 A Yes.

23 Q Would you like to review the transcript and
24 offer corrections?

25 A Yes.

1 Q Okay. What did you do to prepare for
2 today's deposition?

3 A Oh, I read over all the correspondence and
4 everything else that had related to this case.

5 Q All right. Great.

6 Tell me -- what was your major in college?

7 A Zoology.

8 Q Where?

9 A University of Hawaii.

10 Q And do you have a master's degree?

11 A No.

12 Q Okay. So no -- no degrees after your BA --
13 or BS in zoology?

14 A No.

15 Q Okay. You've been an aquatic biologist at
16 DLNR for the past 34, 35 years?

17 A Thirty-five years.

18 Q Thirty-five years.

19 What are your responsibilities as an aquatic
20 biologist?

21 A It's to manage resources, to do field work.
22 Basically, it's whatever is mandated by our division.

23 Q You spend a significant time in streams or
24 next to streams, looking at streams?

25 A Yes. Yes, I do.

1 Q Okay. When was the last time you visited
2 any of the streams in East Maui?

3 A Last time was -- I think, was last year.

4 Q 2019?

5 A Yeah.

6 Q Would you say summer, spring, fall?

7 A I would say in the -- in the fall.

8 Q And how much time would you say -- would you
9 estimate you spent studying the East Maui streams in
10 the past 35 years?

11 A In the past 35 years, let's see, 2008. I'd
12 say maybe 10 to 15 years roughly.

13 Q And would you say you have visited all the
14 streams in East Maui or just a portion of them?

15 A We visited about 15 of the streams.

16 Q So you're not familiar with some of the
17 others that you didn't visit?

18 A We did visit it but we didn't survey them.
19 So, you know -- I mean probably we visited them all
20 but we didn't do any surveys in all the streams so.

21 Q All right. Great.

22 Can you tell me why the Division of Aquatic
23 Resources believes that streams in their natural
24 condition are important?

25 A Well, they're important because they provide

1 habitat for our native species. We have eight native
2 species that live in the streams that provide --
3 well, they provide -- they were used before for food,
4 you know. And then now I know they're not used as
5 much for food.

6 There's also the part where they provide
7 nutrients and prey for other reef fish that live in
8 the estuaries. So they're kind of in a food chain
9 themselves, you know. And they have a amphidromous
10 life cycle which attach to the ocean. And they're
11 unique because they're all endemic. They're not
12 found anywhere else in the world.

13 Q And when you talk about those things, we can
14 include in that Oopu and Opae?

15 A That's what I was talking about, yes.

16 Q Okay. And I don't know if you've said this
17 directly but they have some cultural importance as
18 well?

19 A Yes.

20 Q Okay. I want to present you an exhibit.
21 We'll call this Exhibit 1. It might be a slightly
22 different format than you're used to 'cause it's on
23 paper but are you familiar with the Division of
24 Aquatic Resources' website?

25 A Yes.

1 Q And does this resemble what is featured on
2 the Division of Aquatic Resources' website?

3 A I think so.

4 Q And you don't have any reason to disagree
5 with the description of the Division of Aquatic
6 Resources summary about the cultural importance of
7 streams -- of streams?

8 A No.

9 Q All right. Great.

10 Can you explain to -- I'm not the most
11 sophisticated lawyer, I'm not a biologist, what a
12 habitat unit is?

13 A Habitat unit is a unit that we define that
14 an animal lives in. And it's usually ten -- ten
15 meters square.

16 Q And how do you -- if you're in a stream, how
17 do you determine what the habitat unit is?

18 A You basically look at the habitat itself.
19 And by the -- whether it's a referral run or pool, you
20 can determine what kind of habitat, what kind of
21 animal would be in that habitat. And they don't stay
22 just in one of those habitats. They kind of move
23 around so you have a larger area. And then you also
24 have other species that inhabit the same habitat.

25 Q Sure. Do you -- if it's -- how to say this?

1 If -- are there some habitat units that have much
2 more potential to support native species than other
3 habitat units?

4 A Yes.

5 Q So habitat units aren't necessarily
6 equivalent?

7 A No.

8 Q Okay. So if there's a big terminal
9 waterfall below a habitat unit, that could affect its
10 quality, right?

11 A When you say a big -- you talking about a
12 pool? Are you talking about the terminal waterfall
13 or --

14 Q I'm -- okay. I'm talking about the area
15 above the waterfall.

16 A Okay, okay.

17 Q It's a terminal waterfall. Is -- is the
18 fact that there's a terminal waterfall, does that
19 affect, say, the size of the habitat unit you -- you
20 determine?

21 A No.

22 Q Okay. So a habitat unit directly above a
23 terminal waterfall and one that's not by terminal
24 waterfall, are going to be the same size?

25 A Relatively.

1 Q But they may have much different
2 abundance --

3 A They'll have different species, definitely,
4 yes.

5 Q Yeah, okay. All right.

6 Is more water and better connectivity in
7 streams a good thing for native habitat restoration?

8 A Yes. It's always a good thing.

9 Q Okay. And would you agree that stream
10 diversions and insufficient instream flows are key
11 threats to Oopu and Opae?

12 A They're threats, yes.

13 Q Do Oopu and Opae return to the same streams
14 from whence they came?

15 A No, they don't.

16 Q Are you familiar with the Hawaii Stream
17 Atlas?

18 A Yes.

19 Q How is it put together?

20 A I was one of the authors, co-author. And
21 basically, it was put together using our data that we
22 collected in surveys. And it was also used with gray
23 references of any papers that were produced in stream
24 systems.

25 Q So it's not original -- there was no outside

1 research done to compile -- it was a compilation of
2 other things that have been done. It wasn't --

3 A It was a compilation of other things that
4 have been done. But it was also a way for us to get
5 our data when we do surveys out to the public.
6 Because if we don't do that, it's going to sit in
7 shoeboxes, you know, in our division and it's not
8 going to be, you know, shared with the public. So
9 basically, the atlas was produced to, you know, share
10 or share our data -- our latest data with the public
11 and any other data that was out there.

12 Q Okay. Let me have this marked as Exhibit 2.
13 Does this look familiar from the Division of
14 Aquatic Resources' website?

15 A Uh-hum.

16 Q And is there . . . the articles in reference
17 as cited are ones division felt comfortable enough
18 referring the members of the public to?

19 A Yes.

20 Q Okay. And that includes work prepared by
21 Mike Kido? It's on page 8.

22 A Uh-hum.

23 Q Just --

24 A Yes.

25 Q Great. Thanks. All right.

1 How much water has the Division of Aquatic
2 Resources determined the minimum amount of water
3 needed to remain in East Maui streams?

4 A We're saying that it was 64 percent of the
5 base flow, yeah.

6 Q Now, is there a significant difference in
7 terms of what you would expect in the stream ecology
8 between a stream with 64 percent base flow and full
9 and complete restoration?

10 A I think because of the flashiness of the
11 streams, that the streams don't always have full
12 restoration flows. And I mean during the summer
13 periods, you have -- you don't have as much because
14 you don't have freshettes which also provide --
15 augment the stream itself.

16 Spraying the water is usually the basal
17 flow. And this occurs year round and basically
18 provides the stream with water. But it's augmented
19 again by rain. And that's when you have periods of
20 freshettes and these are important.

21 Q Sure. But I want to focus on the difference
22 between a stream that is -- has 64 percent of base
23 flow plus freshettes versus a stream that's not
24 diverted at all. Is there a significant
25 difference -- would you expect a significant

1 difference in stream ecology?

2 A I wouldn't expect that much of a difference
3 if the diversions were, you know, allowed passage and
4 didn't entrain.

5 Q Okay. Can you explain -- again, this is for
6 unsophisticated lawyer. So -- well, explain to me
7 how the 64 percent figure was derived. Did you
8 understand my question?

9 A Uh-hum. Basically that was -- that's a
10 basal flow that's already in the streams.

11 Q Well, that's medium base flows already -- so
12 this is 64 percent of that?

13 A Yes.

14 Q So how does -- where does the -- how does
15 the 64 percent figure get determined that that's the
16 minimum that's needed?

17 A We were looking -- we were looking at flows
18 with what was provided by USDS and CWRM. And
19 basically, with our expertise and our knowledge, we
20 visited a lot of streams, a lot of streams that
21 aren't even diverted. And we've, you know, worked
22 the habitat model and found out that habitat was
23 provided at a 60 percent base flow --

24 Q And when you say habitat -- sorry?

25 A Enough habitat for the animals to reproduce,

1 to grow and everything else.

2 Q So can -- I don't know if you can -- can you
3 explain methodologically, you know, how does this
4 64 percent figure get derived as opposed to say
5 70 percent, 80 percent, 50 percent? I mean can you
6 sort of walk me through how that number came about?

7 A Yeah. It was based on a model and our
8 observations of the animals in the stream. And it
9 was calculated through graphs and everything else
10 about what the flow was at the time that we did the
11 surveys and then what was necessary for the animals
12 to survive.

13 Q Is it fair to say that figure is limited to
14 East Maui and not transferable to other streams
15 across the state or do you think it's translatable to
16 any stream?

17 A I think it's translatable to any stream.

18 Q I see. Okay.

19 Any particular assumptions that were made
20 with that model to help -- you know, all models are
21 underlying assumptions --

22 A Yeah.

23 Q So what are some of the assumptions in that?

24 A Let's see. A lot of the assumptions were
25 . . . I got to think about this. Okay. The

1 assumptions were that basically, the stream would
2 be -- we were looking at undiverted streams, of
3 course, you know. And we're looking at flows,
4 measuring flows and animals' behavior and activity
5 within -- within a undiverted stream. And this is
6 kind of assuming that this is what's necessary even
7 on a diverted stream in the sense that, you know,
8 these animals are reproducing, they're growing and
9 they're migrating in this other stream with
10 64 percent versus, you know, a diverted stream. So
11 we felt that for minimal purposes, that was the
12 sufficient amount for them to actually reproduce,
13 grow and develop.

14 Q I have to say I don't understand. Because
15 if you're looking at an undiverted stream, it's not
16 at 64 percent medium base flow. It's -- you know,
17 it's --

18 A Yeah, but you're comparing it -- you're
19 comparing it with a diverted stream so there's going
20 to be a comparison of course.

21 Q Sure.

22 A You know.

23 Q So how do you -- how do you find out
24 whether -- so are you -- you're saying that a stream
25 that's diverted so that there's only 64 percent of

1 base flow, you're going to find as many fish or --
2 I'm sorry, native aquatic species as you would one
3 that's undiverted as long as -- one of the
4 assumptions, as long as the diversion structures
5 themselves don't impede migration?

6 A True.

7 Q Is there any -- but so is that what you're
8 saying though, those two are equivalent in terms of
9 species?

10 A It also depends on habitat, whether there's
11 habitat available for the animals. 'Cause if there's
12 no habitat, even though you have a, let's say, a
13 hundred percent flowing stream, if there's no
14 habitat, there's not going to be any animals.

15 Q Yeah. Good.

16 A So, you know.

17 Q Any other assumptions or caveats that helped
18 you, you know, in coming up with a 64 percent figure?

19 A Can I look at my --

20 Q I have no problem with that.

21 A Okay. One of the other things that we
22 actually did was we compared the data and tested the
23 model with real live data.

24 Q Yeah.

25 A So, you know, there's a tweaking of the

1 model.

2 Q Yeah.

3 A And verification.

4 Q Okay. So, you know -- I'll let you keep
5 looking at that if you need to.

6 A Okay.

7 Q All right. So I don't know if you know this
8 but the Water Commission has ordered the full
9 restoration of West Wailua Iki and 64 percent of East
10 Wailua Iki. And so based on what you've said, is it
11 your expectation or hypothesis or that in a year, two
12 years, five years, ten years, you really will see no
13 difference in the stream ecology between those two
14 streams? Is that a fair description of the
15 hypothesis you would have?

16 A Well, if you're going to restore a hundred
17 percent flow, of course -- of course that stream
18 supposedly should be better. If it's not, then
19 there's something else going on in the stream.

20 Q Okay. So when you say it should be better,
21 how much better would you expect the hundred percent
22 free flowing stream versus a stream that would have a
23 64 percent base flow?

24 A That would be a natural stream without --
25 without any diversion.

1 Q Okay. How much more -- can you quantify the
2 difference in terms of how much better the stream
3 ecology or how many more species or how much more
4 abundance there would be?

5 A It would depend on the stream 'cause not all
6 streams are alike. So, you know, whatever habitat is
7 there and available, if you put in more water, those
8 habitats will be utilized by the animals coming
9 upstream again.

10 Q So, for example, a comparable West Wailua
11 Iki and East Wailua Iki which are pretty close to
12 each other --

13 A Uh-hum.

14 Q -- would you expect a significant difference
15 in the stream ecology between the fully restored West
16 Wailua Iki and the 64 percent base flow East Wailua
17 Iki?

18 A No.

19 Q Okay? You wouldn't -- so you think it might
20 be better but not significantly better?

21 A Well, the thing is you have to look at the
22 individual stream. And East Wailua Iki is blocked by
23 cobble berm which prevents the migration of animals
24 upstream. Only when you have big freshettes,
25 nothing breaks open, do you have recruitment. And

1 also you have the animals, you know, reproducing and
2 sending out the progeny. But because it's
3 continuously blocked most of the time, it's -- it's
4 hard to say, you know, that they're going to be
5 exactly -- they're going to be exactly alike. Of
6 course if you have an open stream, the fish can
7 migrate up any time, but usually during the wet
8 seasons.

9 Q Okay. So like -- let's not compare those
10 two streams then. But, in general, is there a
11 significant difference in the stream ecology between
12 a stream that is -- has 64 percent of its base flow
13 plus some freshettes versus one that's fully
14 restored?

15 A I think it would be -- you know, I think
16 they'd be pretty -- pretty much equivalent. I mean
17 it's hard to quantify it exactly. I mean, you know.
18 I mean you'd have to go there and you'd have to
19 actually map the stream, find out the habitat and
20 then determine from that, you know, what's going on.

21 Q Okay. What about is there a significant
22 difference in habitat quality in a stream with
23 64 percent base flow and one that just has 20 percent
24 base flow?

25 A Oh, yeah, they're substantial.

1 Q Can you be more -- can you describe how it
2 would --

3 A Well, you don't have enough water in the
4 stream for animals to actually grow, to reproduce,
5 you know, to spawn. So I mean it's not enough water
6 that, you know, the animals can live their normal
7 life. You may be able to sustain the animals but
8 it's not necessarily getting to, you know, their full
9 functional cycles of productivity and whatnot.

10 Q And I think there's some reference in some
11 of your correspondence. But it's not a linear
12 relationship, 20 percent --

13 A Yes, it's not. It's not. You think it
14 would be but it's not.

15 Q Okay. Now, is there a significant
16 difference in habitat quality in a stream with
17 20 percent base flow and one with no base flow where
18 all the base flow can be taken and diverted?

19 A Well, then you have a dry streambed, yeah.
20 So you don't have any animals.

21 Q Does the removal of more than half the water
22 from a -- from a fresh stream in East Maui harm
23 native aquatic species?

24 A Yeah, I would say it would probably would
25 affect the flow, affect the animals' livelihood.

1 Q And certainly taking all the base flow would
2 have an adverse effect on native species?

3 A Well, you would have dry streambed, yeah.

4 Q Would you say if you take all the water from
5 a stream, 60 percent of the time, that it would have
6 profound ecological consequence?

7 A Depends on when that 60 percent of the time
8 was.

9 Q Well, it's base flow.

10 A Yeah.

11 Q So there's still going to be freshettes that
12 come down. So doesn't really depend -- 'cause base
13 flow can be taken -- okay, let me rephrase it.

14 You take all the base flow --

15 A Uh-hum.

16 Q -- plus some of the freshettes so that the
17 stream below the diversion, there's essentially no
18 water flowing below the diversion 60 percent of the
19 year. Is that going to have profound ecological
20 consequences on the ecology of the stream?

21 A It may. But I've seen intermittent streams
22 on other islands that actually have a full complement
23 of animals above where the water goes into the
24 ground. So basically, you have a dry streambed from
25 one section of the stream all the way down to the

1 ocean. Now, those streams still maintain themselves
2 with a population that they have whenever there is
3 freshettes.

4 Q Yeah.

5 A So again, you know, there -- they're
6 intermittent. Their basal flow goes underground and
7 comes out by the ocean. So there's no surface water
8 for the animals to get above.

9 Q Sure. So recognizing that there are
10 intermittent streams and there are -- can be healthy,
11 would you agree that, in general, maintaining the
12 mauka makai lifeline to ensure a healthy -- is
13 necessary to ensure healthy populations of native
14 stream flora and fauna?

15 A Yes.

16 Q Okay. Why don't we give you this. I guess
17 this is number 3.

18 Do you recognize this as coming from the
19 Division of Aquatic Resources' website?

20 A Uh-hum.

21 Q All right. All right. Great. Let's move
22 on from that.

23 In October 2019, so just a few months ago,
24 do you know what information the Board of Land and
25 Natural Resources had regarding whether there was

1 enough water flowing into each stream in East Maui to
2 ensure that populations of native aquatic organisms
3 within had not been adversely affected?

4 A They usually set the standards so I assume
5 that they would know, yeah.

6 Q But you don't know that for a fact? You
7 just assume it?

8 A (Moves head up and down.)

9 Q Do you know does the Division of Aquatic
10 Resource -- I know that the Division of Aquatic
11 Resource provides information to the Water
12 Commission.

13 A Yes.

14 Q But does the Division of Aquatic Resources
15 provide information directly to the Board when it
16 comes to the re-issuance of the revocable permits for
17 the 33,000 acres of land in East Maui?

18 A We don't issue anything directly to the
19 Board. It goes through Water Commission staff.

20 Q Okay. Does the Water Commission follow all
21 the Division of Aquatic Resources' recommendations?

22 A I think they follow -- yeah, most of them
23 that we've given them.

24 Q Well . . . let's . . . this number 4? Mark
25 this as number 4. How helpful is that?

1 Are you familiar with these comments?

2 A No, I never saw them before.

3 Q Okay. Do you know if the Water Commission
4 followed recommendations that are in this?

5 A I don't know.

6 Q Okay. Would an increase in the amount of
7 water being diverted out of East Maui than has been
8 occurring for the past three years or so, would an
9 increase adversely affect native aquatic species?

10 A I think it would.

11 Q Okay. And would increasing the amount of
12 water diverted out of East Maui and has been current
13 for the past three years or so adversely affect
14 native stream habitat?

15 A You wouldn't have stream habitat if they did
16 that.

17 Q Well, I didn't say how much they're going to
18 increase.

19 A Yeah, okay. But, yeah, it would affect the
20 habitat.

21 Q Okay. And how about ecosystem health?

22 A Yes.

23 Q Okay. I'll spend a few minutes talking
24 about the streams that the Water Commission ordered
25 to be restored. Of those ten streams that the Water

1 Commission ordered to be fully restored, are there
2 still diversion structures remaining on any of them
3 that interfere or harm native aquatic species?

4 A There probably are.

5 Q But do you know where? Can you identify any
6 one?

7 A No, no. I don't know exactly where.

8 Q So why do you say they probably are?

9 A 'Cause they haven't -- they haven't taken
10 out any of the diversions yet. They haven't done
11 anything with diversions.

12 Q When did the Division of Aquatic Resources
13 last check on the status of the diversions in those
14 ten streams?

15 A You'd probably have to ask Skippy.

16 Q Okay. Do you know if that was done before
17 the Board made a decision in October 2019 regarding
18 the revocable permits?

19 A No.

20 Q Okay. So you don't know whether the fully
21 restored streams have been fully restored?

22 A They said they were restored. And we can
23 only go on what they tell us, you know. I mean if
24 they say they're restored, we don't have any way of
25 checking unless you look at the gauges.

1 Q So . . .

2 A I mean supposedly they closed the ditches
3 and the diversions that the water continues
4 downstream now so. I mean that's -- that's how they
5 restore.

6 Q But there's still -- you believe there's
7 still diversion structures that may interfere or harm
8 native aquatic species in those streams?

9 A I think so. I think they're probably --
10 yeah, diversion structures are probably still in the
11 stream. I mean they're not going to be taken out
12 that easily.

13 Q Uh-hum. Do you know if DLNR has monitored
14 those ten streams ordered to be restored by the Water
15 Commission to determine if native stream life can
16 effectively migrate and reproduce where the dam
17 structures or other diversion structures in place?

18 A Monitor in the sense that regular --
19 regularly going up there and looking?

20 Q You know what, let me take that back. How
21 about have they ever inspected -- so less continuous.
22 But have they inspected the ten streams that have
23 been ordered to be fully restored to determine if
24 native stream life can effectively migrate and
25 reproduce with the diversion structures that are

1 there now?

2 A You'd have to ask Skippy.

3 Q Okay. Are you familiar with Waiohue Stream?

4 A Waiohue, yeah.

5 Q You know how there's that beautiful pool
6 right above the ditch? You know what I'm talking
7 about?

8 A (Moves head up and down.)

9 Q So what I'm asking you when was the last
10 time you were there?

11 A Well, again, probably last October.

12 Q Okay. So you're familiar that they
13 basically elevated or blocked the gate where the
14 water used to go to the ditch. And so now it goes
15 back to where it used to naturally flow?

16 A (Moves head up and down.)

17 Q If that gate were to collapse in 5 years or
18 10 years or 50 years, the water would be diverted
19 back into the Koolau Ditch, right?

20 A Probably.

21 Q So do you think -- would you describe the
22 restoration there as permanent if given the nature of
23 that gate there?

24 A I wouldn't say it was permanent.

25 Q Yeah.

1 A Our recommendation for that -- that pool
2 over there was to notch, take out the right side of
3 the concrete wall.

4 Q Right as you're looking upstream?

5 A Yeah.

6 Q Uh-huh.

7 A So we take out the right side so you'd have
8 a natural stream flow.

9 Q Is that -- did the Water Commission adopt
10 that recommendation?

11 A I don't think they did. I know the
12 companies had tried to -- HC&S had tried to put on a
13 water -- a hose which was suggested by us that, you
14 know, maybe the animals can get up over there
15 through -- through the water that was trickling over
16 the wall.

17 Q Yeah.

18 A But I think -- yeah. You want a more
19 definite -- definite fix, you would have to take out
20 that right side of the wall.

21 Q Okay. Do you -- have you made that
22 recommendation?

23 A That recommendation was made on the report
24 cards that we had given to the Water Commission a
25 while back. And I think -- yeah, I think it's in

1 the -- right here, Waiohue. Talking about the
2 release but okay, maybe not this section. But I know
3 it was mentioned before that they needed to -- and it
4 might have been in one of the letters that they
5 needed to take out the right side.

6 Q And again, that went to Water Commission, to
7 the Board of Land and Natural Resources, that letter?

8 A Yes, yes.

9 Q Okay. Great.

10 Okay. I want to talk about some specific
11 streams. And I want to talk first about Puohokamo
12 Stream. You know what stream I'm talking about?

13 A Okay.

14 MR. FRANKEL: And for the court reporter,
15 I'll spell it, P-u-o-h-o-k-a-m-o-a.

16 Q (By Mr. Frankel) Now, in 2010, the Division
17 of Aquatic Resources ranked Puohokamo Stream as the
18 third highest priority stream for restoration. Does
19 that sound right?

20 A Okay.

21 Q Why don't I give you this. We'll make
22 this --

23 A Well, it was -- it was -- yeah, it was
24 basically the third, the third in the group of that
25 communications with the Water Commission Members.

1 Q Right. Let me -- I think it be easier for
2 the other attorneys if I hand this out. So let's
3 make this Exhibit 5. And . . . I just to make
4 sure -- can you look at Exhibit 5 that's there and
5 see if that's the same thing -- is that the same
6 thing you're looking at or are you looking at the
7 prior -- the report that --

8 A I was looking at a prior.

9 Q Okay.

10 A Yeah.

11 Q So I recognize that things changed around.
12 But by April 2010, the Division of Aquatic Resources
13 had recommended restoration work to Puuhokamoa has
14 the priority rank 3, is that right? If we look at --

15 A Yeah, yeah.

16 Q Okay. Now, despite the Division of Aquatic
17 Resources recommendation, the Water Commission only
18 restored 20 percent of the base flow to the stream,
19 right?

20 A Uh-hum.

21 Q That's a yes?

22 A Yes.

23 Q And you folks felt it would be relatively
24 easy to allow water to pass through the Manuel Luis
25 Ditch, right? If you look at . . . the page -- were

1 you looking at -- yeah, yeah, yeah.

2 A Yeah, this one.

3 Q And you -- is that -- well, why don't you
4 take a minute to read through that.

5 So you got -- well, let me take a step back.
6 You helped -- you did some of the field work and some
7 of the investigative work that created the report
8 that led to this letter and recommendations, correct?

9 A Uh-hum.

10 Q And the division believed that it would be
11 relatively easy to allow water to pass through the
12 Manuel Luis Ditch, is that right?

13 A Yes.

14 Q And do you know -- I don't know if this is
15 what -- if you know this or not. But do you know if
16 the Manuel Luis Ditch provides water to the county or
17 is that more the Koolau and the Wailoa Ditches?

18 A We don't know who the ditches provide water
19 to.

20 Q Okay. Okay. Now, did -- do you know did
21 the Board of Land and Natural Resources require any
22 modification of any diversion structures on
23 Puohokamoa Stream?

24 A Not that I know of.

25 MS. WESTON: Do you mean CWRM?

1 MR. FRANKEL: No, I meant the Board. We've
2 already established they're 20 percent by CWRM. But
3 I'm asking about the Board. But thank you, Amanda.

4 Q (By Mr. Frankel) So what is the impact on
5 native species of only restoring 20 percent of the
6 median base flow to Puohokamoa Stream?

7 A Well, it would be a lot better if they could
8 provide more. But then again, you have the issues of
9 the diversion themselves, you know, so --

10 Q You'd want both addressed to deal --

11 A They would have to be similarly addressed,
12 yes, yes.

13 Q Great.

14 I want to switch to another stream,
15 Haipuaena, H-a okina i-p-u-a okina e-n-a, Haipuaena.

16 Now, in the same letter going -- it's -- the
17 Division of Aquatic Resources ranked Haipuaena as the
18 sixth highest priority stream for restoration, is
19 that right?

20 A Yes.

21 Q But the Water Commission only restored
22 20 percent of the base flow to the stream, right?

23 A Yes.

24 Q And DLNR did not require any modification of
25 any of the diversion structures on Haipuaena Stream,

1 did it?

2 A No, it didn't.

3 Q So what's the impact of allowing the
4 stream -- allowing the diversion structures to remain
5 in place and not restoring more of the base flow to
6 the stream?

7 A Well, probably it impacted it because as you
8 can see, there was no water below the diversion.

9 Q Although if they ordered -- if the Water
10 Commission ordered 20 percent of the base flow to be
11 restored, that's still below what the Division of
12 Aquatic Resources recommended, right?

13 A It was below what we recommended but it
14 might provide connectivity. So that's another thing
15 that, you know, we look at.

16 Q Sure. But as you've answered earlier,
17 there's a significant difference between 64 percent
18 base flow and 20 percent base flow?

19 A Yes.

20 Q Okay. Hanawi Stream, let me ask you about
21 that.

22 A Sure.

23 Q Is -- I don't know how to begin this one
24 in --

25 A It is --

1 Q Oh, yeah. Is Hanawi Stream worthy of
2 restoration?

3 A Yes. More so, not on the necessary flow
4 because it has a spring on the lower section of the
5 stream which provides a lot of the basal flow. And I
6 think one of the issues more is entrainment and the
7 diversion itself of how the animals can get past it.

8 Q And that's the Koolau Ditch number 4, is
9 that right?

10 A I think so.

11 Q Okay. K-4?

12 A K-4.

13 Q And okay. Has the Division of Aquatic
14 Resources brought this issue to the attention of the
15 Board of Land and Natural Resources?

16 A We brought it to the Water Commission. And
17 the landowner had actually put another pipe on the --
18 on the diversion wall to see if the animals could
19 come above and move upstream into the area above the
20 diversion and actually crawl up the diversion.

21 Q So let's back up for a second. You referred
22 to the landowner?

23 A Yes.

24 Q Do you know if this land is owned by the
25 state and allow -- is it part of the land that EMI

1 and A&B --

2 A Okay. EMI and A&B that actually leasing the
3 land, right? So basically they're the ones that
4 tried to help, provide, you know, some means so the
5 animals get past.

6 Q Did they do -- did they follow your
7 recommendations that's in this letter?

8 A As far as notching it, no.

9 Q Have you gone to check to see on whether the
10 work that they did is sufficient to provide passage?

11 A It would have -- we'd have to monitor it and
12 we didn't -- we don't have any means of monitoring
13 it.

14 Q Okay. Would it be unreasonable for the
15 Division of Aquatic Resources to ask the Board, not
16 the Water Commission but ask the Board of Land and
17 Natural Resources to ask for this alteration of the
18 diversion structure?

19 A I think it would be reasonable.

20 Q Okay. Next question. Next stream is Kolea
21 Stream which is not in that -- is not in this
22 letter --

23 A Okay.

24 Q -- I believe. Are you familiar with Kolea
25 Stream?

1 A Somewhat.

2 Q You know what, let's -- let me give you
3 this.

4 MR. FRANKEL: What is this, 6 now?

5 MS. WESTON: Yeah.

6 Q (By Mr. Frankel) You're one of the authors
7 of this report, right?

8 A Yes.

9 Q And does this look like a true and correct
10 copy of your -- of the report?

11 A Yes, it is.

12 Q Okay. So there is -- well, let me ask you
13 this. Well, no, I'll back up.

14 Page 6 of the report, the discussion, the
15 very bottom there. Let me read that last paragraph
16 to you. It says "Kolea Stream is one of the smaller
17 streams, but nonetheless has a large potential --
18 sorry, has a large amount of potential habitat in the
19 middle and upper reach for *Lentipes concolor* and a
20 moderate amount of" -- boy, I'm not going to be
21 able -- maybe you can help me.

22 A *Awaous guamensis*, *Atyoida bisculcata* and
23 *Neritina granosa*.

24 Q Can you now translate those into Hawaiian
25 words? What are these species?

1 A Okay. Those are Nakea --

2 Q Oopunakea?

3 A Yeah. The Alamoo -- the first one is Alamoo
4 and the other one is the Opae and the other one is
5 Hihiwai.

6 Q Great. It goes on to say "Restoration of
7 the flow to increase animal passage between
8 diversions would greatly improve the productivity of
9 the stream and increase the availability of potential
10 habitat to native species."

11 A Uh-hum.

12 Q Do you have any reason to disagree with this
13 paragraph that --

14 A No.

15 Q Do you know if the Division of Aquatic
16 Resources ever gave a copy of this report to the
17 Board of Land and Natural Resources?

18 A We gave it to the Water Commission.

19 Q But not to the Board?

20 A No.

21 Q Okay. Okay. Switching to the -- I don't
22 know how you pronounce the HSHEP model. Is that --
23 is there a better way of naming --

24 A HSHEP model.

25 Q Okay. That model looked at 16 streams,

1 right?

2 A Yeah.

3 Q Those 16 streams were chosen by the Water
4 Commission, not the Division of Aquatic Resources,
5 right?

6 A We had a meeting with them and we agreed on
7 the selection of streams.

8 Q So you agree those are the 16 that you were
9 going to look at?

10 A Yeah. And this wasn't with just us. It was
11 also with Bishop Museum and A&B, you know. So it was
12 a lot of other folks that were involved in the
13 meeting to determine which streams we're going to
14 look at. It wasn't just something that we and CWRM
15 decided.

16 Q Uh-hum. And so those are the ones that you
17 folks collectively determined were the most important
18 ones to look at?

19 A 'Cause they would give the biggest bang for
20 the buck in return of water.

21 Q Okay. Was a survey completed on each of
22 those 16 streams?

23 A I believe it was, yes.

24 Q Including Haipuaena?

25 A I think so. Maybe it wasn't on Haipuaena.

1 I know we did 15 streams.

2 Q Right. So why would Haipuaena be excluded?

3 A I don't know.

4 Q Okay.

5 A I mean you're talking 12 years ago.

6 Q That's fair. That's fair.

7 A That's a while back.

8 Q Yeah. All right. I'll talk about
9 structures now.

10 A Uh-hum.

11 Q What kind of harm can diversion structures
12 themselves cause?

13 A They can act as barriers to the migration of
14 native species. They can also entrain.

15 Q And for the non-biologist, entrained means
16 the same thing basically as capture?

17 A Capture, yes.

18 Q Okay. Those are probably -- are there other
19 problems that diversion structures cause to stream
20 ecology or species or those the only two?

21 A Those are two that we kind of look at
22 besides the diversion of water, yes.

23 Q Sure. Sure.

24 Now, has anyone -- have you or anyone at
25 Division of Aquatic Resources or DLNR systematically

1 examine, analyzed and evaluated all the diversion
2 structures on public land in East Maui?

3 A No.

4 Q Okay.) Are diversion structures in East Maui
5 stream still causing problems for native species?

6 A I think they are.

7 Q Okay. Have you had a chance to re-look at
8 Polhemus' report that's in the draft EIS for the
9 lease of East Maui lands? We talked about it a
10 little bit last time. Have you looked at that more
11 carefully?

12 A His report.

13 Q Uh-hum. It's . . . he uses the model --

14 A Yeah.

15 Q -- to look at -- to evaluate the impact
16 of -- or compare full restoration, more diversion,
17 just following the Water Commission's
18 recommendations, et cetera. Do you -- have you
19 looked at that recently?

20 A A little bit.

21 Q Okay. So there's 13 streams that are not
22 affected by the Water Commission's order. Okay? And
23 that would include Kolea Stream. And he concludes
24 that -- that the existing diversions reduce habitat
25 units on those streams from 588,000 square meters to

1 88,386 square meters, a reduction of 85 percent.

2 Knowing what you do about some or all the streams, is
3 the reduction of 85 percent, is that going to have a
4 significant ecological impact?

5 A Yes.

6 Q Okay. Last set of -- my last topic. We
7 might be done in an hour.

8 MS. WESTON: Could we take a short bathroom
9 break?

10 MR. FRANKEL: I mean if you really want -- I
11 just take -- well, I might have follow-up. That's
12 fine.

13 MS. WESTON: It's been an hour.

14 MR. FRANKEL: Okay, that's fine.

15 MS. WESTON: Thank you.

16 MR. FRANKEL: Sure. Off the record.

17 (Recessed at 9:32 a.m.)

18 (Reconvened at 9:39 a.m.)

19 Q (By Mr. Frankel) I have a last question or
20 set of questions for you.

21 A Uh-hum.

22 Q Tough one.

23 Can you describe the pressure that was put
24 on the Division of Aquatic Resources when Laura
25 Thielen was Chair and Linda Lingle was Governor and

1 the issue of stream restoration was pretty hot. Do
2 you recall that? Dan Polhemus was in charge.

3 A Yes.

4 Q Describe to me that pressure.

5 A Well, there was pressure definitely and to
6 the point where the Chair, Laura Thielen, actually
7 came and talked to us about what our findings were.

8 Q Be more descriptive and specific.

9 A Well, in the sense she was trying to
10 understand what were we saying so that, you know, she
11 could provide, you know, get our backs, right? I
12 mean if she doesn't understand what we're talking
13 about and she cannot convey it to the commissioners
14 that, you know, she needs to -- she needs to
15 understand exactly what we're talking about.

16 Q Sure. Now, did she put pressure on you
17 folks to change your recommendations?

18 A No, I don't think so. I don't think she
19 did. I think one of the things was it was a
20 misunderstanding of how Dan saw stuff versus how we
21 saw stuff was probably one of the issues.

22 Q So was the staff being more protective of
23 streams than Dan was or was it vice versa?

24 A I'm not sure the exact but, yeah, it was
25 kind of a -- just a misunderstanding of what the

1 different values meant. So he didn't fully
2 understand what we were talking about.

3 Q He didn't -- when you're using the model, he
4 didn't really have a good grasp --

5 A Yeah, yeah. He didn't have a good grasp of
6 what we were trying to say when we set those -- those
7 comments about, you know, recommendations and
8 whatnot.

9 Q So other than clearing up misunderstandings,
10 was there actual pressure? What -- when you said
11 there's pressure, what was the nature of the
12 pressure? What was trying to be -- other than
13 clearing up misunderstanding?

14 A Can I be candid?

15 Q Yeah.

16 A Well, she wanted to get rid of Dan Polhemus.
17 That was it.

18 Q Why?

19 A She wasn't -- she didn't like him.

20 Q Yeah. Okay. Setting aside any personality
21 differences, was there -- was she unhappy about the
22 advocacy or recommendations or scientific analysis
23 being provided by the Division of Aquatic Resources?

24 A No. I think it's just a personal issue.

25 Q Okay. So other than the -- yeah, we all

1 understand that people clash. People have different
2 personalities. Other than that, was there any other
3 pressure, political pressure, put on the Division of
4 Aquatic Resources?

5 A I -- I -- there may have been. I don't
6 know. I was just a staff member. So I'm not high up
7 into the organization where, you know, I'm in
8 administration. And I don't hear a lot of the stuff
9 that goes on. So if there was pressure, then it was
10 probably fielded by the administrators as well as the
11 program managers.

12 Q Did you get the impression that Laura
13 Thielen or any of the Water Commission wanted to mute
14 the information or recommendations coming out?

15 A No, no. I think they were sincere in what
16 they were trying to do to understand what we were
17 suggesting.

18 MR. FRANKEL: Okay. Thank you. I have no
19 further questions. Either of you?

20 MS. WESTON: No questions.

21 MS. MARTIN: No questions.

22 MR. FRANKEL: Okay, thank you.

23 (Concluded at 9:43 a.m.)

24 --oo0oo--

25

WITNESS' CERTIFICATE

I, GLENN HIGASHI, certify that I have read the foregoing typewritten pages 1 to 44, inclusive, and corrections, if any, were noted by me, and the same is now a true and correct transcript of my testimony.

Dated: This ___ day of _____, 2020.

GLENN HIGASHI

Signed before me
this _____ day of _____, 2020.

Sierra Club vs. BLNR, et al.
Civil No. 19-1-0019-01 JPC
Deposition of Glenn Higashi
taken March 3, 2020

C E R T I F I C A T E

1
 2 STATE OF HAWAII)
 3 CITY AND COUNTY OF HONOLULU) SS:

4
 5 I, PRISCILLA GONZAGA, Certified Shorthand
 Reporter, do hereby certify:

6 That on March 3, 2020, appeared before me
 7 GLENN HIGASHI, the witness whose deposition is
 contained herein; that prior to being examined he was
 8 by me duly sworn:

9 That the deposition was taken down by me in
 machine shorthand and was thereafter reduced to
 10 typewriting; that the foregoing represents, to the
 best of my ability, a true and correct transcript of
 the proceedings had in the foregoing matter.

11 That pursuant to Rule 30(e) of the Hawaii
 12 Rules of Civil Procedure, a request for an
 opportunity to review and make changes to this
 13 transcript:

14 x Was made by the deponent or a party (and/or
 15 their attorney) prior to the completion of
 the deposition.

16 Was **not** made by the deponent or a party
 17 and/or their attorney) prior to the
 completion of the deposition.

18 Was waived.

19 I further certify that I am not an attorney
 20 for any of the parties hereto, nor in any way
 concerned with the cause.

21 Dated: This day of March 2020 in
 22 Honolulu, Hawaii.

23
 24
 25 Priscilla Gonzaga, CSR # 127

Sierra Club vs BLNR, Department of Land and Natural Resources

CIVIL NO. 19-1-0019-01 JPC (Environmental Court)

Glenn Higashi Deposition 031820 Edits

| <u>Page</u> | <u>Line</u> | <u>Edits/Comments</u> |
|-------------|-------------|--|
| 5 | 21 | Manage, protect and restore the state's aquatic resources and ecosystems |
| 8 | 15 | linear meters |
| 12 | 16 | Spring water contributes to the basal flow of the stream |
| 13 | 10 | 64% of basal flow required in the stream to sustain spp biological functions (growth, reproduction, etc.) |
| 13 | 18 | USGS not USDS |
| 13 | 23 | 64% not 60 |
| 13 | 25 | Enough habitat and flow |
| 14 | 7-8 | It was based on an HEP model and over 91,000 animal observations in streams statewide |
| 14 | 22 | The model assumes that habitat quality and quantity are related to the number of animals using a habitat over the long term. |
| 36 | 23 | Kolea Stream is small and steep with a terminal waterfall and as a result has little suitable habitat predicted for the non-climbing animals ('o'opu 'akupa, 'o'opu naniha, 'ōpae 'oeha'a). Although middle and upper reaches has suitable habitat predicted for the climbing animals ('o'opu 'alam'oo, 'o'opu nōpili, hihiwai, 'ōpae kala'ole) from a ranking perspective, Kōlea Stream did not rank highly for the amount of potential suitable habitat for any species in comparison with the other 16 streams in the analysis. |

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WITNESS' CERTIFICATE

I, GLENN HIGASHI, certify that I have read the foregoing typewritten pages 1 to 44, inclusive, and corrections, if any, were noted by me, and the same is now a true and correct transcript of my testimony.

Dated: This ___ day of Apr 20, 2020, 2020.

Glenn Higashi

GLENN HIGASHI *AW*

Signed before me
this _____ day of _____, 2020.

Sierra Club vs. BLNR, et al.
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