

1 PUBLIC HEARING BY THE PIERCE COUNTY HEARING EXAMINER

2
3 In Re:)
4 Administrative Appeal: AE1-10)
5 Appellants: Coalition to Protect)
6 Puget Sound Habitat and Case Inlet)
7 Shoreline Association)
8 Shoreline Substantial Development)
9 Permit: SD22-06)
10 Applicant: Longbranch Shellfish,)
11 LLC)
12)
13)

14 Excerpt of Transcript of Proceeding

15 Before STEPHEN J. CAUSSEAU, JR.

16 Wednesday, March 16, 2011

17 APPEARANCES

18 For the Appellant Coalition to Protect Puget Sound Habitat:

19 LAURA HENDRICKS
20 3919 51st Avenue Court Northwest
21 Gig Harbor, Washington 98335

22 For the Appellant Case Inlet Shoreline Association:

23 CURT PUDDICOMBE
24 P.O. Box 228
25 Vaughn, Washington 98394

1 APPEARANCES - (continuing)

2 For the Applicant:

3 SAMUEL PLAUCHÉ
4 LAURA KISIELIUS
5 AMANDA STOCK
6 Plauché & Stock, LLP
7 811 1st Avenue, Suite 320
8 Seattle, Washington 98104

9 For Pierce County Planning & Land Services:

10 JILL GUERNSEY
11 Office of the Pierce County Prosecutor
12 955 Tacoma Avenue South, Suite 301
13 Tacoma, Washington 98402

14 Also present: Ty Booth, Senior Planner, PALS
15 Adonais Clark, Environmental Designee, PALS
16 Dave Risvold, Environmental Biologist, PALS
17 Jenny Pelesky, Clerk

18
19
20
21
22
23
24 Reported by: Linda M. Grotefendt, CCR
25 License No. 3013

1 (Herein begins the excerpted portion of the
2 transcript.)

3
4 CAPT. CHARLES MOORE, having been previously
5 sworn upon oath by the Hearing Examiner, testified as
6 follows:

7
8 THE WITNESS: Is the swearing in from yesterday
9 still good?

10 THE HEARING EXAMINER: You're still sworn in, yes.

11
12 NARRATIVE TESTIMONY

13
14 THE WITNESS: Okay. Well, I've had a little time
15 to look over some of the materials. So I want to make some
16 statements about different types of plastic that are
17 involved in the operation, because most of the testimony has
18 revolved around the tubes themselves, but, actually, there
19 are at least three different types of plastic involved in
20 the operation, and they have different characteristics and
21 do different things in the marine environment.

22 The zip ties are nylon. Nylon is denser than water and
23 will sink to the bottom, as will the tubes or parts of tubes
24 if they get broken off.

25 The netting is polyethylene, which floats, and it seems

1 like it may have been the reason why it was gathered in a
2 different part of the water column in the trawls that were
3 done. I should mention that the Tacoma Narrows Bridge,
4 where the trawls were done, is a substantial distance from
5 the majority of the geoduck farms.

6 And the idea that 17 percent of the cleanup that was
7 done by the industry was from aquaculture and that the total
8 was 72 dump trucks -- I did the math on that. That means
9 they got 12 dump trucks full of debris from the aquaculture
10 operations, which makes it kind of weird to dispute the
11 quantitative analysis.

12 You know, there is a range there, but it's a substantial
13 amount of aquaculture debris. If it's 12 dump trucks full,
14 17 percent of 72 dump trucks, that's a substantial amount of
15 debris, and it travelled from the area of the aquaculture
16 operations to the Tacoma Narrows Bridge area, which is a
17 substantial distance away.

18 So the plastic is mobile. And being of different types,
19 it will occupy different areas in the water column and do
20 different things.

21 Now, it was mentioned that there were research-and-
22 development attempts made using things of this nature:
23 screen. This is a polyethylene screen, which does float. I
24 got myself a cup of water and broke a piece off. Now, you
25 wouldn't expect this -- this is rather flexible and, when

1 it's initially installed in the operation, it would be very
2 difficult to tear. It's a very tough plastic. But you can
3 see this has had some bio-fouling. It's been exposed to
4 tidal range.

5 And what hasn't really been talked about, and I
6 neglected to really mention yesterday, was the effect of UV
7 radiation on the plastic. The sun is really the primary
8 degrader, cross-linker, of polymers. And this particular
9 unit, having been exposed in the environment, is now
10 brittle. So it was quite easy for me to break off a piece
11 and float it in this cup of water to demonstrate that it was
12 a lighter-than-water polymer. I'm sure that it's
13 polyethylene.

14 So polyethylene is the most absorptive of persistent
15 organic pollutants. A lot of the testimony here has focused
16 on metals. But, really, what concerns me most about plastic
17 pollution is its ability to absorb what we call persistent
18 organic pollutants, the oily pollutants that are used in
19 agriculture and industry, things like PCBs, DDE, also the
20 products of combustion that I talked about yesterday in the
21 distillation of the atmospheric pollutants into this sea
22 surface micro layer. They're what we call the polycyclic
23 aromatic hydrocarbons.

24 These petroleum-derived pollutants absorb into the
25 matrix of this polyethylene very readily, much more

1 readily -- it was pointed out that PVC is a more rigid
2 plastic. It's got all this chlorine in it. It's not as
3 permeable as these ones that are mostly just carbon and
4 oxygen. So the polyethylene really is a better absorber of
5 contaminants and a transmitter of contaminants in the marine
6 environment.

7 In fact, it's the best of the plastics at absorbing and
8 then desorbing in the gut of creatures that ingest these
9 plastics. The chemistry is such that it's capable of
10 desorbing and removing those contaminants that have absorbed
11 to it into the gut of the animal. So the photodegradation
12 that's taking place, cross-linking the polymers, making them
13 brittle so that they break off -- this will occur faster in
14 the nets than it will in the PVC pipe.

15 And just from my own research, just to inform you about
16 the delectability of plastic, the desirability to eat
17 plastics, I brought these that I found in the marine
18 environment. This is a soap bottle that's been completely
19 pecked here by some animal. Here's one bottle that is full
20 of shark bites. You can see the impression of the teeth of
21 the shark.

22 And here is a bottle that's nothing -- the bottom of the
23 bottles are typically a bit thicker. So this particular
24 bottle had been completely eaten away, and all that's left
25 is the base of the bottle, with a little mark from the

1 molding machine.

2 So these are not specific to Puget Sound. These are
3 from another part of the Pacific Ocean. But the point is
4 simply that losing 17 dump trucks full of plastic into the
5 marine environment -- it's not logical to assume that there
6 will be no ingestion of that plastic. It's also not logical
7 to assume that the persistent organic pollutants that have
8 been absorbed to it won't desorb into the organism that
9 ingests it. And I believe that that is a significant
10 adverse impact.

11 Now, as to the ability of the material to leave the
12 aquaculture site, I just want to demonstrate here -- and I
13 haven't done anything to alter this tube that, I guess, was
14 found in a cleanup. But it's attached -- the screen is
15 attached to the tube by one of these nylon zip ties, it
16 looks like, or perhaps a rubber band, since I don't see the
17 clutch on the zip tie. Yeah, it must be a type of a rubber
18 band.

19 But in any case, the energy that's required to remove
20 this is very slight, and this is a floating plastic. This
21 is a polyethylene net that wants to leave the tube, in the
22 sense that, as the tide comes in, it's buoyant, and tube is
23 heavier than water, so it's -- they're sort of fighting
24 against each other. One wants to stay in the sediment, and
25 the other one wants to get up and leave. That's a

1 prescription for a loss of the material to the environment.

2 Also wanted to address the issue of the polymerization
3 of PVC. It was mentioned, by Dr. Schenck, that the vinyl
4 monomer is toxic, but that, when it's rigidified in the
5 polymerization process, it loses that toxicity.

6 But what she failed to mention was that the
7 polymerization process is never 100-percent perfect. It's
8 an industrial process. It uses catalysts and, when one
9 polymerizes these vinyl monomers, one has within that
10 plastic a certain amount of free vinyl monomer that can
11 leach out into the environment.

12 And so even though the majority of the plastic is less
13 toxic than the monomer, there are still monomers in that
14 which will leach out as they come in contact with the marine
15 environment.

16 Now, let's see. I have here -- I was provided by
17 Ms. Hendricks with a couple of photographs, and they seemed
18 instructive in your review of the permit inasmuch as they
19 show the kind of changes that occur to the operation as time
20 goes on.

21 The first picture that I'd like to show you is one --
22 now, we saw a very interesting video of tubes that were
23 uncovered by the netting, which I assume is part of the
24 routine culture of the clams, that netting becomes unneeded
25 after the clams reach a certain stage. They're no longer

1 subject to predation. I guess sea otters aren't a problem.
2 So they take the nets off, and, in the video, there were no
3 nets.

4 However, in this particular picture which I'm going to
5 -- I don't have copies of, so I'll just bring it over to
6 you. It shows an array of tubes in which some nets are
7 there and some nets are missing. Some tubes are whole, some
8 tubes are broken.

9 THE HEARING EXAMINER: Is this in the record as an
10 exhibit?

11 MS. HENDRICKS: No. No. I just gave it to him.

12 THE HEARING EXAMINER: Do you want to show --

13 MS. KISIELIUS: Can we look at it?

14 MR. PLAUCHÉ: Where is this taken from?

15 MS. HENDRICKS: This was a picture of Totten Inlet.

16 MR. PLAUCHÉ: Do you know what farm?

17 MS. HENDRICKS: It's the Taylor farm.

18 MS. STOCK: How about a date?

19 MS. HENDRICKS: It was either 2006 or 2007.

20 MR. PLAUCHÉ: Do you know which Taylor farm it was?

21 MS. HENDRICKS: It was -- I don't know. I can't
22 tell you.

23 MR. PLAUCHÉ: I'm asking because Taylor doesn't use
24 tops, so it's not calculating that that's a Taylor farm.

25 MS. HENDRICKS: Well, it's on the shoreline of

1 Totten Inlet. I can't tell you specifically right now.
2 It's Totten Inlet.

3 MR. PLAUCHÉ: We won't object to the picture.

4 THE WITNESS: I won't give these other photographs
5 to you. It's the same sort of deal where they're --

6 THE HEARING EXAMINER: That's okay. We're going to
7 admit this one. So --

8 THE WITNESS: Yeah. Well, there's no need for me
9 to dwell on that except to say that there is a -- and the
10 evidence shows, I mean, from the industry itself, that there
11 is a loss and that they're concerned about it. And the
12 question is, really, before you: Does it amount to a
13 significant adverse impact?

14 And I'm here to tell you that, based on my research,
15 based of these ingestion studies that we've done, based on
16 the number of studies that are coming out showing fish
17 ingestion, it is a significant impact.

18 With this new field of science, this new inquiry into
19 the environmental impacts of plastic, it sort of obeys the
20 Biblical injunction "seek and ye shall find." If you really
21 look for these things -- and I admit that, when they looked
22 in the sediments, they couldn't find PVC. But we also
23 learned that it would be extremely microscopic, small
24 amounts that would be missing after an extended period of
25 time, that they would be transported away from the site,

1 that they weren't found in the site, which -- and indeed,
2 the trawling that was done, that found the aquaculture
3 residue, was not near the aquaculture site.

4 So it's the very mobility of plastics in the marine
5 environment that makes it have such adverse impacts. And I
6 described some of the different ways in which those impacts
7 are manifested yesterday.

8 Let's see what we've got here. Now, I'm a proponent of
9 aquaculture, and I want to give you a scenario. In some
10 future world, I believe we will be able to get together and
11 not have a five-year delay in realizing these permits. And
12 I think what I can offer up as an ideal future scenario is
13 aquaculture that is part of a green machine that is carried
14 out on a land-based farm.

15 What we're able to do with halophyte agriculture, which
16 is salt-loving plants like salicornia, is process effluence
17 from agriculture before they get back into the marine
18 environment and also retain any of these losses from the
19 various tubes and materials used in the aquaculture
20 operation on land.

21 So I can actually imagine reclaiming damaged wetlands
22 areas in geoduck aquaculture by having the installation be
23 an enclosed area surrounded by land in which the runoff is
24 then passed through a farm of saltwater-loving plants, the
25 halophytes, that will bio-remediate any toxics in the water

1 and stop the migration of any losses of equipment from the
2 farm before it goes back into the ocean.

3 It's as if you make a fence of greenery, a bio-swale of
4 plants. And these salicornia actually contain a seed which
5 has the quality of oil of safflower oil. The University of
6 Arizona has done experiments creating generations of these
7 plants. So you'd have -- we've had testimony from the
8 agricultural sector and the aquaculture sector, and I
9 believe they can be combined in a future operation which
10 provides food and fuel and does not -- and actually
11 remediates and improves the marine environment.

12 So I don't want to come off as someone who wants to see
13 this industry fail. I want this industry to succeed, and I
14 believe the possibilities are endless for them to be a
15 positive contributor.

16 THE CLERK: Your time is up.

17 THE WITNESS: Thank you.

18 THE CLERK: Thank you.

19 THE HEARING EXAMINER: Thank you, sir.

20
21 (Herein concludes the excerpted portion of
22 the transcript.)
23
24
25

