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Protecting America's Waters

February 14, 2012

Thurston County Hearing Examiner
Building 1, 2000 Lakeridge Drive SW
Olympia, Wa 98502

Re: Project No. 961372 SSDP-Taylor Shellfish North Totten
Mussel Farm Application Quotes from Captain Charles Moore's
Book-Plastic Ocean

Dear Hearing Examiner and Staff,

According to the Hearing Examiner on February 13, I was allowed to provide quotes from the book Plastic Ocean as the book itself could not be admitted as evidence. The following excerpts are from Captain Charles Moore's book Plastic Ocean. The Sierra Club recently sponsored Captain Moore's 5 City book signing events where discussed the following findings and threats from plastics to the health of marine waters. The following link is a video of his January 2012 presentation in Seattle where he discusses the findings documented in this book and his concern of the use of plastics used by the shellfish industry in South Puget Sound:

<http://www.edmaysproductions.net/webvideo/moore.wmv>.

Introduction from Book Cover—In Plastic Ocean, Moore recounts his ominous findings and unveils, the secret life and hidden properties of plastics. Moore includes us in his maritime exploits as he collects samples throughout the oceans, and in his struggle to earn scientific credibility, the key to getting the world's attention about the oceans' plight. He describes how plastics, originally meant to replace and conserve valued natural materials, gradually emerged as a planetary menace, exposing our cozy relationship with them as a dance with the devil. From milk jugs to bottle caps to polymer molecules small enough to penetrate human skin, Moore explains, plastic is not just a material that litters the environment, but a potential threat to vanishing marine species and their fragile habitats—more damaging, he argues, than climate change. As the ocean teeters on the brink of irrevocable decline, they send a message to humanity, delivered by Moore; your health and well-being may also be at risk.

Moore's research prompted a massive global reassessment of plastic's invasiveness and raises profound questions about the impact and implications of this man-made blight. Plastic Ocean reminds us that oceans are essential to life on earth, and as such are the responsibility of all humanity. By taking the reader on a journey across and into an ocean now filling with

our plastic waste in all its myriad forms, Moore calls for a fundamental rethinking of what we now know to be our Plastic Age.

Page 58—Bigger stuff appears to be fishing floatsam-nets, buoys, lines and crates—evidence of a heedless industry. The scraps, the countless broken-down bits, will never yield their beginnings.

Page 83—Fouling “communities” are typically associated with contaminated hulls of boats that travel from port to port, seeding local waters with alien and often destructive invasive species. In the world of marine science, they are called sessile organisms. Sessile meaning attached. In their earliest, larval stages they must “recruit” an object to anchor on or else perish. These organisms seem to love plastic flotsam. If their migratory homes stay whole, it’s anyone’s guess which distant habitats will greet unwelcome colonists.

Note: The Feb 13 hearing testimony and examples of plastic mussel disks are being found by citizens at Johnson Point and Henderson Bay—great distances from the only mussel rafts in South Sound/Totten Inlet.

Page 84—The plastics do indeed seem to mimic the plankton—bad news for plankton eaters.

Page 114—A disturbing result comes from counting individual plankton. We find in one sample that plastic chips outnumber them.

Page 118—Plastic is like an invasive species. Once established, it doesn’t go away. The oceans can assimilate pollutants, even oil. But oil that’s been catalyzed and converted into a synthetic form, plastic, doesn’t dissipate it.

Big pieces break down into smaller, more ingestible pieces. We recovered many objects bearing nibble marks. This insidious debris represents man’s despoilment of the earth’s most pristine environment by one of its least valued materials.

Page 161—The topics are fascinating, but none make mention of the inevitability of big fishing gear breaking into billions of small bits. Or the likelihood of these bits becoming dinner for the food chain’s lower members, the filter feeders.

Page 242—Two big points: Takada’s tests compared the toxicity of the two dominant plastic types: polyethylene and polypropylene. The most contaminated by far was polyethylene...Upwelling from the toxic seabed provides additional opportunities for plastic debris to absorb and concentrate these toxicants, a recipe for poison plastic pills that are up to a million times more toxic than surrounding seawater.

Note: Gordon King testified that the Mussel rafts use polyethylene and/or polypropylene mesh socks/nets to grow the mussels.

Page 266—Both polyethylene and polypropylene pellets and fragments harbored levels of BPA comparable to and in some cases exceeding those of legacy industrial chemicals and pesticides, ranging between 1 and 1000 parts per billion. A key issue with this chemical is the health effects some researchers have seen in animals administered doses at very low levels. In laboratory experiments, BPA at parts per trillion have suppressed testosterone production,

and amounts comparable to those in the gyre studies have caused “adverse health effects” in mice.

Page 268—In other words, the plastic material is itself a toxic Trojan horse, not so bad to look at but riddled with unforeseen chemicals that may pose greater risk to marine and terrestrial-biota than the dreaded persistent organic pollutants.

Page 324—In our 2008 fish study, we’d found that 35% of them and ingested plastic of all colors, apparently not selecting for color in the darkness. Like so many other marine creatures, they’re being duped by plastic bits, which so closely resemble natural food in size, shape texture, and passivity. If the ratio of plastic to plankton increases—in 1999 we had a sample in which plastic pieces actually outnumbered individual plankton—then it follows that ingestion of plastic by planktivores will also increase. And deeper into the food web plastic penetrates.

Sincerely,
Laura Hendricks, Chair
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