UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

MARC ANDERSON, KELLY NELSON, *and* JULIETTE MORIZUR, Plaintiffs, v. SEAWORLD PARKS AND ENTERTAINMENT, INC., Defendant.	Case No.: 4:15-cv-02172-JSW-JCS

REBUTTAL EXPERT REPORT OF DR. INGRID N. VISSER

Dated: April 19, 2019

CONTAINS INFORMATION DESIGNATED CONFIDENTIAL BY SEAWORLD

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I. INTRODUCTION

1. My name is Dr. Ingrid Visser. I have prepared this rebuttal report pursuant to my role as an expert witness on behalf of Mr. Marc Anderson, Ms. Kelly Nelson, and Ms. Juliette Morizur ("Plaintiffs") in this case. On 8 February 2019, I submitted my opening expert report ("Visser Opening Report"), in which I described my opinions on the accuracy of certain statements made by Defendant SeaWorld Parks & Entertainment, Inc. ("SeaWorld"). I also detailed my qualifications and experience in the Visser Opening Report.

2. In this rebuttal report, I respond to some of the arguments and opinions advanced on behalf of SeaWorld by its employees and its retained expert, Mr. Mark Simmons. Below, I identify the opinions advanced and assertions made on behalf of SeaWorld and provide my responses. My responses herein should be read in light of the Visser Opening Report since the issues addressed overlap.

II. RESPONSES TO SEAWORLD'S EXPERTS

1) Ambiguities regarding Mr. Simmons' expert report

3. In his expert report, Mr. Simmons does not consistently articulate which of his arguments are in response to my opinions. Instead, Mr. Simmons' criticisms are directed at "Plaintiffs' experts'" reports and opinions generally.[1] Furthermore, in the one instance where Mr. Simmons indicates that he *is* criticizing my opinions — and not those of other individuals — he fails to identify which opinions of mine he is

[1] *See, e.g.*, Simmons Report at 11, 12, 14, 15, 16, 17, 18, 20, 21.

criticizing.[2] [redacted] [3] [redacted] .[4] [redacted] [5] But Mr. Simmons fails to identify which of my "many conclusions" he regards as invalid based on that alleged failure.

4. Accordingly, I reserve my right to provide a response if it is later clarified which of my opinions and conclusions Mr. Simmons is criticizing, and he explains his basis for his criticisms.

2) Claims regarding adequacy of SeaWorld's orca tanks

5. I understand that Mr. Simmons authored a book titled "Killing Keiko" that discusses the history of captivity and release efforts relating to a male orca

[2] *See* Simmons Report at 13-14.

[3] *Id.*

[4] *See, e.g.*, SIMMONS Dep. Tr. (Rough) at 126:16 - 127:3 [redacted]) (emphasis added).

[5] Simmons Report at 12.

named Keiko, and his opinions are based on his experience with that orca.[6] One of Mr. Simmons' opinions is that: "… *killer whales in zoological care at SeaWorld . . . can be well-adapted to their environments*."[7] At deposition, Mr. Simmons testified about the appropriate size of tanks (pools) that captive orca require. Specifically, Mr. Simmons testified that "*Keiko's pool in Mexico was certainly too small for an adult male killer whale,*"[8] that Keiko was "… *clearly, clearly too big for the facility*,"[9] and explained that: "… *when you're going to exercise an animal and . . . his length exceeds the depth of that particular pool, the only pool that he had access to, it makes it difficult to exercise*."[10]

6. I agree with the foregoing assertion by Mr. Simmons regarding Keiko's tank in Mexico being too small, but I disagree with his claim regarding the environment of SeaWorld's orca.[11] It is contradictory for Mr. Simmons to maintain that Keiko was "*clearly too big for the facility*" in Mexico, but that SeaWorld's orca, in SeaWorld's tanks, "… *can be well-adapted to their environments* …" because

[6] Although I understand Keiko was never a SeaWorld orca, Mr. Simmons devotes a section of his expert report to Keiko (*see* Simmons Report at Section IV.B), and he testified at deposition that his opinions in this case are supported by his "discussions and experience with Keiko." *See, e.g.*, SIMMONS Dep. Tr. (Rough) at 117:13-15.

[7] *See, e.g.*, Simmons Report at 11.

[8] SIMMONS Dep. Tr. (Rough) at 266:1-5.

[9] *Id.* at 271:5-8.

[10] *Id.* at 264:4-16.

[11] I discussed the physiological and psychological impacts of habitats in my opening report (*see, e.g.*, Section VI.2), and those opinions remain unchanged.

SeaWorld's tanks are not appreciably different in terms of size from Keiko's tank in Mexico.

7. News articles and publications report Keiko's tank in Mexico as containing approximately 0.5 million gallons of water and as being about 85 - 100 feet long, 43 - 60 feet wide, and 15 - 22 feet deep[12] (although I typically use the metric system, the articles refer to Keiko's tank are in feet). I regard these reports, which include contemporaneous ones from the 1990s, as reliable.[13] Additionally, **Figure [1]** below, published in Life Magazine in 1993, depicts Keiko in his pool at Reino Aventura,

[12] *See, e.g.*, Simmons Deposition Exhibit 324, downloaded from https://www.baltimoresun.com/news/bs-xpm-1993-10-22-1993295003-story.html (Article titled "Help near for ailing 'Free Willy' star New home sought for killer whale; freedom possible," dated 19931022; states: "The animal was about the size of a full-grown dolphin then, easily fitting into the [Mexico] park's approximately 500,000-gallon pool." . . . [The] kidney-shaped pool is 90 feet long, 43 feet wide and just over 15 feet deep.") (internal quotation marks omitted); *see also* Simmons Deposition Exhibit 323, downloaded from https://www.latimes.com/archives/la-xpm-1996-06-09-ls-13157-story.html (Article titled "Willy Went Free, but Will Keiko?" dated 19960609; records Keiko's pool in Oregon contained 2 million gallons of water, which was "four times the size of his old one" in Mexico); McDaniel, "Won't somebody please save this whale?" Life Magazine, Vol. 16, No. 2., at pp 47 - 56 ("Now 21 feet long, Keiko has been cooped up for more than eight years in an oval pool 90 feet long, 43 feet wide and 20 feet deep."). http://www.ecoevoblog.com/2016/10/19/freeing-willy/ ("While in Mexico Keiko lived alone in an approximately 500,000-gallon chlorinated tank."); WILLIAMS V.(2001). Captive Orcas, Dying to Entertain You, Whale and Dolphin Conservation Society (WDCS), http://www.wdcs.org/submissions_bin/orcareport.pdf at 85 (Keiko "was held in a cramped and inadequate tank measuring only 26m x 13m (85 x 43ft) at Reino Aventura, Mexico City.").

[13] Mr. Simmons was also unable to articulate any reasons to doubt their accuracy at deposition. *See* SIMMONS Dep. Tr. (Rough) at 260:18-262:5, 263:3-10 ("I don't have any information on me that contradicts this. I have not -- I don't have any information to doubt that.").

Mexico City.[14] As evident from the image, Keiko's pool is roughly about 5 body lengths long and under 3 body lengths wide. This is consistent with the pool's reported dimensions and provides additional corroboration.

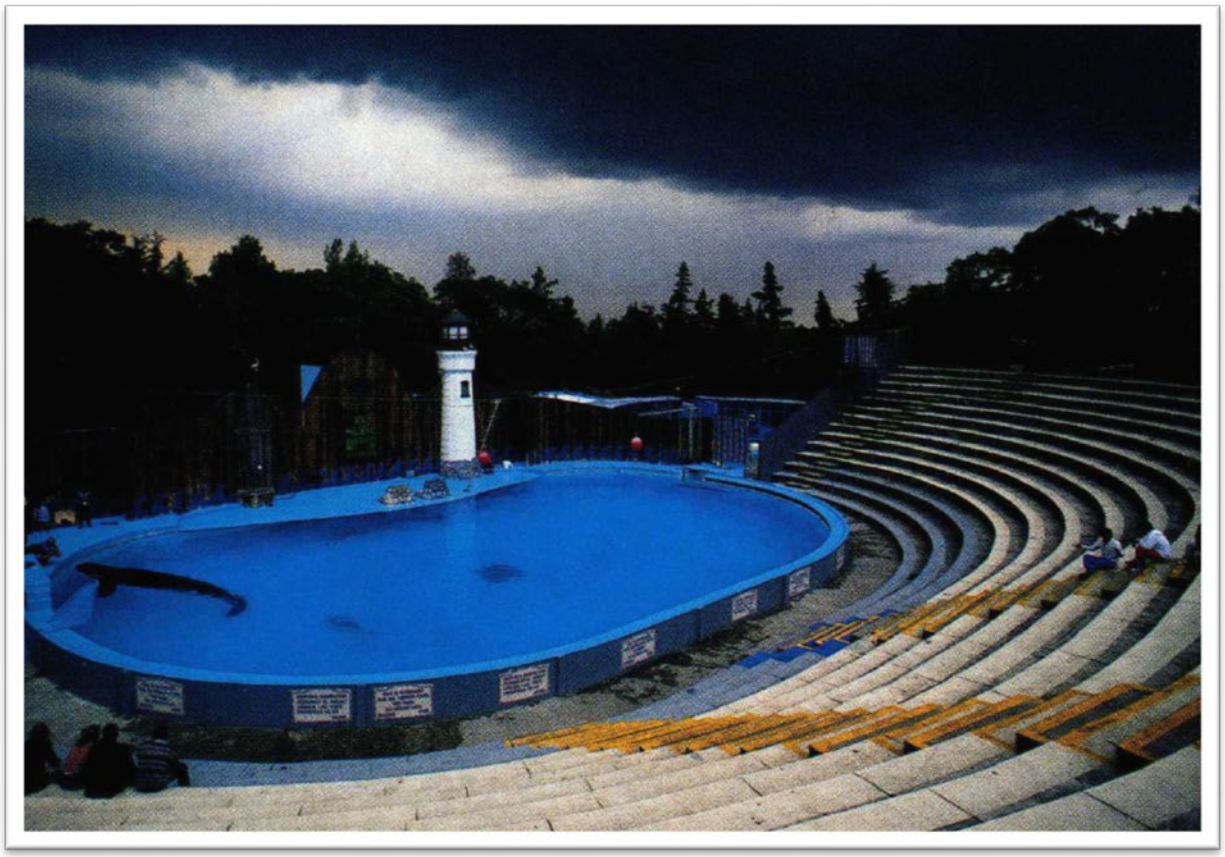

Figure [1]

8. I detail the size of SeaWorld's orca habitats in the Visser Opening Report. As noted in Table 2 of my report, Tank A (show tank) and Tank B (one of the back tanks) at SeaWorld San Diego are only about 5.9 to 8.6 times the length of SeaWorld's adult male killer whales housed there. Taking all of SeaWorld San

[14] McDaniel, "Won't somebody please save this whale?" Life Magazine, Vol. 16, No. 2., at pp 47 - 56.

Diego's tanks together — and noting that there are 11 orca held at this facility — SeaWorld provides approximately 0.529 million gallons of water per orca.[15] This means it provides merely ~0.029 million gallons (*i.e.*, 5.8%) more per orca compared to Keiko's tank in Reino Aventura, Mexico City. I am aware of no evidence that would support the view that a tank "*certainly too small for an adult male killer whale*" can be made adequate for an adult male killer whale through an enlargement of 5.8%.[16] I depict the above calculations visually in **Schedule A** to this report.

9. Moreover, Mr. Simmons criticized the Reino Aventura park's tank as being "*not deep enough for him* [*i.e.*, Keiko] *to sit upright*."[17] This criticism is undoubtedly applicable to many of SeaWorld's orca tanks (*e.g.*, Tanks B and C at SeaWorld San Diego) which are just ~15 feet deep. [redacted].[18]

[15] *See, e.g.*, SW000543-44 (Coastal Commission Report noting: "Currently there are five pools in the stadium facility: Pool A has a volume of 2.2 million gallons, Pool B is 900,000 gallons, Pool C is 940,000 gallons, Pool D is 80,000 gallons, and Pool E is 1.7 million gallons, for an existing total of approximately 5,820,000 gallons. . . *Given the current orca population at SeaWorld San Diego, this equates to 529,091 gallons of water per orca.*") (emphasis added).

[16] It is also worth noting that, with additional whales, comes the additional problems of overcrowding, incompatibility, and aggression. *See* Visser Opening Report at Sections VI(2) and VI(4); *see also* SW-AND0276915-18 [redacted]; SW026170-72 ([redacted]

[17] SIMMONS Dep. Tr. (Rough) at 237:2-6.

[18] *See* Visser Opening Report at Table 2.

3) Claims regarding accreditation

10. [redacted].[19] [redacted].[20]

11. [redacted]. For example, the AZA standards require that:

> 1.5.1. All animals must be well cared for and presented in a manner reflecting modern zoological practices in exhibit design, balancing animals' welfare requirements with aesthetic and educational considerations.
>
> 1.5.2. All animals must be housed in enclosures which are safe for the animals and meet their physical and psychological needs.
>
> 1.5.2.1. All animals must be kept in appropriate groupings which meet their social and welfare needs.
>
> 1.5.2.2. All animals should be provided the opportunity to choose among a variety of conditions within their environment.
>
> 7.1.1. Habitats must provide consideration of the 3-dimensional space use, and provide sufficient space and environmental complexity to stimulate and promote natural behavioral activities and social interactions, resulting in healthy and socially-adapted cetaceans.

[19] *See, e.g.*, DOLD 4/12 Dep. Tr. at 42:22-46:2.

[20] *Compare id.* at 56:3-99:22 with Simmons Report at 11.

> 7.1.2. Cetacean habitats must be designed to maintain cetaceans in appropriate social groups based on current scientific knowledge. . . Each cetacean requires an environment that allows for social contacts and positive interactions with other cetaceans. The institution must be able to mitigate situations involving incompatible animals. This may be accomplished through a number of methodologies including training, transferring animals from one habitat into another, allowing animals to separate themselves from each other, or by other means.[21]

12. [redacted],[22] [redacted],[23] [redacted]

[21] Association of Zoos and Aquariums' "Accreditation standards & related policies," 2019 edition, available online at https://www.speakcdn.com/assets/2332/aza-accreditation-standards.pdf.

[22] *See, e.g.*, Visser Opening Report at Section VI(4). [redacted] *See, e.g.*, SW-AND0147792 [redacted] SW-AND0191327 [redacted] SW-AND0190391 [redacted]

[23] *See, e.g.*, Visser Opening Report at Sections VI(2), VI(4)(9), VI(4)(10). *Compare* AZA Inspector's Handbook 2019 at p. 21 ("*When observing the animals, please consider the following in assessing the overall welfare of the animals, both groups and individuals. . . Look to see if exhibits contain a 'safe spot' where the animals can retreat from public view, from a dominant conspecific, or from some other perceived threat should they wish to.*") *with* SW-AND0276916 ([redacted] *Compare* AZA Inspector's Handbook 2019 at p. 21 ("*Note the features within the exhibit in relation to the species (furniture, plantings, rocks, corals, haul-outs, substrates, water features, climbing structures, etc.) Are they appropriate?*"); *with* SW-AND0273357 ([redacted]

[redacted].[24] The Visser Opening Report presents additional evidence supporting the foregoing.

[redacted] *see also* SW-AND0190559 ([redacted]); SW-AND0191666 [redacted] SW-AND0188077-78 [redacted] SW-AND0273672 ([redacted] SW020347-48 [redacted]

[24] *See, e.g.*, Visser Opening Report at Section VI(4)(12); *see also* SW-AND0190401 [redacted]; SW-AND0190523 ([redacted]

4) Claims regarding orca teeth

1. Dental morphology

13. Dr. Dold, in his deposition on 20190412, makes reference to elephant teeth as a comparison to orca teeth. Dr. Dold, however, fails to acknowledge that elephants did not evolve to use their tusks in the same way as orca use their teeth. In the Visser Opening Report, I discuss how captive and free-ranging orca use their teeth, and do not repeat that discussion herein. Elephants, in contrast, use their tusks for digging, carrying and behavioural displays (and where the size of the tusk is important in determining the hierarchical position of a particular elephant in a herd).[25] Indeed, elephant tusks do not erupt in all individuals (*see* Raubenheimer (2000)[26] for examples in the African elephant), in contrast to orca's teeth, which erupt in all individuals. An additional striking difference that Dr. Dold fails to acknowledge is that elephant tusks "*… are continuously growing permanent incisors of the upper jaw, …*"[27] compared to orca teeth which are homodont and once fully formed do not continue to grow. These significant differences make it unscientific to make comparisons between the two, and suggest that the pulp innervation of the two are similar.

[25] WEISSENGRUBER, G. E., M. Egerbacher, and G. Forstenpointner. (2005) "Structure and innervation of the tusk pulp in the African elephant (*Loxodonta africana*)." *Journal of anatomy* 206, no. 4: 387-393.

[26] RAUBENHEIMER, E.J., 2000. Development of the tush and tusk and tusklessness in African elephant (*Loxodonta africana*). *Koedoe*, *43*(2), pp.57-64.

[27] WEISSENGRUBER et al., (2005) at 387-393.

2. Comparability of dental wear and damage seen among SeaWorld's orca and wild orca

14. I understand that Dr. Dold has opined that: "*Killer whales at SeaWorld and in free-ranging populations experience various dental issues and wear that SeaWorld's killer whales' dental health and/or issues do not result in a general state of harm to the killer whales or prevent them from engaging in normal behaviors or maintaining normal body conditions.*"[28] [redacted]."[29] [emphasis added].

15. [redacted]

[28] SeaWorld's Supplemental Expert Disclosures at 9.

[29] DOLD 4/12 Dep. Tr. at 277:10-24 (emphasis added).

[redacted].

16. **Figure [2]** below illustrates the differences that are seen among wild orca and SeaWorld's orca. The angle of wear on the teeth of a wild orca and a captive orca are consistently dissimilar, in that the wear on the teeth of the wild orca (left) is angled so that the lower edge is on the inside of the mouth, whilst the wear on the captive is angled so that the lower edge is on the outside of the mouth. The angle is important because it demonstrates that, in captive orca, the source of wear is external (*i.e.*, hard surfaces such concrete walls, and toys). Additionally, the type of wear in wild orca is population-wide and tooth wear is generally even within an individual (*i.e.*, not jagged). By contrast, SeaWorld orca exhibit fractures and uneven wearing (*see* **Figure [3]** for an example of an adult female orca from SeaWorld Orlando; **Figure [4]** for an example of an adult male orca from Loro Parque), demonstrating that they are the result of stereotypies and damage from manipulation of toys.

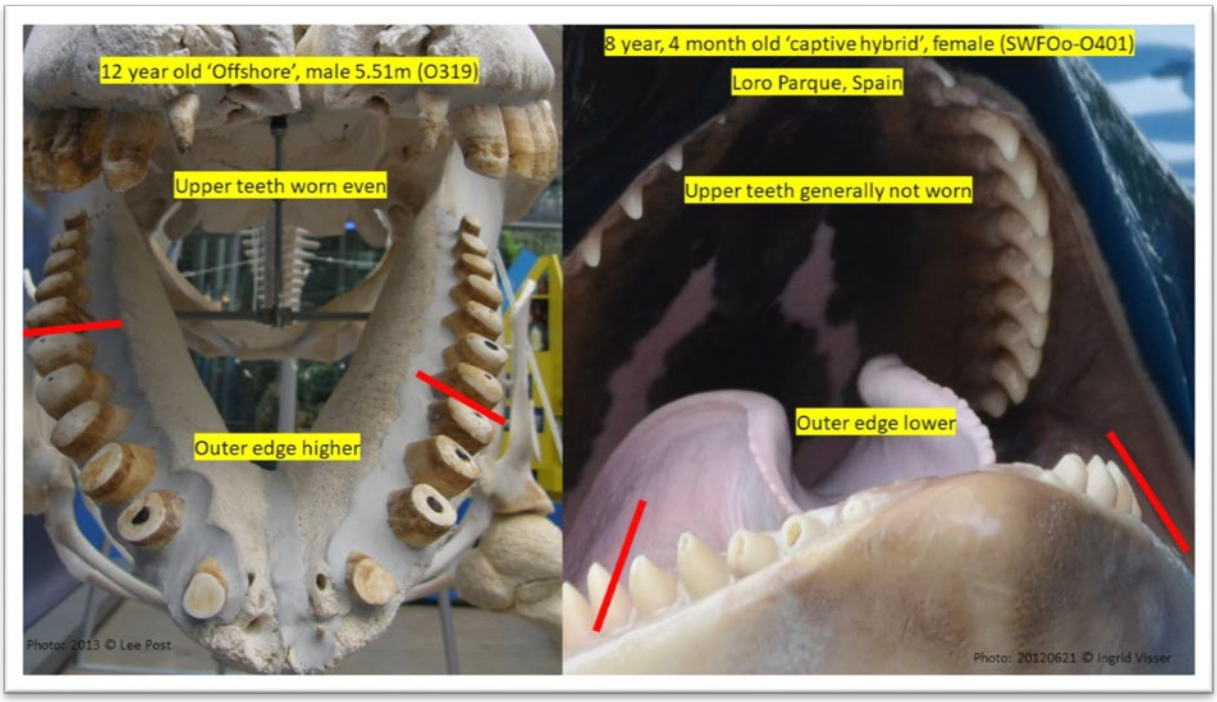
12 year old 'Offshore', male 5.51m (O319)
Upper teeth worn even
Outer edge higher
Photo: 2013 © Lee Post
8 year, 4 month old 'captive hybrid', female (SWFOo-O401)
Loro Parque, Spain
Upper teeth generally not worn
Outer edge lower
Photo: 20120621 © Ingrid Visser

Figure [2]

Figure [3][30]

[30] Photo © Ingrid N. Visser.

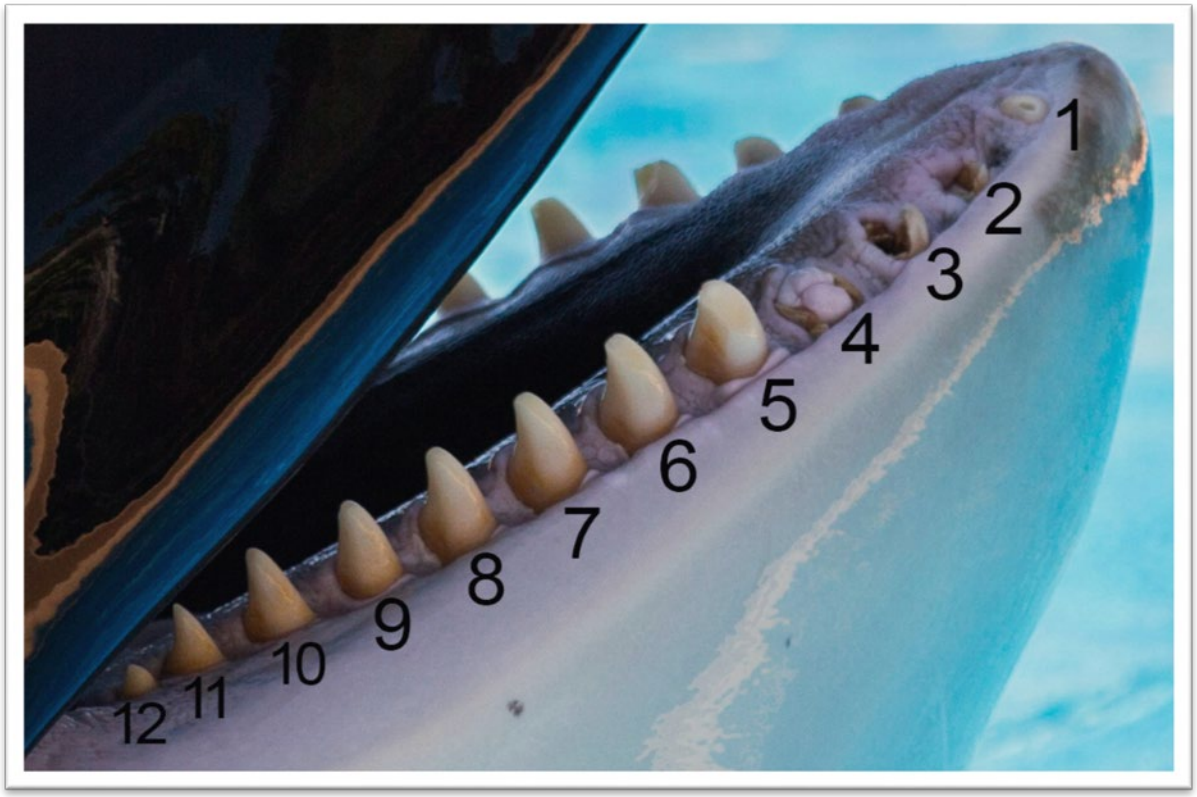

Figure [4][31]

17. The age at which tooth wear and damage are seen among wild and captive orca present another important point of distinction. [redacted],[32] but its own orca show "excessive wear" and "fractures" at ages even under 2 years old. I disagree further with Dr. Dold's opinion that these dental issues "*do not result in a general state of harm*" for the orca.[33] [redacted]

[31] Photo © Ingrid N. Visser.

[32] DOLD 4/12 Dep. Tr. 141:14-142:2; *see also* SIMMONS 4/10 Dep. (Rough) Tr. at 302:1-4 [redacted]

[33] SeaWorld's Supplemental Expert Disclosures at 9.

[redacted]

i. [redacted][34]

ii. [redacted][35]

iii. [redacted].

[34] SW-AND0148992.

[35] *Id.* This is consistent with the testimony offered by SeaWorld's former veterinarian, Dr. Lanny Cornell, in SeaWorld's lawsuit against Marineland of Canada. He testified that, when Ikaika was 4 years old and being transported to Marineland, he "exhibited one major health issue: a chronic dental problem" which resulted in his teeth "always be[ing] subject to infection." *See* SW-AND0090771 at SW-AND0090775. Dr. Cornell testified that he confirmed from SeaWorld's "medical records and behavioural chart," that Ikaika had dental infections in September 2005, November 2005, and April 2006 — *i.e.*, when Ikaika would have been just over 3 years of age.

[redacted][36]

iv. [redacted][37]

[redacted].[38]

v. [redacted].[39]

vi. [redacted][40]

vii. [redacted].[41]

[36] SW-AND0148992.

[37] *Id.*

[38] SW000515.

[39] SW-AND0148992.

[40] SW-AND0149337.

[41] *Id.*

viii. [redacted]”[42]

ix. [redacted][43]

x. [redacted].[44]

xi. [redacted].[45]

[42] SW-AND0151138.

[43] *Id.*

[44] *Id.*

[45] *Id.* [redacted] *See* SW-AND0137455-57 [redacted] *see also* SW-AND0139569 [redacted]

18. [redacted].[46] [redacted]

5) Claims regarding use of medications

19. I understand that Dr. Dold will "testify to the appropriateness of diagnostic procedures and treatments provided to SeaWorld killer whales."[47] I understand that he further intends to testify that: "diazepam [and] other benzodiazepines . . . are not used at SeaWorld to manage anxiety or aggression on a long-term basis."[48] It is unclear what precisely SeaWorld means by "on a long-term basis," but the contemporaneous evidence available in this case undermines Dr. Dold's intended testimony.

20. [redacted].[49] [redacted]

[46] *See* DOLD 4/12 Tr. at 271:12-272:11 [redacted]

[47] SeaWorld's Supplemental Expert Disclosures at 9.

[48] *Id.*

[49] *See* SW-AND0148762, SW-AND0148766.

[redacted]

- [redacted]
- [redacted]

[redacted].[50] [redacted]

21. [redacted][51] Mr. Simmons misunderstands

[50] *See also* SW019861 [redacted] SW019862- SW019863 [redacted]

[51] Simmons Report at 17.

my opinion that SeaWorld's necessity to frequently medicate its orca demonstrates a persistent state of ill-being. [redacted] [52]

[redacted].[53]

22. [redacted].[54] [redacted]

[52] DOLD 4/12 Dep. Tr. at 144:8-18.

[53] SW-AND0148766; *see also* Visser Opening Report at Section VI(4)(4), Schedule 7(b).

[54] *See, e.g.*, DOLD 4/12 Tr. at 122:6-22 [redacted]; SIMMONS 4/10 (Rough) Tr. at 219:25-220:4 [redacted]

[redacted],[55] [redacted],[56] and yet SeaWorld is unable to demonstrate that orcas in captivity at SeaWorld live considerably longer lives than wild ones. In my opinion, this provides further evidence of the fact that SeaWorld's orca are harmed by captivity at SeaWorld.

6) Claims regarding dorsal fins

23. Dr. Dold has indicated that he intends to testify that: "the conformational changes to the SeaWorld killer whales' [dorsal fins] do not present a health issue to the animals or cause them 'suffering' and is not harmful to a killer whale's overall health and well-being."

24. Assuming for the sake of argument that Dr. Dold is correct, I do not believe that that demonstrates the truth of SeaWorld's advertisement that collapsed dorsal fin are normal and equally common in the wild. The fact that dorsal fin collapse is widespread among SeaWorld's captive orca but not those found in the wild

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[redacted] *see also* SW-AND0092435 at SW-AND0092438 [redacted] NELSON_000018 at NELSON_000021 ("*We know that care of killer whales has improved immensely — thanks to research made possible by maintaining a population of killer whales that we work with on a daily basis. For this reason, the studies that best reflect the longevity of SeaWorld's killer whales are those that have taken place since the 1980s.*").

[55] Simmons Report at 17.

[56] *Id.* at 21-23.

demonstrates that it is not "normal." Orca are rarely found in nature with collapsed dorsal fins — it is a consequence of their captivity at SeaWorld.[57]

25. Moreover, Dr. Dold is incorrect in arguing that there is no correlation between orca health and the health of the dorsal fin. I note that the list of published papers Dr. Dold relies on to support his intended testimony omits relevant literature like Kastelein et al. (2016)[58] and Durban et al. (2009).[59] When documenting the free-ranging population of Southern Resident orca, Durban et al. (2009) report on 13 who showed "peanut-head" (a notable depression behind the cranium). All but two of these whales subsequently died indicating the strong correlation between peanut-

[57] *See* Visser Opening Report at ¶¶ 418-428; *see also* DOLD 4/12 Dep. Tr. at 213:12-14, 234:25-236:5 (

.

[58] KASTELEIN, R., R. Triesscheijn, and N. Jennings. (2016). Reversible Bending of the Dorsal Fins of Harbor Porpoises (Phocoena phocoena) and a Striped Dolphin (Stenella coeruleoalba) in Captivity. *See* discussion on Kastelein in the Visser Opening Report at footnote 608.

[59] DURBAN, J. W., H. Fearnbach, D. Ellifrit and K. C. Balcomb (2009). Size and body condition of Southern Resident killer whales, Contract report to the Northwest Regional Office, National Marine Fisheries Service, Order number AB133F08SE4742, Requisition Number NFFP5000-8-43300**:** 22.

head and terminal decline. Of these 13, three individuals (*i.e.*, 23%) also had compromised dorsal fin structural integrity. The survivors included none of those three individuals.[60] In each individual's case, death was preceded by increased drooping of the dorsal fins; the three examples from the report are noted below (emphasis added):

- "1994, L42 (male born est. 1973) – a slight depression behind the blowhole was first noticed in mid June 1994; a prominent depression by mid July; the dorsal fin was drooping by mid August; the depression had become large by early September exposing the shape of the back of the cranium and vertebrae; last seen in late September."

- "1994 K17 (male born est. 1966) – a slight depression behind the blowhole was first noticed in mid July; prominent depression by mid August; last seen in mid September with the fin severely drooping."

- "1995 J3 (male born est. 1953) – a slight depression behind the blowhole noticeable by the end of March; moderate depression by mid May, with the fin beginning to droop; last seen late May."

[60] *Id.* at p. 18.

III. CONCLUSION

26. My conclusions, as stated in the Visser Opening Report, remain unchanged.[61]

* * *

Dated: April 20, 2019

(New Zealand time)

Dr. Ingrid Visser

[61] Prior to submission of this rebuttal report, I noted a few errors in the Visser Opening Report. *First*, footnote 373 refers to Schedule 8. This is incorrect; the correct schedule is Schedule 12. *Second*, footnote 611 should cite to DOLD 11/9 Dep. Tr. at 97:21-103:6 [redacted] The current cite in footnote 611 of the Visser Opening Report [redacted] is incorrect.

Schedule A

Comparison Between Orca Tanks at SeaWorld San Diego
and Keiko's Tank In Mexico

As shown in **Figure [A1]** below, SeaWorld San Diego's Tank C is 118 feet long, 75 feet wide, and 15 feet deep. I understand that the adjacent Tank B is a similar size to Tank C.

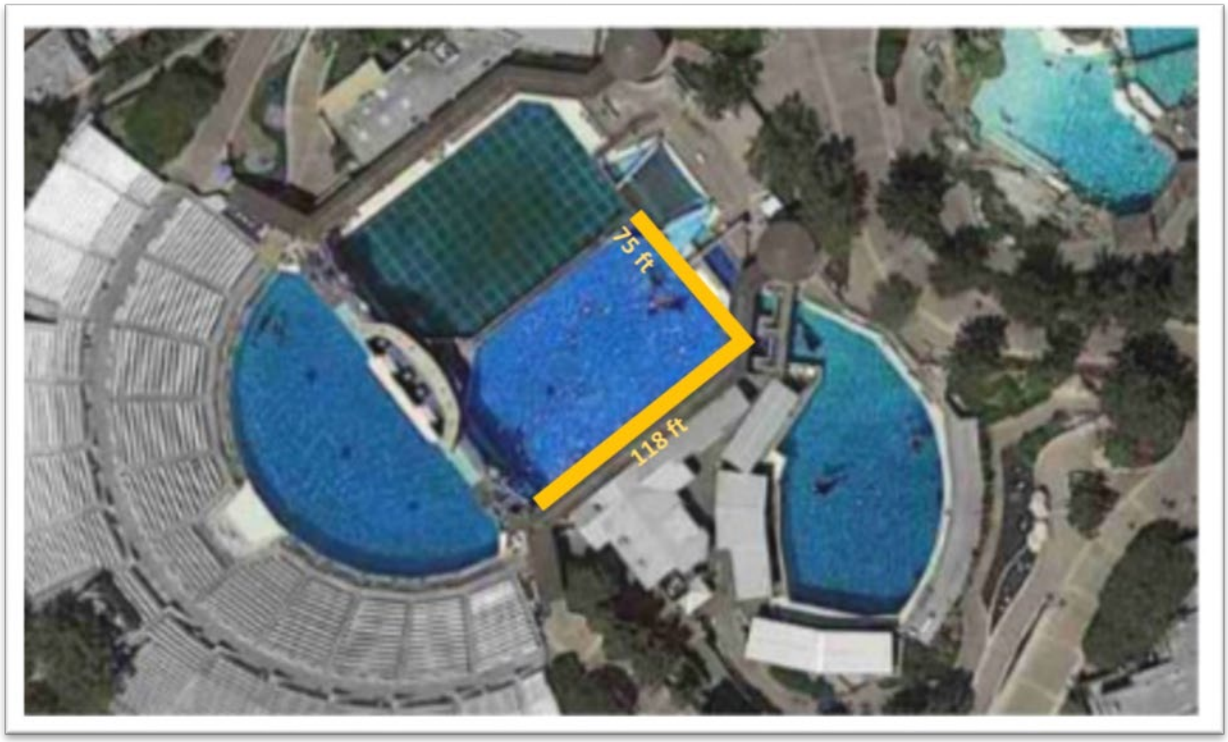

Figure [A1]

As shown in **Figure [A2]** below, SeaWorld's Tanks B and C are not appreciably larger than Keiko's tank at Reino Aventura in Mexico City, which was 100 feet long, 60 feet wide, and 20 feet deep. Indeed, SeaWorld's Tanks B and C are shallower (15 feet) than Keiko's tank. In the below figure, Keiko's tank in Mexico is shown in dark orange, whereas SeaWorld's Tank C is shown in yellow.

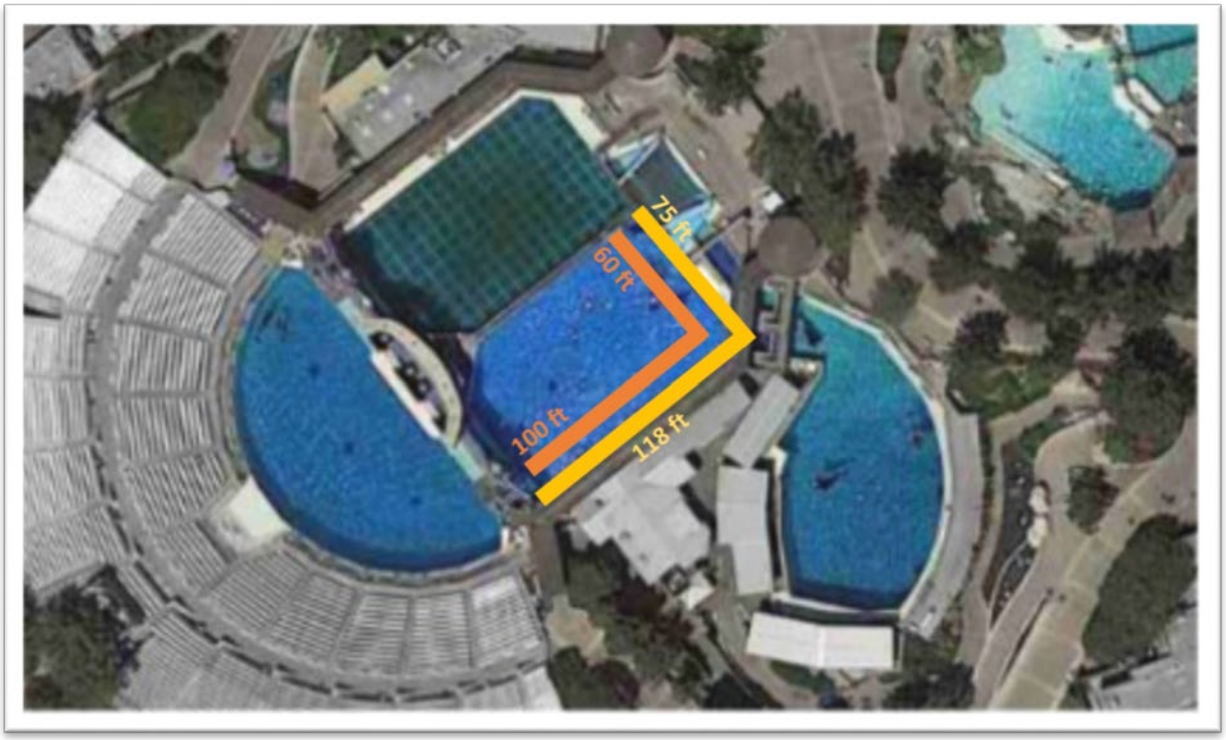

Figure [A2]

In **Figure [A3]** below, I approximate the shape and size of Keiko's tank at Reino Aventura in Mexico City (depicted in dark orange below) and superimpose it on the SeaWorld's Tank C.

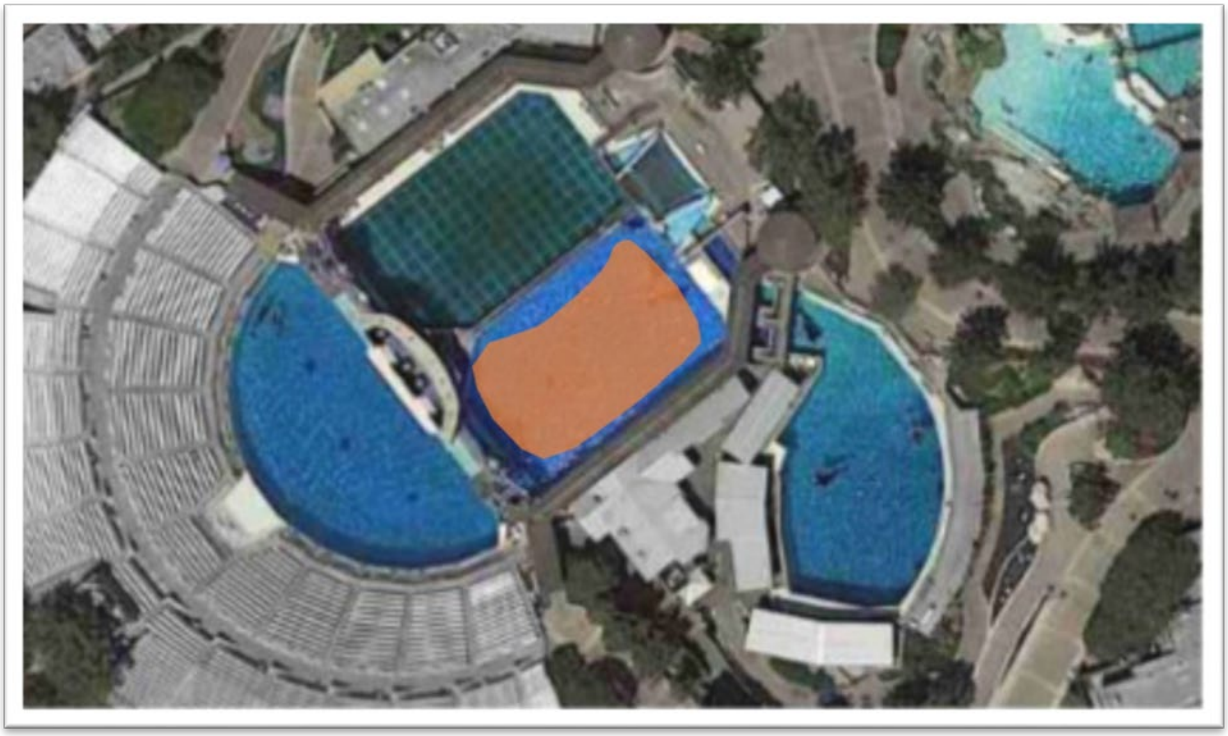

Figure [A3]

Figure [A4] below provides a comparison of the orca habitats provided by SeaWorld and Keiko's former home, Reino Aventura, which SeaWorld's expert described as "certainly too small." It should be remembered that, as per SeaWorld's training records and other internal documents discussed in the Visser Opening Report, SeaWorld's orca do not always have free access to all the tanks; instead, they are frequently kept in groups, separated in different tanks with the gates between them closed.

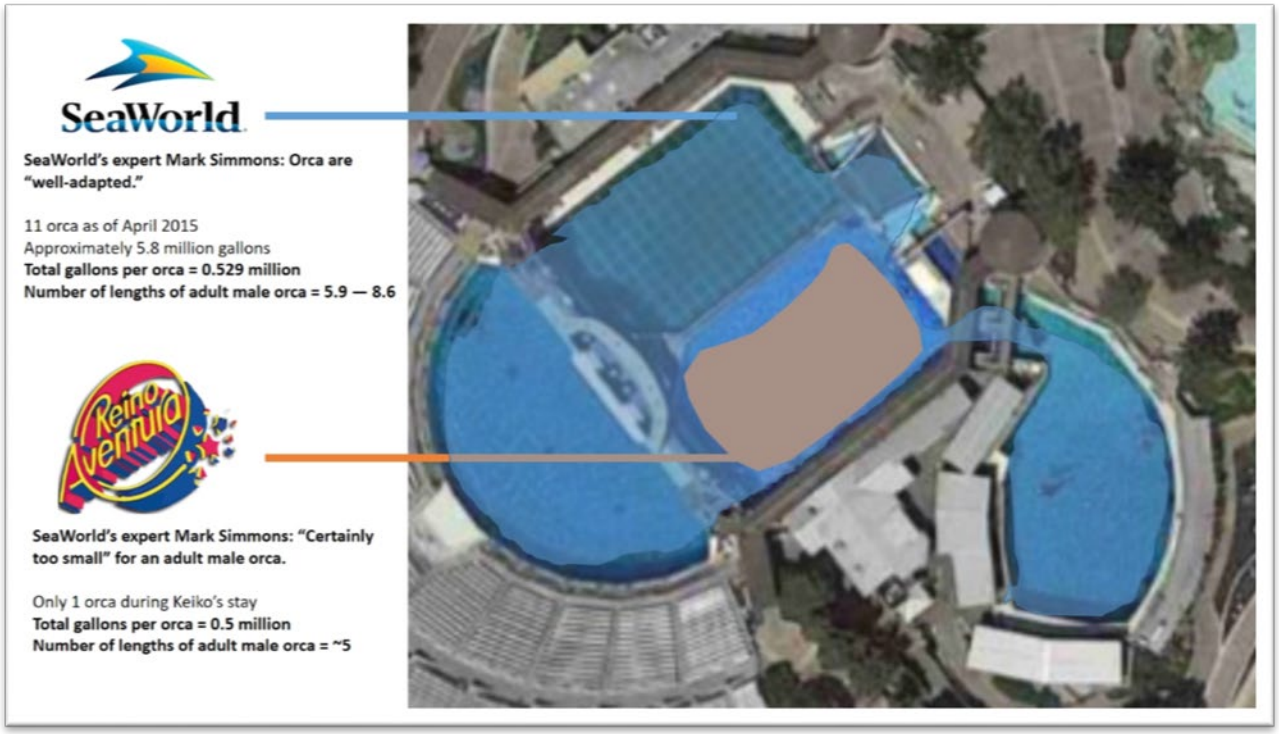

Figure [A4]