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BEFORE THE HEARING EXAMINER
FOR THURSTON COUNTY

In the Matter of the Appeal of:)	Appeal No. 16-106159 VE
Patrick Townsend, Kathryn Townsend, and)	Project No. 2014108800
Anneke Jensen)	APPLICANT’S EXHIBIT LIST
of the May 3, 2016 Mitigated Determination of)	
Non-Significance in the request of ChangMook)	
Sohn for Substantial Shoreline Development)	
Permit for an Intertidal Geoduck Aquaculture)	
Operation)	

Applicant ChangMook Sohn, of Pacific Northwest Aquaculture, hereby submits the following list of exhibits in the above-referenced proceeding. Applicant reserves the right to submit as an exhibit any document included on any other party’s exhibit list. Applicant also reserves the right to submit exhibits not on this list in response to exhibits and/or witnesses identified in any other party’s lists and issues and/or exhibits presented by any other party in the course of the hearing.

1. Curriculum Vitae of Phil Osborne, Ph.D. October 2016.
2. Coastal Processes Assessment, Golder Associates Inc. October 2016.

Presentation materials assessing anticipated impacts of the proposed geoduck farm that is the subject of this appeal (“Farm”) related to sediments, currents, and waves.

APPLICANT’S EXHIBIT LIST - 1

PLAUCHÉ & CARR LLP
811 First Avenue, Suite 630
Seattle, WA 98104
Phone: 206-588-4188
Fax: 206-588-4255

1 3. Washington State Department of Ecology, Southern Puget Sound Water
2 Quality Assessment Study, Circulation and Flushing in South Puget Sound. 1986. Study
3 of the circulation patterns and rate of tidal flushing within South Puget Sound in order to
4 understand potential pressures being placed on water quality as a result of anthropogenic
5 impacts.

6 4. Assessment of Coastal Sediment and Shoreline Morphology Impacts—
7 Proposed Longbranch Shellfish Farm, P. Osborne, Ph.D. February 15, 2011. Expert
8 report assessing impacts associated with sediment, transport processes, and potential
9 beach morphology related to a proposed geoduck aquaculture farm.

10 5. Curriculum Vitae of Rosalind Schoof, Ph.D. October 2016.

11 6. Steps of risk assessment flow chart. Undated. Diagram of steps involved
12 in conducting a risk assessment.

13 7. Endocrine disrupting chemicals in fish bile: A rapid method of analysis
14 using English sole (*Parophrys vetulus*) from Puget Sound, WA, USA. da Silva et al.,
15 Chemosphere 92 (2013) 1550-1556. May 16, 2013. Discusses a method for analyzing
16 chemicals in fish and comparing results from urban and non-urban sites.

17 8. 2007 Puget Sound Update: Ninth Report of the Puget Sound Ambient
18 Monitoring Program (excerpts). February 2007. Summarizes the condition of Puget
19 Sound as measured by ongoing monitoring and research activities of the Puget Sound
20 Assessment and Monitoring Program.

21 9. Curriculum Vitae of Philip Bloch. October 2016.

22 10. Eelgrass (*Zostera Marina L.*) Restoration in Puget Sound: Development
23 and Testing of Tools for Optimizing Site Selection. September 2014. Describes a spatial
24 model used to identify potential eelgrass restoration sites.

1 11. Assessing Potential Benthic Impacts of Harvesting the Pacific Geoduck
2 Clam *Panopea generosa* in Intertidal and Subtidal Sites in British Columbia, Canada. Liu,
3 W., C.M. Pearce, and G. Dovey. Journal of Shellfish Research 34.3:757-775. 2015.
4 Assesses potential effects of commercial-scale geoduck harvesting on the sedimentary
5 benthic environment and nearby eelgrass beds.

6 12. Technical Memorandum: Operational definition of an eelgrass (*Zostera*
7 *marina*) bed. A summary of workgroup discussions and related analysis. Washington
8 State Department of Natural Resources, Aquatic Resources Division. Donaghue, C.
9 2011. Addresses the operational definition of an eelgrass bed.

10 13. Modeling seagrass density and distribution in response to changes in
11 turbidity stemming from bivalve filtration and seagrass sediment stabilization. Estuaries.
12 27: 793-806. Newell, R.I.E. and E.W. Koch. October 2004. Discusses a model used to
13 calculate how changes in the balance between sediment sources and sinks regulate
14 turbidity.

15 14. Seasonal effects of clam (*Panopea generosa*) on eelgrass (*Zostera marina*)
16 density but not recovery dynamics at an intertidal site. Ruesink, J.L. and K. Rowell.
17 Aquatic Conservation Marine and Freshwater Ecosystems. 22: 712-720. 2012. Examines
18 impacts associated with culturing geoducks in eelgrass beds.

19 15. Email from Ruesink, J. to Marlene Meaders dated March 18, 2013.
20 Addresses potential impacts to eelgrass from geoduck aquaculture and appropriate buffers.

21 16. Light requirements for growth and survival of eelgrass (*Zostera marina L.*)
22 in Pacific Northwest (USA) estuaries. Estuaries and Coasts. 31: 969-980. Thom, R.M.,
23 S.L. Southard, A.B. Borde, and P. Stoltz. 2008. Addresses submarine light requirements
24 for the protection and restoration of eelgrass in Pacific Northwest estuaries.

25

1 17. Kelp and Eelgrass in Puget Sound. Puget Sound Nearshore Partnership
2 Report No. 2007-05. Published by Seattle District, U.S. Army Corps of Engineers,
3 Seattle, Washington. Mumford, T.F. 2007. Discusses biology and habitat requirements
4 of eelgrass and kelp in Puget Sound.

5 18. Curriculum Vitae of Marlene Meaders. October 2016.

6 19. Verified Tide Data from Tacoma, Washington (Station ID 9446484).
7 2007. Information pertaining to tidal elevations and exposure.

8 20. Washington Shellfish Initiative. December 9, 2011. Policy initiative
9 adopted by Governor Christine Gregoire to protect and enhance shellfish aquaculture.

10 21. NOAA's National Shellfish Initiative. December 2011. Policy initiative
11 adopted by the National Oceanic and Atmospheric Administration to increase shellfish
12 aquaculture for commercial and restoration purposes.

13 22. U.S. Department of Commerce Aquaculture Policy. June 2011. Policy
14 initiative adopted by the U.S. Department of Commerce to support the development of
15 sustainable aquaculture.

16 23. NOAA Aquaculture Policy. June 2011. Policy initiative adopted by the
17 National Oceanic and Atmospheric Administration to enable the development of
18 sustainable marine aquaculture.

19 24. Geoduck culture flow chart. Undated. Graphical depiction of various
20 stages and activities for commercial geoduck aquaculture.

21 25. Newspaper Article from The Olympian entitled: Dirty Job: Shellfish
22 Workers Rid Beaches of Tons of Trash. October 23, 2006. Discusses beach cleanups
23 conducted by shellfish farmers.

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1 26. Geoduck aquaculture photographs. Various dates (specific dates, locations,
2 and photographer to be identified on each photograph). Photographs of representative
3 geoduck aquaculture activities and farms.

4 27. Proposal to Reissue and Modify Nationwide Permits, 81 Fed. Reg. 35186
5 (excerpts). June 1, 2016. Federal Register notice regarding proposal to reissue and
6 modify Nationwide Permits.

7 28. Shellfish Interagency Permitting Team, Existing Permitting Processes
8 flowchart. November 2014. Flowchart depicting various regulatory requirements and
9 approvals for commercial shellfish aquaculture farms.

10 29. Summary Report: PCSGA South Puget Sound Bi-Annual Beach Cleanups.
11 September 12, 2016. Reports results of bi-annual beach cleanups organized by the Pacific
12 Coast Shellfish Growers Association.

13 30. Programmatic Biological Assessment, Shellfish Activities in Washington
14 State Inland Marine Waters, U.S. Army Corps of Engineers Regulatory Program
15 (excerpts). October 30, 2015. Assessment of shellfish aquaculture activities in
16 Washington State pursuant to Section 7 of the Endangered Species Act and Section 305 of
17 the Magnuson-Stevens Fishery Conservation and Management Act.

18 31. National Marine Fisheries Service, Endangered Species Act Section 7
19 Formal Biological Programmatic Opinion and Magnuson-Stevens Fishery Conservation
20 and Management Act Essential Fish Habitat Consultation for Shellfish Aquaculture
21 Activities in Washington State (COE Reference Number NWS-2014-12) (excerpts).
22 September 2, 2016. National Marine Fisheries Services assessment of shellfish
23 aquaculture activities in Washington State pursuant to Section 7 of the Endangered
24 Species Act and Section 305 of the Magnuson-Stevens Fishery Conservation and
25 Management Act.

1 32. Map of Zangle Cove identifying historic eelgrass observations and
2 Changmook Sohn property, Confluence Environmental Company. October 2016.
3 Overview map of Zangle Cove that identifies observations of eelgrass and describes time
4 periods when eelgrass has been observed, planted, or found to be absent during field
5 observations in Zangle Cove between 2006 and 2016.

6 33. Changmook Sohn Property Field Observations – Orthophoto and field
7 photos, Confluence Environmental Company. October 2016. Orthophoto of Changmook
8 Sohn Property and vicinity describing the intertidal taken during low tide in 2016 with a
9 selection of ground based photopoints identifying site characteristics.

10 34. Tube visibility analysis presentation, Meaders, M. October 2016.
11 Presentation comparing different methods and data to analyze the potential for tube
12 exposure on the proposed geoduck farm.

13 35. Tube exposure spreadsheet, Confluence Environmental Company. October
14 2016. Spreadsheet of 6-minute tide data for Tacoma, WA, Station ID 9446484, and
15 daylight hours for Olympia, WA, calculating the amount of time that tubes would be
16 exposed throughout the year.

17 36. Email correspondence from B. Dewey to J. Gaeckle *et al.* dated September
18 2, 2014. Discusses, among other things, eelgrass and geoduck culture interactions in
19 Samish Bay.

20 37. State of the Science Assessment: Shellfish Aquaculture Interactions with
21 Submerged Aquatic Vegetation, Confluence Environmental Company. April 17, 2015.
22 Addresses the interactions and ecosystems services of submerged aquatic vegetation and
23 shellfish aquaculture.


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38. Email correspondence from J. Morris, Ph.D. to interested parties dated March 18, 2015. Requests submittals for a state of science assessment on shellfish aquaculture interactions with submerged aquatic vegetation.

DATED this 16th day of September, 2016.

PLAUCHÉ & CARR LLP

By: 
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Jesse G. DeNike, WSBA #39526
Attorneys for Pacific Northwest Aquaculture, LLC/ChangMook Sohn, Applicant