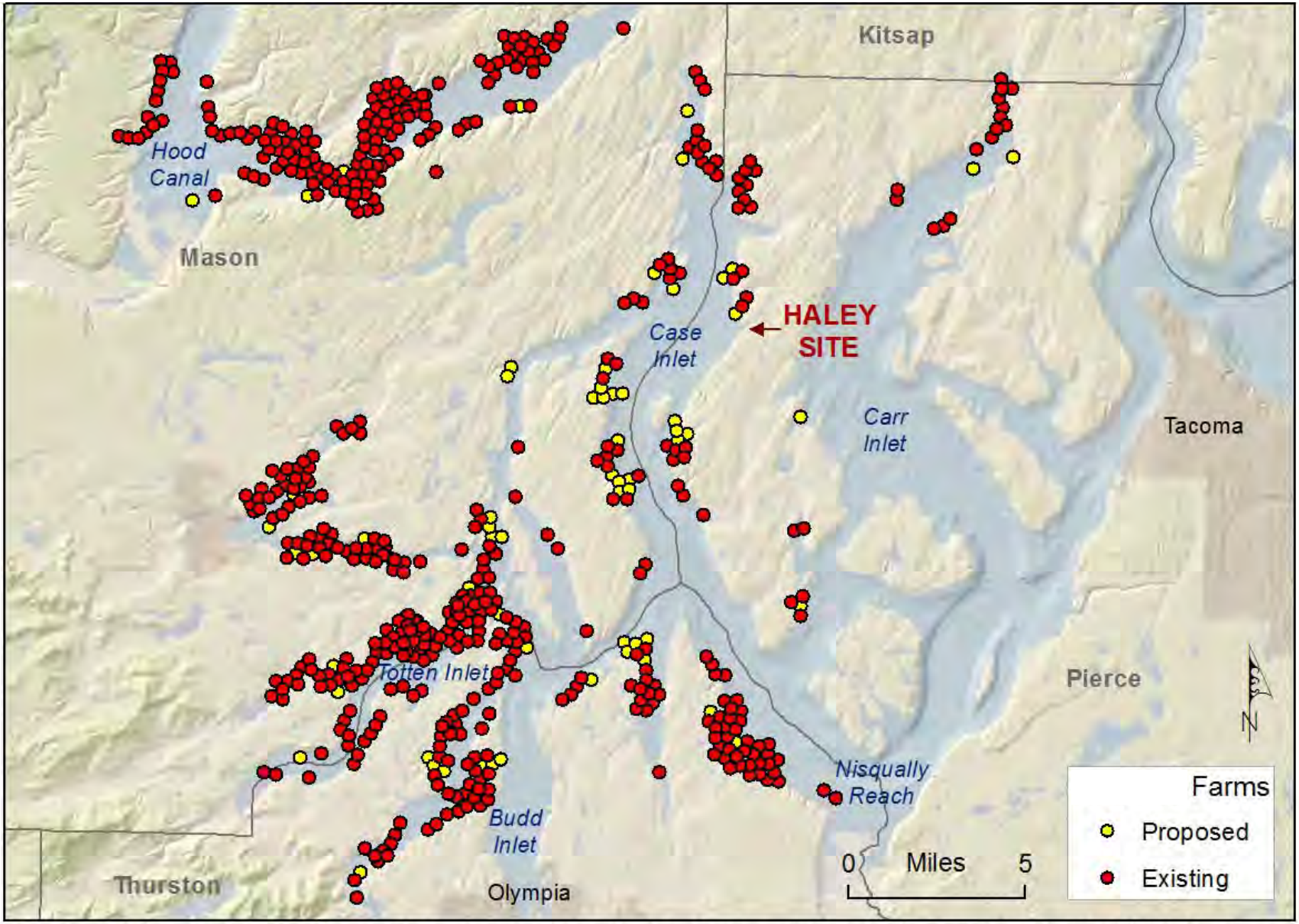
Cumulative Impacts: existing and proposed shellfish farms



Known existing and proposed shellfish farm locations in South Puget Sound, totaling 625 in best-available 2012-2014 data.

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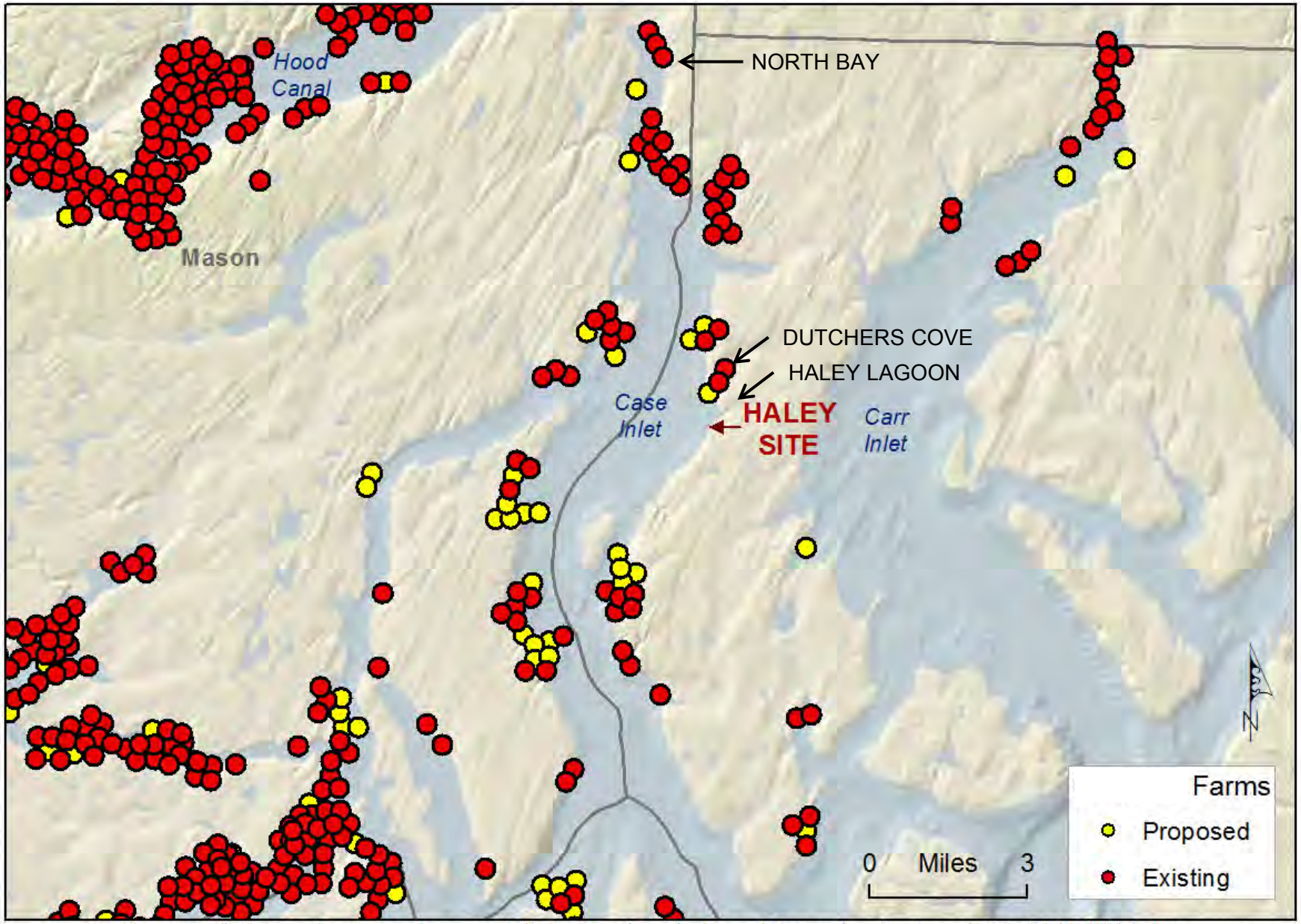
Cumulative Impacts: existing and proposed shellfish farms



Known existing and proposed shellfish farm locations in Case Inlet, using best-available 2012-2014 data.

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May 1, 2015

Via Certified Mail Return Receipt Requested

Lieutenant General Thomas P. Bostick
Commanding General and Chief of Engineers
U.S. Army Corps Of Engineers
441 G Street NW
Washington, DC 20314-1000

Brigadier General John S. Kem
Commander Northwestern Division
P.O. Box 2870
Portland, OR 97208-2870

Colonel John G. Buck
Commander, Seattle District
U.S. Army Corps of Engineers
P.O. Box 3755
Seattle, WA 98124-3755

Re: Petition For Suspension Of Authorizations Of Commercial Shellfish Aquaculture Activities Under Nation Wide Permit 48 In Puget Sound.

Dear Generals Bostick & Kem and Colonel Buck:

The Coalition To Project Puget Sound Habitat ("CPPSH"), hereby requests - pursuant to 33 C.F.R. § 330.5(b) and other applicable authorities - that the Seattle District of the U.S. Army Corps of Engineers ("Corps") suspend authorization of commercial shellfish aquaculture in Puget Sound under Nation Wide Permit (NWP) 48, until such time as the Corps has initiated and completed a new review of the environmental effects of authorized activities and imposed conditions on NWP 48 as appropriate to ensure that the effects of authorized activities are minimal, consistent with the public interest, and not significant.

CPPSH is an alliance of concerned citizens, environmentalists, scientists, and recreational users who are concerned about the potential adverse effects of current and expanding aquaculture plants, animals, and ecological function in the nearshore environment and public waters. CPPSH submits this Petition to again notify and remind the Corps of the dramatic difference between the **anticipated** number of activities authorized under NWP 48 in Puget Sound, and the **actual** number of pre-construction

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notifications received and authorizations issued so far, **as well as** new information regarding the potential effects of the authorized activities on the environment in Puget Sound —including ESA-listed species.

CPPSH requests that Corps suspend authorization of commercial shellfish aquaculture in Puget Sound under NWP 48 until the Corps has initiated and completed a new review of the environmental effects of authorized activities. In addition, the use of NWP 48 in Puget Sound should be suspended until the Corps has imposed conditions to ensure that the effects of authorized activities are minimal, consistent with the public interest, and not significant.

Suspending authorization of additional commercial shellfish aquaculture in Puget Sound under NWP 48 would be in the public interest. It would avoid the authorization of activities under this NWP 48 which may have more than minimal and significant effects on the environment. It would allow the Corps to continue to authorize commercial shellfish aquaculture activities under individual permits, for which it conducts individualized environmental affects analyses. It would also the Corps comply with it's obligations under the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA) and the Clean Water Act (CWA).

This Petition is being submitted in both electronic and paper form. The paper letter is accompanied by a CD that includes extensive supporting materials including photographs, references, and considerable relevant literature. These materials document some (though not all) of the extensive, unaccounted for, and newly discovered impacts resulting from industrial-scale aquaculture activities in Puget Sound that are taking place under the auspices of NWP 48 authorizations.

Background

In early 2012, the Corps reissued a suite of NWPs to authorize certain activities that require permits under Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act.[1] These NWPs included NWP 48 – Commercial Shellfish Aquaculture Activities. *Id.* at p.10,280.

As part of that re-issuance the Corps produced a Decision Document, which purports to satisfy the Corps's obligations to analyze the effects of activities authorized under NWP 48 on the environment and the public interest. Those obligations are imposed by the NEPA, and by the Corps own regulations.[2] The National Decision Document addresses effects of authorization on a national and programmatic basis, and it contains only a cursory cumulative impacts discussion with little or no application to

[1] *See,* Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184 (Feb. 21, 2012).

[2] *See*, Decision Document, Nationwide Permit 48 1 (Feb. 13, 2012) ("*National Decision Document*").

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local conditions anywhere. *Id*. at pp.25–30.

Shortly thereafter, the Seattle District announced regional conditions applicable to NWP 48.[3] Concurrently, the Seattle District produced a Supplemental Decision Document for NWP 48.[4] The Supplemental Decision Document is Seattle District Engineer's analysis of the cumulative adverse effects of NWP 48, as modified by regional conditions, which the District deemed necessary to address effects on the aquatic environment. The District relied on these two documents to conclude that such effects would be minimal and not significant. *Id.* Supp. Dec. Doc. at p.1. In the Supplement, the Seattle District estimated that there were only "101 commercial shellfish growing areas in Washington State" **and** that NWP 48 would be used "approximately 50 times" each year during the life of the permit. *Id*. at p.31.

As indicated in the Supplemental Decision Document, the Seattle District has developed special conditions for commercial shellfish aquaculture activities.[5] As suggested by a blank reference number in its heading ("Corps Reference Number: NWS-XXXX-XXXXX"), this document appears to be a template of conditions that has no effect until applied to an individual verification.

At the time, Corps had initiated but had not yet completed an "ESA Section 7 consultation with National Marine Fisheries Service ("NMFS") for the national NWP program. On Nov. 24, 2014, after the conclusion of consultation, NMFS issued a Biological Opinion (hereafter "BiOp").[6] On the grounds that the NWP program would address any "incidental take" of ESA listed species or their habitat in subsequent consultations, the 2014 BiOp did not provide an Incidental Take Statement ("ITS") for the NWP program, and the 2014 BiOP does not exempt from the "take" prohibitions in ESA Section 9 any incidental take that occurs as a result of NWP 48. *Id.* at p.355.

Previously, in 2009, NMFS issued a BiOp for activities in Washington State authorized under the 2007 version of NWP 48.[7] The 2009 BiOp clearly stated that it

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[3] *See*, Special Public Notice (Mar. 19, 2012), *available at*: http://www.nws.Corps.army.mil/Portals/27/docs/regulatory/Special%20Public%20Notices/2012_Final_NWP_48_SPN.pdf ("*Special Public Notice*") (explaining requirements of 2012 NWP 48 as applicable in Washington State).

[4] *See,* Supplement to the National Decision Document for 2012 Nationwide Permit 48 and Regional General Conditions 1 (Mar. 19, 2012) ("*Supplemental Decision Document*") *available at*:http://www.nws.usace.army.mil/Portals/27/docs/regulatory/NWPs/2012%20NWP%201%20to%2010%20Supp%20Decdoc%20_3-19-12_.pdf.

[5] *See, Special Conditions for Commercial Shellfish Aquaculture Activities,* Permit Guidebook, http://www.nws.Corps.army.mil/Portals/27/docs/regulatory/NWPs/Existing%20Aquaculture%20Activities%20-%20Special%20Conditions.pdf ("Special Conditions Template").

[6] *See,* NMFS, BiOp for Authorization of discharges of dredged and fill material or other structures into the waters of the United States under the Corps' Nationwide Permit Program 1 (2014) ("2014 BiOp").

[7] *See*, NMFS, Conference Programmatic on Nationwide Permit 48 – Shellfish Aquaculture Activities, NWR-2008-4151 (Apr. 28, 2009) ("2009 BiOp").

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also did not exempt any incidental take of listed species arising from activities authorized under NWP 48 in Puget Sound. *Id.* at p.65. Although the 2009 BiOp found that the activities under NWP 48 were likely to adversely affect critical habitat designated for Puget Sound Chinook salmon and Hood Canal summer-run chum salmon (*id.* at p.25) the 2009 BiOp ITS did "not quantify incidental take nor exempt any incidental take from the prohibition against take." *Id.* at p.65.

Current conditions are dramatically different from those contemplated by the 2012 Supplemental Decision Document or the 2009 BiOp. Rather than authorizing 50 activities per year, in the first eight months after the 2012 NWP 48 issued, the Seattle District issued authorizations or verifications for approximately 800 activities under NWP 48.[8] And, in 2013, the Seattle District issued verifications for more than 100 *additional* activities. *Id.* There are also **many** more requests for verification under NWP 48 currently pending. *Id.*

CWA

A person discharging dredge and full into a wetland or water of the U.S. must first obtain a section 404 permit from Corps, pursuant to 33 U.S.C. § 1344 (2012). The Corps may issue a NWP to authorize a certain category of activities that involves discharges of dredged or fill material.[9]

Corps may issue a NWP only if it determines that the activities permitted are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effects on the environment.[10] Activities may be permitted under NWP only if no significant adverse effects to fish, shellfish, wildlife or their habitats will occur and appropriate steps have been taken to minimize the adverse effects on the aquatic ecosystem.[11]

When issuing an NWP the Corps must conduct an analysis of compliance with 404(b)(1) Guidelines and prepare a statement of findings.[12] The Corps must deny a permit that does not comply.[13]

NEPA

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[8] *See,* Corps Spreadsheet marked Attachment A.

[9] *See,* 33 U.S.C. § 1344(e); 33 C.F.R. § 325.5(c) (2014); *See also,* Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184, 10,184 (Feb. 21, 2012).

[10] *See,* 33 U.S.C. § 1344(e); 40 C.F.R. § 230.7.

[11] *See,* 40 C.F.R. §§ 230.7, 230.10.

[12] *See*, 40 C.F.R. 230.6(d); 33 C.F.R. § 330.5(b)(3).

[13] *See*, 33 C.F.R. 320.4(a)(1); *Sierra Club v. Army Corps of Engineers*, 464 F. Supp. 2d 1171, 1218 (M.D. Fla. 2006) *affirmed at* 508 F.3d 1332 (11th Cir., 2007).

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Under NEPA, the Corps must prepare an Environmental Impact Statement ("EIS") when undertaking a major Federal action that significantly affects the quality of the human environment, pursuant to 42 U.S.C. § 4332(C). Corps may initially prepare an environmental assessment ("EA") to determine whether an action requires an EIS.[14] Although less demanding than an EIS, an EA must still consider all reasonably expected environmental impacts of the action.[15]

An EA must include a brief discussion of the environmental effects of the action, including cumulative impacts.[16] If, through the EA, Corps concludes that an action will have no significant environmental effects, it may forgo preparation of an EIS and undertake the action, but it must produce a Finding Of No Significant Impact ("FONSI").[17]

A federal agency must prepare a Supplemental NEPA analysis when there are substantial changes to the proposed action, significant new circumstances, or significant new information relevant to environmental impacts of the agency action.[18] The obligation to supplement is triggered when "substantial questions" about "whether a project **may** have a significant effect" arise.[19] The same standard for supplementation applies to EA's as to EIS's.[20]

Number And Extent Of Authorized Activities

The number of activities authorized in Puget Sound under NWP 48 is dramatically different from the number contemplated by Corps when it made its minimal impacts and no-significance findings. As outlined, rather than authorizing 50 activities per year (as estimated in the Seattle Dist. Supp. Decision Document) in the first eight months after 2012 NWP 48 issued the Seattle District issued verifications for approximately 800 activities. In 2013, the Seattle District issued verifications for over 100 additional activities and many more notifications are pending.

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[14] *See*, 33 C.F.R. § 230.10; 40 C.F.R. § 1501.4.

[15] *See,* 33 C.F.R. § 230(10); 40 C.F.R. §1508.9(b); *see Native Ecosystems Council v. U.S. Forest Service*, 428 F.3d 1233, 1246 (9th Cir. 2005).

[16] *See,* 40 C.F.R. §§ 1508.7–.9.

[17] *See*, 33 C.F.R. § 230.11; 40 C.F.R. §§ 1501.4(e), 1508.13.

[18] *See, Alliance for the Wild Rockies v. U.S. Department of Agric.*, 772 F.3d 592, 606 (9th Cir. 2014); 40 C.F.R. § 1502.9(c)(1) (2014).

[19] *See, Klamath Siskiyou Wildlands Center v. Boody*, 468 F.3d 549, 562 (9th Cir. 2006) (quoting *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1152 (9th Cir. 1998)(emphasis added).

[20] *See, Humane Soc'y of U.S. v. Bryson*, 924 F. Supp. 2d 1228, 1253 n.27 (D. Or. 2013); *Idaho Sporting Congress v. Alexander*, 222 F.3d 562, 566 n.2 (9th Cir. 2000); *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1152 (9th Cir. 1998).

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The National Decision Document for this NWP expressly relies on the Corps's subsequent exercise of discretionary authority to modify, suspend, or revoke NWP 48 in order to reach a finding that the impacts of authorized activities are minimal, consistent with the public interest, and not significant.[21] Corps's principal exercise of regional discretionary authority to ensure minimal effects was the imposition of regional conditions which Corps analyzed in the Supplemental Decision Document.[22] The Supplemental Decision Document expressly states that the cumulative impacts of NWP 48 on the aquatic environment are "dependent on **the number times** the NWP is used."[23]

When it issued NWP 48 and the Seattle District's regional conditions, the Corps did not account for the potential massive increase in authorized activities attributable to the modification of the 2012 NWP 48 allowing authorization of new and expanded operations. The Corps's projections of the number of authorized activities were based on the reported use of the 2007 version of NWP 48, which did not authorize new and expanded activities. The National Decision Document projects the number of authorized activities based on reported uses of the 2007 permit.[24] The Supplemental Decision Document likewise estimated the number of times 2012 NWP 48 would be used based on applications received during previous years.[25]

Since the Corps's minimal effects and no significant impacts findings relied heavily (if not exclusively) on projections of the numbers of authorizations under the NWP 48, and because those projections **dramatically underestimated** the number of authorized activities in Puget Sound, the actual number of authorized activities invalidates the essential premises of Corps's prior findings. The actual number of authorizations raises substantial questions as to whether the authorized activities will actually have significant and/or more than minimal effects.

Water Quality Effects Of Shellfish Aquaculture

The Corps' minimal impacts, public interest, and no significant impact findings relied on the premise that aquaculture will improve water quality.[26] However, research published after the 2012 re-issue of NWP 48 contravenes this premise. The USGS presentation at the 2014 SeaGrant shellfish symposium documented that "water quality

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[21] *See, E.g.*, National Decision Document at pp. 29 & 38.

[22] *See, Supplemental Decision Document* at p.1.

[23] *See, Supplemental Decision Document* at p.31 (emphasis added).

[24] *See, National Decision Document* at p.38.

[25] *See, Supplemental Decision Document* at p.31.

[26] *See, National Decision Document* at pp. 5, 12, 13, and 30 ("At moderate population densities, commercially produced shellfish populations may improve general environmental concerns, such as water and habitat quality, within navigable waters by removing suspended materials and plankton from the water column in waters subject to eutrophication and by providing physical structure to the waterbody that can be used as habitat by some aquatic organisms (Dumbauld et al. 2009).")

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effects of bivalves are not understood in much of Puget Sound." [27] A recent study warns of adverse water quality impacts, including algal blooms, from intensive shellfish production.[28] Other studies have linked aquaculture to geochemical changes in the intertidal environment.[29] In 2015, a new Bendell study documented changes in ammonium and PH in intertidal sediments.[30] In addition, there were early on some claims that industry made, about potential benefits that have not turned out to be supportable.[31]

The Seattle District Supplemental Decision Document asserts that water quality impacts arising from shellfish farming will be minimal based on regional special conditions developed in consultation with NMFS.[32] However, that consultation was conducted for the 2007 permit and expressly excluded new and expanded operations. *Id.* at 19. Thus, the dramatic increase in the number of authorized activities undermines the premises on which the minimal effects finding relies upon.

Furthermore, there is no reasonable basis to assert that this consultation or regional and special conditions will address the effects of shellfish aquaculture under current conditions because those conditions are not described and information supporting their efficacy is not provided. Sadly, the Corps's minimal effects and no significant impacts findings relied on premises that have been contravened by research. They also relied upon facts that are not applicable to current conditions. Given that, there are substantial questions as to whether the already authorized activities - not to mention any future authorizations - will have a significant and/or more than minimal effect on water quality.

PVC, High Density Polyethylene, Polyolefin

Although the National Decision Document acknowledges public comments regarding the "introduction of plastics," it does not address effects of chemical leachate from PVC tubing.[33] The Supplemental Decision Document also does not discuss plastic

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[27] *See,* Konrad, Christopher Approaches for Evaluating the Effects of Bivalve Filter Feeding on Nutrient Dynamics in Puget Sound, Dec 8, 2014 Washington SeaGrant Symposium Presentation.

[28] *See,* Bouwman, Lex, et al., *Mariculture: Significant and Expanding Cause of Costal Nutrient Enrichment*, 8 Environ. Res. Lett. 044026, *4 (2013).

[29] *See, e.g.*, Bendell, L.I., et al., *Changes in Geochemical Foreshore Attributes as a Consequence of Intertidal Shellfish Aquaculture: A Case Study*, 404 Marine Ecology Progress Series 91–108 (Apr. 2010).

[30] *See, e.g.,* Bendell, L.I., et al., Changes in Ammonium and PH within Intertidal Sediments in Relation to Temperature and the Occurrence of Non-Indigenous Bivalves, Open Journal of Marine Science, 2014, 4, 151-162.

[31] *See,* Coalition To Protect Puget Sound Habitat, Shellfish Aquaculture, Dispelling the Myths, March 2015.

[32] *See, Supplemental Decision Document* at p.19, & 31–32.

[33] *See, National Decision Document* at p.11.

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leachate, PVC, or phthalates. Yet recently published studies describe the dangerous environmental impacts that may arise from PVC. It is now well known that PVC can leach dangerous chemicals. PVC is "sensitive to thermal- and photo-degradation and is not useful without the addition of stabilizer additives, such as antioxidants and UV stabilizers."[34]

Also, PVC uses phthalates as plasticizers. Unfortunately, "these chemicals are proven endocrine disruptors." *Id.* at p.29. "Phthalates may constitute up to 50 percent of the total weight of PVC plastics."[35] These chemicals can leach into the environment and affect the reproduction, development, and genetics of a variety of organisms. *Id.* Phthalates easily leach into the environment and have been shown to bioaccumulate in fish and alter behavior. *Id.*, at p.2,051.

PVC introduced directly into the marine environment will likely degrade and release phthalates, among other chemicals.[36] We now know that if salmon spend enough time near the PVC piping, they could absorb ecologically significant amounts of endocrine disrupting phthalates.[37] In fact, NMFS has already determined that tubes and canopy netting associated with geoduck aquaculture can pose adverse effects on essential fish habitat and substrate.[38] In general, introductions of plastics to marine environments will contribute to plastic pollution. A recent study estimates a minimum of 5.25 trillion particles weighing 268,940 tons are afloat in the world's oceans,[39] while microplastic debris harm is well documented in deeper waters. [40]

Charles Moore, a well know ocean expert, recently tested the plastic geoduck canopy nets, net caps, mesh tubes, oyster bags and clam canopy netting typically used by industry working under NWP 48 permits. They are made of High Density Polyethylene, known to be harmful to aquatic life.[41] Moore also tested Willapa Bay

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[34] *See e.g.,* Jort Hammer et al., *Plastics in the Marine Environment: The Dark Side of a Modern Gift*, 220 Reviews Of Envtl. Contamination And Toxicology 1 (2012); *see also,* Center for Biological Diversity, Rulemaking Petition to EPA on PVC Use in Oceans (July 24, 2014) *available at* http://www.epa.gov/oppt/chemtest/pubs/PVC_RCRA.pdf.

[35] *See,* Jörg Oehlmann *et al.*, *A Critical Analysis of the Biological Impacts of Plasticizers on Wildlife*, 364 Philosophical Transactions Of The Royal Soc'y B., 2,047, 2,048 (2009).

[36] *See e.g.,* Anthony L. Andrady, *Microplastics in the Marine Environment*, 62 Marine Pollution Bulletin 1596 (2011).

[37] *See e.g.*, Heather J. Hamlin, *Review, Embryos as Targets of Endocrine Disrupting Contaminants in Wildlife*, 93 Birth Defects Research Part C: Embryo Today: Reviews 26 (2011).

[38] *See,* Letter from William W. Stelle, Jr., NMFS, to Michelle Walker, Corps, WCR-2013-29, (Haley permit comment) at pages 4 and 5 (Nov. 15, 2013).

[39] *See, e.g.,* Eriksen, M., *Plastic Pollution in the World's Oceans: More than 5 Trillion Plastic Pieces Weighing over 250,000 Tons Afloat at Sea*, PLoS ONE 9(12): e111913. doi:10.1371/ journal.pone.0111913 (2014).

[40] *See, e.g.,* Woodall, Lucy, et al, 2014. The deep sea is a major sink for microplastic debris. R. Soc. Open sci.1:140317.

[41] *See,* Charles Moore Algalita Power point, March 3, 2015 Haley Hearing.

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oysters, and found that the Polyolefin rope was imbedded in some of the oyster shell and oysters. These produce plastic particles that are harmful to human health.[42] [43] Further evidence of environmental harm from aquaculture plastics and micro-plastics was presented by Mr. Moore in a Tulane Law Review report.[44] The 5 Gyres Institute, a leading marine plastic pollution organization, has also stated that in terms of the future of aquaculture gear "only 100% environmentally benign materials are acceptable moving forward."[45]

Given the unanticipated number of activities authorized under NWP 48, in conjunction with the newly information available regarding the water quality effects of PVC, High Density Polyethylene and Polyolefin materials, there is a clear need to conduct a supplemental environmental assessment of the potential impacts of use of NWP 48 in Puget Sound.

Eelgrass

Eelgrass "creates complex habitat that supports a diverse food web including fish, invertebrates, and waterfowl and reduces oxygen, dampens wave energy, absorbs nutrients and promotes conditions that facilitate organic matter mineralization and sedimentation."[46] Eelgrass beds are sensitive to human caused disturbances, including increased sedimentation from adjacent geoduck farm harvesting activities.[47]

The NWP National Decision Document and NWP 48 Supplemental Decision Document assert that adverse environmental effects of authorized activities on eelgrass will be addressed through general and regional conditions, ESA Section 7 consultation, and subsequent review of pre-construction notifications. The Seattle District describes special conditions that all "newly positioned" culturing not be placed within 10 feet of eelgrass and requiring a plan for grounding of vessels within eelgrass beds.[48]

However, since the 2012 reissue, information has become available regarding effects on eelgrass arising from the use of motorized boats and increased sediment

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[42] *See, e.g.,* Avio, Carlo Giacomo, et al, 2014. Pollutants bioavailability and toxicological risk from microplastics to marine mussels. Environmental pollution 198 (2015) 211-222.

[43] *See, e.g.,*Van Cauwenberghe, Lisbeth, et al. 2014. Microplastics in bivalves cultured for human consumption. Environmental Pollution 193 (2014) 65-70.

[44] *See,* Moore, Charles. 2014. Rapidly increasing Plastic Pollution from Aquaculture Threatens Marine Life, Tulane Environmental Law Journal Volume 27 Issue 2.

[45] *See,* Letter from Marcus Eriksen, PhD, 5 Gyres Institute, to The Coalition to Protect Puget Sound Habitat, February 8, 2015.

[46] *See,* Washington State Dept. of Natural Resources, Puget Sound Submerged Vegetation Monitoring Project, 2009 Report 41 (2011).

[47] *See, Coalition to Protect Puget Sound Habitat v. Pierce County*, SHB Case No. 13-016 *15 (Findings of Fact, Conclusions of Law, and Order, Jan. 22, 2014) (stating that disturbances from geoduck harvest can harm eelgrass).

[48] *See, Special Conditions Template* at p.2.

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from geoduck harvesting.[49] The unanticipated number of activities authorized under NWP 48 in conjunction with the newly information available regarding the effects on eelgrass invalidate the premises Corps relied on to determine that regional and special conditions would ensure that effects on eelgrass are minimal and not significant.

Salmon and the Nearshore

ESA-listed Puget Sound Chinook salmon and Hood Canal Summer Run chum salmon occupy Puget Sound.[50] As NMFS noted in the 2009 BiOp, activities authorized under NWP 48 will likely adversely affect critical habitat for these salmon. *Id*. at p.25. Shellfish aquaculture harms salmon populations though consumption of zooplankton and direct competition for food with juvenile salmon.[51] Further, the method of growing geoducks that is most frequent harbors fish that prey on salmon.[52]

Greatly expanding the geographical scope of aquaculture could lead to lower salmon runs as their population comes into direct competition with commercial shellfish farms. PVC and related pollutants will also potentially harm salmon in Puget Sound. As noted already, salmon may absorb ecologically significant amounts of phthalates.[53] Further, expanding geoduck harvesting could lead to a further decline in eelgrass beds in Puget Sound, which would reduce salmon habitat.[54] Finally, harvesting geoduck greatly increases sediment in the water around the harvest site, which will potentially negatively affect both juvenile and adult salmon in the vicinity.

James Brennan, a well respected nearshore marine ecologist (with over 24 years experience in Puget Sound), has outlined the adverse effects from aquaculture in a detailed power point.[55] Noted in Brennan's presentation is the Chinook and Bull Trout South Sound Recovery plan, which shows aquaculture as a stressor to salmon populations.[56] A similar power point presented by Jim Johannessen, a noted Puget

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[49] *See e.g.*, Nat'l Parks Service, FEIS Drakes Bay Oyster Company Special Use Permit, 333 (2012) (noting that motor boats scar eelgrass meadows); and *Coalition to Protect Puget Sound Habitat v. Pierce County*, at p.*15.

[50] *See,* 2014 BiOp at pp. 182 and 192.

[51] *See e.g.,* Canadian Science Advisory Secretariat, *Effects of Shellfish Aquaculture on Fish Habitat*, 25-26 (2006), *available at* http://www.dfo-mpo.gc.ca/Library/323203.pdf.

[52] *See*, G.R. VanBlaricom, et al., *Ecological Consequences of Geoduck Clam Aquaculture for Benthic Communities of Intertidal San Flats in Southern Puget Sound*, *available at* http://www.caseinlet.org/uploads/Benthic_Communities_of_Intertidal-Van_Blaricom.pdf.

[53] *See*, Hamlin, *Review, Embryos as Targets of Endocrine Disrupting Contaminants in Wildlife*, *supra* at p.26.

[54] *See,* Washington State Dept. of Natural Resources, Puget Sound Submerged Vegetation Monitoring Project, 2009 Report 3 (2011).

[55] *See,* James Brennan Power point, March 2015, Assessment of Known, Apparent, and Likely Impacts Associated With Geoduck Aquaculture with Emphasis on the Proposed Haley Shellfish Farm.

[56] *See,* Chinook and Bull Trout Recovery Plan, South Puget Sound, Submitted to NOAA

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Sound geomorphologist and restoration expert (with over 30 years of experience in Puget Sound) also discusses the adverse impacts of geoduck aquaculture.[57]

Both Mr. Brennan and Mr. Johannessen included Bendell studies that document adverse impacts to native species, changes in community composition and increasing nearshore impacts and plastic pollution.[58] [59] [60] A Washington Department of Fish and Wildlife biologist, Chris Waldbillig, similarly noted in an email to Pierce County in 2012 that "I would look at typical juvenile salmonids windows**, generally aquaculture and juvenile salmon habitat do not go hand in hand** and try to get them to avoid clam predator netting." (emphasis added).[61]

Mr. Brennan has also cautioned that the SeaGrant geoduck research that is often cited by industry as demonstrating little or no impact from aquaculture, was actually **very** limited in its scope and contains significant scientific caveats.[62] A power point by Dr. Gary Ritchie similarly outlines the lack of statistical rigor in the SeaGrant geoduck impact studies.[63]

The National Decision Document responds to comments regarding the effects on critical habitat for ESA-listed species, asserting that such effects would be addressed through General Condition 18, pre-construction notification review, and Section 7 consultation.[64] The Supplemental Decision Document also responded to comments on critical habitat and reached similar conclusions.[65]

However, prior ESA consultations expressly excluded new and expanded operations. *Id.* at 19. The dramatic increase in the number of authorized activities invalidates the premises on which the decision documents rely.

Fisheries and adopted in 2005, Ch.4).

[57] *See,* Jim Johannessen Power point, March 2015, Coastal Geomorphology and Coastal Geology Analysis of Proposed Haley (Taylor Shellfish, Seattle Shellfish) Geoduck Farm, Pierce County, Wa.

[58] *See,* Bendell, L.I. 2014. Evidence for Declines in the Native Leukoma staminea as a Result of the Intentional Introduction of the Non-native Venerupis philippinarum in Coastal British Columbia, Canada. Estuaries and Coasts (2014)37:369-380.

[59] *See,* Bendell, L.I.2014. Community composition of the intertidal in relation to the shellfish aquaculture industry in coastal British Columbia, Canada. Aquaculture 433 (2014) 384-394.

[60] *See,* Bendell, L.I. 2015. Favored use of anti-predator netting (APN) applied for the farming of clam beds leads to little benefits to industry while increasing nearshore impacts and plastics pollution. Marine Pollution Bulletin (In Press) (2015).

[61] *See,* emails from Chris Waldbillig, WDFW, to Scott Sissons at Pierce County, March 28, 2012.

[62] Brennan Power point, March 2015, Assessment of Known, Apparent, and Likely Impacts Associated With Geoduck Aquaculture with Emphasis on the Proposed Haley Shellfish Farm.

[63] *See,* Dr. Gary Ritchie, PhD. Power point, Geoduck impact studies lack statistical rigor, March 2-6, 2015.

[64] *See, National Decision Document* at pp.10, 24, 36, & 40–42.

[65] *See, Supplemental Decision Document* at pp.2–4, 7, 18–19, 7 24–25.

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The 2009 BiOp's finding that the anticipated adverse effects of activities authorized under NWP 48 on critical habitat designated for Puget Sound Chinook salmon and Hood Canal summer-run chum salmon are "too small, too short-lived and diffuse" to cause takings of these species is no long reliable. The scope of activities authorized under NWP 48 has dramatically expanded. In addition, there are dramatic increases in the number of activities authorized under the NWP.

The 2009 BiOp was issued for the NWP 48 under the 2007 NWP program. In 2012, Corps reissued the NWPs with modifications to General Conditions and to NWP 48. These changes included removing reporting requirements and substantially reducing the number of notification thresholds.[66] Perhaps most significantly, the 2012 NWP 48 authorizes new commercial shellfish activities, whereas the 2007 version only authorized existing activities.[67]

To make its finding regarding potential for take of ESA-listed species, the 2009 BiOp relied on assessments driven by the amount and extent of covered activities. For example, the BiOp: stated that size of the action area for the consultation was "driven by the spatial extent of aquacultural acreage," *id.* at p.30; considered estimates of the number of farmed parcels and total farmed acreage in each portion of the action area, *id* at pp. 30–33; concluded that benthic disturbances did not effect listed fish based on the current level of disturbance, *id.* at p. 52; and concluded that the functional depression of eelgrass sites within managed beds had limited effect on listed fish due to the extent of shellfish aquaculture sites, *id*. at p.53.

The number of authorized activities under 2012 NWP 48 dramatically exceeds that contemplated by the 2009 BiOp. This alone constitutes new information that the effects of the action may affect listed species and critical habitat in a way not considered in the biological opinion.

The 2009 BiOp specified that reinitiation of consultation is required if the amount or extent of taking specified in the ITS is exceeded; if new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; if the identified action is subsequently modified in a manner that has an effect to the listed species or designated CH that was not considered in the biological opinion; or if a new species is listed or critical habitat is designated that may be affected by the identified action.[68] The dramatic expansion of authorized activities in number and in application to new and expanded activities constitutes unconsidered changes in *extent* of effect and a *modifications* that may have an effect.

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[66] *See,* 77 Fed. Reg. 10,184, at pp. 10,228–30.

[67] *See*, 77 Fed. Reg. 10,184, at pp. 10,232 and 10,280.

[68] *See,* 2009 BiOp at pp.64–65.

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Since the 2009 BiOp findings were predicated on the extent of activities authorized under NWP 48, the inclusion of new activities and the dramatic expansion in the number of authorized activities triggers the reinitiation conditions of the 2009 BiOp and renders reliance on its findings regarding adverse effects of authorized activities on Puget Sound Chinook salmon and Hood Canal summer-run chum salmon unreasonable. This invalidates the premises of Corps findings that the effects of authorized activities on these species will be minimal and not significant.

Birds

Aquaculture causes a variety of negative impacts to marine birds. The industry treats waterfowl as pests, and purposely harasses them so that they stay away from the planted sites.[69] As numerous incidents affirm, predator exclusion nets can directly harm marine waterfowl by trapping birds.[70] Aquaculture can also harm marine waterfowl by displacing their food supply, as areas historically open for foraging are converted to aquaculture use.[71] Harmful industry practices which include clearing the shorelines of marine life and polluting plastics are depicted in a South Sound and Burley Lagoon power point.[72]

The Nationwide Decision Document acknowledges comments regarding effects of harassment and destruction of migrating birds through harassment. The Decision Document asserted that minimal impacts to breeding areas for migrating birds were addressed by General Condition 4.[73] That Decision Document also specifies that NWP 48 requires that PCN include information about the use of anti-predator nets. *Id.* at pp.2 & 4. The Seattle District Supplemental Decision Document also acknowledges additional public comment regarding effects on birds. The Seattle District felt that such effects would be minimized through General Condition 4 and special regional conditions.[74]

Unfortunately, General Condition 4 cannot be reasonably relied on because it only excludes, to the maximum extent practicable, activities in migratory bird "breeding"

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[69] *See*, DeFrancesco, J. and Katie Murray, Pest Management Integrated Plan for Bivalves in Oregon and Washington 52–53 (Diane Clarke, ed. 2010) *available at* http://www.ipmcenters.org/pmsp/pdf/OR-WAbivalvePMSP.pdf.

[70] *See, e.g.*, Photos, Case Inlet Shoreline Association (CISA), http://www.caseinlet.org/Photos.php (showing image of a bold eagle trapped in aquaculture netting).

[71] *See*, A. Heffernan, et al., *A Review of the Ecological Implications of Mariculture and Intertidal Harvesting in Ireland* (1999); *see also*, John P. Kelly, et al., *Effects of Aquaculture on Habitat Use by Wintering Shorebirds in Tomales Bay, California* (1996).

[72] *See,* Coalition To Protect Puget Sound Habitat Picture Power Point, 14 pages.

[73] *See, Nationwide Decision Document* at pp.11, 32 and 42.

[74] *See, Supplemental Decision Document* at pp.18, 21–23.

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areas.[75] This condition will have no effect on non-migratory birds or on activities outside of migratory bird **breeding areas**. While the District's special conditions require labeling and control of net materials, they do not include any conditions directed at minimizing effects on birds of any kind. In fact the word "bird" or "birds" do not even appear in the Special Conditions adopted by the District.

The extra pressure that aquaculture places on the birds through netting and displacement of food sources needs to be carefully examined. The Corps current NWP 48 NEPA documents fail to do this, primarily because of the grossly underestimated intensity of the NWP 48 usage. The unanticipated number of activities authorized under NWP 48 and the failure of Corps to impose special conditions directed at minimizing harm to birds invalidate the premises Corps relied on to determine that effects on birds are minimal and not significant.

Other Species

The added increase in noise from aquaculture vessels has the potential to harm or harass Southern Resident Killer Whales. Furthermore, declines in Chinook salmon populations would adversely affect prey availability for killer whales.[76] The Nationwide Decision Document does not discuss killer whales at all. Killer whales are commonly seen in South Puget Sound in the project areas. The Supplemental Decision Document acknowledges public comments on interference with whale recovery, but concludes that such effects will be minimized through Section 7 consultation and pre-construction notification review.[77] The Supplemental Decision Document also points at a regional general conditions addressing bank stabilization. *Id.* at p.40.

Unfortunately, these findings and the 2009 BiOp findings were predicated on the limited presumed extent of activities authorized under NWP 48. The inclusion of new activities, **and** the dramatic expansion in the number of authorized activities, triggers the reinitiation conditions of the 2009 BiOp. It also renders reliance on its findings regarding adverse effects of authorized activities on killer whales and Puget Sound Chinook salmon and Hood Canal summer-run chum salmon entirely unreasonable.

Geoduck aquaculture is know to have displaced beds of sand dollars in the past, and will likely do so in the future.[78] Sand dollars are an important feature of the nearshore environment, and wide scale removal will be detrimental to organisms that

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[75] *See*, 77 Fed. Reg. 10,184 at p.10,282.

[76] *See*, NMFS, Recovery Plan for Southern Resident Killer Whale (Orcinus orca) II-75 (2008).

[77] *See, Supplemental Decision Document* at pp.18–19.

[78] *See, e.g.*, Photos, CISA, http://www.caseinlet.org/Photos.php (showing image of sand dollars removed from tidelands near Steamboat Island).

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depend on that environment.[79]

The Nationwide Decision Document asserts that provisions relating to submerged aquatic vegetation, General Condition 18 (endangered species), General Condition 14 (proper maintenance), PCN review, and prospective regional conditions will ensure minimal effects to sand dollars.[80] The Supplemental Decision Document also acknowledges public comment on sand dollar beds, and reaches a similar conclusion.[81]

However, no regional or special conditions are directed at sand dollars. The unanticipated number of activities authorized under NWP 48 and the failure of Corps to impose special conditions directed at minimizing harm to sand dollars invalidate the premises Corps relied on to determine that effects on sand dollars are minimal and not significant.

Shellfish aquaculture can also at least potentially have major negative effects on fish such as herring, which can get caught in netting.[82] The Nationwide Decision Document does not address the trapping of herring in anti-predator nets. However, it does specify that NWP 48 requires that PCN include information about the use of anti-predator nets.[83] The Supplemental Decision Document acknowledges public comment regarding introduction of nets to aquatic habitats, and concludes that Section 7 consultation, PCN review, and special regional conditions will ensure that effects are minimal.[84]

However, the regional conditions on NWP 48 do not address herring or nets. The Special Conditions Template only includes a condition requiring spawning surveys and avoidance of certain activities if herring spawn are present.[85] Unfortunately, because those two actions do not directly address the placement of netting, they cannot be reasonably relied on to minimize the effects of trapping herring spawn in nets. Thus, the unanticipated number of activities authorized under NWP 48 and the failure of Corps to impose special conditions directed at minimizing harm to herring invalidate the premises Corps relied on to determine that effects on herring are minimal and not significant.

Recent Sea Grant diver survey results also indicate potential loss of habitat for

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[79] *See*, Megan N. Dethier and Amy Leitman, *Concerns and Questions Relevant to Infaunal and Epibenthic Impacts of Geoduck Aquaculture* 1 (2007).

[80] *See, Nationwide Decision Document* at p.13.

[81] *See, Supplemental Decision Document* at pp.18-19.

[82] *See, e.g.*, Home, CISA, http://www.caseinlet.org/Home_Page.php (showing photos of dead herring trapped by anti-predator netting).

[83] *See, Nationwide Decision Document* at pp.2 & 4.

[84] *See, Supplemental Decision Document* at pp.18 & 23.

[85] *See, Special Conditions Template* at p.1.

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Flat Fish, when tubes and nets are present. The Nationwide Decision Document acknowledges public comment regarding effects on flat fish.[86] The Decision Document concludes, based on permit terms, other regulation, and prospective regional and case-specific conditions, that such conditions will be minimal. *Id.* The Decision Document also specifies that NWP 48 requires that PCN include information about the use of anti-predator nets. *Id.* at pp.2, 4.

The Supplemental Decision Document does not discuss flat fish at all. The regional conditions on NWP 48 also do not address flat fish or nets. The Special Conditions Template includes no conditions directed at flat fish. Thus, the unanticipated number of activities authorized under NWP 48 and the failure of Corps to impose special conditions directed at minimizing harm to flat fish invalidate the premises Corps relied on to determine that effects on flat fish are minimal and not significant.

Authority to Suspend

The Corps may revoke or modify a NWP if the Corps determines that the authorized activities have an adverse environmental impact or are more appropriately authorized by individual permits.[87] The Corps has delegated to District and Division engineers the discretionary authority to suspend, revoke, or modify authorizations under an NWP.[88]

Corps regulations expressly provide that a Division engineer may modify, suspend, or revoke NWP authorizations for any specific geographic area, class of activities, or class of waters within their division.[89] In fact, the District engineer also has authority, following informal consultation with a permittee, to suspend any already issued specific authorization under an NWP, as long as the engineer notifies the permittee in writing.[90]

In issuing NWP 48, and making a finding that issuing NWP 48 was in the public interest, the Corps expressly invoked and relied upon its authority to suspend, revoke, or modify the NWP at a later date.[91] The Corps also expressly relied on its authority to

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[86] *See, Nationwide Decision Document* at p.11.

[87] *See,* 33 U.S.C. §1344(e)(2) (2012); *See also id.* at § 1344(d) (2012). The 404(b)(1) Guidelines, 40 CFR Part 230 (2014), also specify that activities which are more appropriately regulated by individual permit, due to their location in specific geographic areas, must be excluded from a NWP. *See*, 40 CFR § 230.7(b)(2).

[88] *See*, 33 C.F.R. § 330.1(d), 33 C.F.R. § 330.4(e); *See also id.* at § 330.2(g).

[89] *See,* 33 CFR § 330.5(c)(1).

[90] *See,* 33 CFR § 330.5(d)(2)(ii). If, following suspension, the district engineer finds that environmental concerns or the public interest so requires they can issue a final written decision to the permittee completely revoking the NWP authorization. *See,* 33 CFR § 330.5(d)(2)(iii). No public notice or hearing is required for such a case-specific revocation. *Id.* at § 330.5(d)(3).

[91] See, *National Decision Document*, NWP 48, p.36 (Feb. 13, 2012)(Describing a district engineer's authority to revoke, suspend, or modify any NWP authorization).

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revoke NWP 48 on a geographic basis, to ensure that individual and cumulative impacts would be minimal and not significant.[92]

The Seattle District made the same determination in its own Supplement Decision Documents on NWP 48.[93] In addition, NMFS repeatedly referenced and relied upon the Corps's authority to revoke, suspend, or modify the NWP in its 2014 BiOp.[94] In fact, the 2014 BiOp not only relies on that presumption, it **requires** reinitiation of consultation "If the Corps **fails to** modify, **suspend or revoke** Nationwide Permits to address any" concerns mutually identified by the Corps and NMFS.[95]

Conclusion

The number of activities authorized and seeking authorization under 2012 NWP 48 dramatically exceeds the number of activities anticipated when Corps made its minimal effects, public interest, and no-significant impact findings for 2012 NWP 48. There is also new information regarding the potential effects of authorized activities on the environment. Given both (or either) of those, there is no longer a reasonable basis to conclude that 2012 NWP 48 is consistent with the requirements of 33 U.S.C. §1344(e) for the issuance of general permits.

Further, these changes raise substantial questions as to the adequacy of Corps's

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[92] *Id.* at p.4 (Citing 33 C.F.R. §§ 330.4(e) and 330.5 and asserting that The Corps's abilities take action to suspend or revoke an NWP or NWP authorization for activities within a region or state provide "additional safeguards."), at p.16 ("Specific NWPs can also be revoked on a geographic or watershed basis where the individual and cumulative adverse effects resulting from the use of those NWPs are more than minimal." and "Division engineers can also revoke an NWP if the use of that NWP results in more than minimal individual and cumulative adverse effects on the aquatic environment, especially in high value or unique wetlands and other waters."), and at p.29 ("In a specific watershed, division or district engineers may determine that the cumulative adverse effects of activities authorized by this NWP are more than minimal. Division and district engineers will conduct more detailed assessments for geographic areas that are determined to be potentially subject to more than minimal cumulative adverse effects. Division and district engineers have the authority to require individual permits in watersheds or other geographic areas where the cumulative adverse effects are determined to be more than minimal, or add conditions to the NWP either on a case-by-case or regional basis to require mitigation measures to ensure that the cumulative adverse effects are minimal. When a division or district engineer determines, using local or regional information, that a watershed or other geographic area is subject to more than minimal cumulative adverse effects due to the use of this NWP, he or she will use the revocation and modification procedure at 33 CFR 330.5. In reaching the final decision, the division or district engineer will compile information on the cumulative adverse effects and supplement this document."); *See also,* Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184, p.10,186 (2012).

[93] *See,* Supp. Dec. Doc and Reg. Gen. Conditions pp.40 & 47 (Mar. 19, 2012).

[94] *See generally*, NMFS 2014 BiOp, finding that as a result of consultation the Corps agreed to exercise its authority to revoke, suspend, or modify NWP as needed to respond to information that raises concerns regarding environmental effects. *Id.* at pp.78, 325, 338–39, & 344–45. To this end, The Corps agreed to issue guidance and semi-annual reports on its permitting activities. *Id.* at pp.72, 75, 77, & 325.

[95] 2014 BiOp at pp.105 & 112 (NMFS even notes that the New England District has suspended at least one NWP within its jurisdiction.)

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prior environmental analysis. These changes and new information trigger the requirement to supplement the NEPA documents for this permit.

To address these deficiencies, CPPSH requests the following:

- The Corps should suspend authorizations under 2012 NWP 48 in Puget Sound, so that commercial shellfish operations under CWA Section 404 and/or Section 10 of the Rivers and Harbors Act are authorized by individual permit only;

- That suspension of 2012 NWP 48 should remain in effect until the Seattle District Corps has completed a supplemental NEPA and CWA review of the effects of the already authorized activities;

- That suspension of 2012 NWP 48 should remain in effect until the Seattle District Corps has completed a supplemental NEPA and CWA review of the potential effects of the further NWP 48 authorizations;

- The Corps should supplement its existing analysis with detailed information and analysis regarding the cumulative impacts of the existing and future projected levels of aquaculture. This is needed because the current permit usage and authorization levels are clearly an order of magnitude or more greater than Corps previously anticipated;

- As part of that process, the Corps should hold one or more hearings to take testimony on and collect evidence regarded the existing and likely cumulative impacts; and

- The Corps needs to reassess whether authorization of activities under NWP 48 will result in "take" of ESA-listed species, including Puget Sound Chinook salmon and Hood Canal chum salmon, or jeopardize their continued existence or adversely modify their habitat.

We look forward to hearing from you on these issues. Since at the moment, NWP 48 remains in operation in Puget Sound, and the number of applications and potential authorizations under NWP 48 continues to mount, we ask that you act, or publicly refuse to act, on this Petition within 30 days. If you have not done so, in order to protect Puget Sound from further cumulative and individual negative impacts, CPPSH will have little choice but to take any legal action available.

Sincerely,

Laura Hendricks

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