COMMENT: NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COOKE AQUACULTURE STEELHEAD

Submitted by Stephanie Ross Commentator[1]

I. OVERVIEW

Cooke Aquaculture (hereafter "Applicant") is a foreign, for profit entity, which seeks National Pollutant Discharge Elimination System (hereafter "NPDES") permits to discharge pollutants in the waters of United States, and Washington State, from the Washington State Department of Ecology (hereafter "DOE"). These pollutants include a multitude of antibiotics and chemicals, listed and referenced infra. Not set forth by Applicant, but necessarily included, are the polychlorinated biphenyls (hereafter "PCBs") which are conclusive, federal and state "Toxic Pollutants." CFR 401.15.

Applicant "operates two freshwater hatcheries…the hatcheries raise and produce the juvenile fish that are eventually transferred to Cooke's Puget Sound marine net pens for final cultivations and desire harvest size. Eyed all-female triploid Rainbow Trout/steelhead eggs would be supplied to the Cooke hatcheries from the Troutlodge hatchery…" Applicant NPDES application, attachment D at D-2.

DOE expressly underscores that PCBs are in the fish feed for hatcheries. "EPA and Ecology are not aware of a feasible way to reduce PCBs in fish feed for hatcheries." Fact Sheet For The Upland Fin-Fish Hatching And Rearing General NPDES Permit at 20.

It is widely recognized that farmed fish "That are fed ground-up fish have been found to be higher in PCBs compared with wild caught…" Mayo Clinic 2020. The United States government informs that "the types of PCBs that tend to bioaccumulate in fish and other animals and bind to sediments happen to be the most carcinogenic. "United States Environmental Protection Agency "Polychorinated Biphenyls (PCBs)" EPA.gov (emphasis added).

DOE was allocated and has received public funds to mitigate the presence and impact of toxic pollutants.

> **Ecology's role in Southern Resident orca recovery**
> Ecology works to improve and protect water quality, water quantity, fish habitat, and reduce toxic contaminants….Governor Inslee's 2019-21 budget package includes over $26 million in operating and $300 million in capital investments for Southern Resident orca

[1] Commentator is a multi-jurisdictional constitutional attorney. However, this Comment is not written in a representative capacity for any past or present clients. The Commentator's submission is personal and solely her own.

recovery. Specifically, we will use these funds to address lack of prey, toxic contaminants, and vessel traffic issues.

Department of Ecology "Focus on: Saving the Southern Resident orca" Financial Services 19-01-00; See e.g. Washington Department of Ecology Budget and Program Overview 2019-2021

The DOE cannot take taxpayer funds to protect the Southern Resident Orcas and simultaneously issue permits to a foreign, for profit entity to discharge toxic and multiple chemical and antibiotic pollutants that impact human health and endangered species. It is manifest that existing and future NPDES permits are unjustifiable.

Further, the issuance of NPDES permits for Applicants fish farms in the endangered species critical habitat in the waters of the United States and Washington, is a wholesale violation of the Endangered Species Act of 1973 (hereafter "ESA"), 16 U.S.C. §1531 et seq as pertaining to the Southern Resident Orcas. Pursuant to the laws of the United States and the State of Washington, the only applicable remedy is denying issuance of any further NPDES permits for further aquaculture operations at Applicant's Washington State fish farms (hereafter "fish farms") and voiding the existing permits. These are not permissible pursuant to the laws of Washington State, the Clean Water Act 33 U.S.C. secs 1251 et seq (hereafter "CWA") or to the ESA, Sections 9 and 10.[2]

II. BACKGROUND

Commercial fish farms have been present and operated in the State of Washington for several decades.[3] In 2016, Applicant purchased these fish farms from Icicle Seafoods. In only three years, Applicant has been sanctioned for a number of violations including the collapse of the Cypress Island farm, pollution and risk-related mismanagement issues at the Port Angeles farm, water quality mismanagement issues at the Port Angeles Facility and water quality violations in the operations off of Bainbridge Island. As recently as October 2019, a portion of one Bainbridge Island net pen started to sink. Department of Ecology.

Massive escapes from the fish farms in Washington State are not limited to the Cypress Island collapse. In 1997, "an estimated 300,000 Atlantic salmon escaped from the net pens, then owned by Global Aquaculture." Anderson, Ross "Atlantic Salmon Escape into Sound from Pens," Seattle Times, Tuesday, June 15, 1999. Approximately two years later in 1999, the Bainbridge Island Rich Passage facility collapsed, "releasing about one hundred thousand non-native salmon

[2] In the United States, citizens have a constitutionally guaranteed right "to petition the government for a redress of grievances." United States Constitution, First Amendment. Accordingly, any and all threats or retaliation, filing of a lawsuit or threat to file a lawsuit for exercise of this right shall be addressed as a civil and/or criminal matter as may be appropriate.

[3] Fish farms as referenced herein specifically excludes any and all First Nation owned and/or operated commercial fish facilities.

into Puget Sound." Id; http://us.whales.org/news/1999/06/farm-raised-salmon-escape-washington-pen; "Rough Waters for Salmon Farms", Bainbridge Review, Saturday, July 8, 2000. Many of the Atlantic salmon from the 1999 escape made their way to the mill pond at the head of Port Blakely Harbor. Port Blakely has a wild native salmon tributary. ESA threatened and endangered species have been located in the Port Blakely area.

The Center for Food Safety has reported and documented the frequency and quantity of world-wide escaped fish farmed from 1996-2012. The number of incidents is more than 30, and totals a reported amount of 25,768,729 escaped fish.

Endangered Southern Resident Orcas

All of Applicant's fish farms are located in the federally designated habitat of the critically endangered Southern Resident Orcas. Designated Critical Habitat for Southern Resident Killer Whales, November 2006, NOAA Fisheries, Northwest Region.

The Southern Resident Orcas are faced with imminent extinction if immediate, wide scale actions are not taken to alleviate the threats to them in their marine environment. Accordingly, NOAA recently has identified the Southern Resident Orca as among those few species who will become extinct without urgent and comprehensive intervention. National Marine Fisheries Service, Recovering Threatened and Endangered Species Report to Congress (FY 2015-2016) (Nov. 30, 2017), https://www.fisheries.noaa.gov/resource/document/recovering-threatened-and-endangered-species-report-congress-fy-2015-2016.

The Governor of the State of Washington convened the Southern Resident Orca Task Force to address the looming extinction of the extraordinary Southern Resident Orca. The Task Force cited three threats, including lack of prey and toxic contaminants. The Executive Summary specifically states Southern Residents and their prey are exposed to an ever-increasing mixture of pollutants in the marine environment, particularly in the Salish Sea. “Many of the pollutants are poorly metabolized, persist in the environment and bioaccumulate and biomagnify in the food web. These toxins can reduce salmonid survival by making them more susceptible to disease, which in turn means less food is available to the Orcas. The toxic contaminants can also reduce immunity and cause reproductive disruption in Orcas.” Southern Resident Orca Task Force, November 2018, 5-6.

The Governor's Task Force further explained the impact of contaminants on the Southern Resident Orcas:

> Contaminants enter the Salish Sea through . . . direct water contamination . . . and invariably enter the food web . . . At the top of the food chain, these contaminants can accumulate in long lived, high level predators including the Southern Resident Orcas.

Id. at 31.

Toxic contaminants in the water irreparably affect starving as well as well-fed Southern Resident Orcas. As the Task Force instructed "Orcas with higher contaminant levels in their blubber also have higher levels circulating in their blood, even when they are well-fed." Id. at 31, citing NOAA Northwest Fisheries Science Center.

Fish Farm Pollutants

Species sought to be introduced by Applicant are themselves a pollutant in the critical habitat of the Southern Resident Orca. Any chance of escape of any number of fish exacerbates the threat to the survival of the Orcas faced with imminent extinction. Applicant has not delineated precisely which pollutants will be introduced directly into the water, the home of the Southern Resident Orcas, but vaguely asserts that there will not be a significant change from those presently utilized.

According to Applicant's first statement in 2017 and renewed in its present NPDES application, these contaminants include the following:

> **Feed Additives**
> **Canthaxanthin and/or Astaxanthin** - Natural and/or synthetically produced compounds of the two types of carotenoid pigments may be added to the fish feed in levels ranging from 30 ppm to 70 ppm. Both canthaxanthin and astaxanthin are approved by the USFDA for use in fish feeds to enhance the pink to orange/red coloration of salmonid flesh. In the animal kingdom, carotenoids are heavily utilized as a source for pigmentation, a vitamin A precursor, for improving intercellular communication, enhancing immune responses, and as antioxidants in vivo [1,2] . . .
> **Antioxidants** - Antioxidants are added to the fish feed mixture to stabilize the vitamin supplements and increase the shelf life of the feed . . .
> **Antibiotic Medicated Feed** - Medicated feed may be periodically used to treat bacterial disease at the marine net pen sites . . .
> **Romet 30 (Sulfadimethozine-ormetoprim)** - Romet 30 is the trade name for an aquatic animal premix containing a sulfadimethozine-ormetroprim antibiotic that is used to treat bacterial disease. When medicated feed is prescribed, the premix is added by the feed manufacturer during the feed milling process. Romet 30 is used to treat Furunculosis, Vibrio, Myxobacterial and other bacterial pathogens if they occur in the cultivated fish stocks. When a disease treatment is prescribed by a veterinarian, the Romet 30 medicated feed is manufactured at a concentration of 2.27 grams of active ingredient per one (1) pound of fish feed. The medicated feed is then fed to the fish to achieve a dosage rate of 50mg of active ingredients per one (1) kilogram of fish per day, for a treatment period of five (5) consecutive days.
> **Terramycin TM 200 (Oxytetracyclilne HCL)** - TM 200 is the trade name of for [sic] an aquatic animal antibiotic premix that is used to treat Furunculosis, Vibrio, Myxobacteria and other bacterial diseases. The TM 200 pre-mix is added to the feed by the manufacturer when prescribed by the veterinarian to treat specific disease events. TM 200 is mixed to achieve a concentration of 5 grams of active ingredient per one (1) pound of fish feed. The medicated feed treatment is fed to achieve a dosage rate of 75mg active ingredient per one (1) kilogram of fish per day, for a period of ten (10) consecutive days.
> **Aquaflor - (Florfenicol)** - Aquaflor is the trade name for the premix containing the antibiotic Florfenicol., and is approved by the USFDA for the use in freshwater food fish to

treat bacterial disease. In marine finfish aquaculture, Aquaflor can be used under the Investigational New Animal Drug (INAD) system administered by the USFWS and USFDA. When prescribed, Aquaflor medicated feed is used to treat bacterial disease and is mixed into the feed by the feed manufacturer at the active ingredient concentration rate of 0.302 grams per one (1) pound of fish food. Aquaflor medicated feed is fed to the fish to achieve a dosage of 10mg of active ingredients per one (1) kilogram of fish per day, for a period of ten (10) consecutive days.

Disease Control Chemicals - Other disease control chemicals that may be used at the farm sites are Finquel MS222, Iodophor disinfectants and sodium hypochlorite (chlorine bleach) disinfectant solutions.

Finquel MS222 - Finquel (MS222) is a USFDA approved fish anesthetic that is periodically used when the fish are sampled for weight and condition factors. A small number of fish are periodically captured by dip net from a pen and then immersed in a tote of seawater with a small amount of MS222 mixed in. The MS222 anesthetizes the fish so that they can be safely handled, inspected, weighed and then returned unharmed back to the fish pen . . .

Chlorine Bleach Solution and/or Argentyne Iodophor Solution - These surface disinfectants are used as a bio-security measure in footpaths at the farm sites and to periodically sterilize any shared equipment between the sites. Argentine [sic] Iodophor solutions are used in foot baths at the farm sites during the entire year. Estimated average annual consumption rates for each farming area of Iodophor solutions at the Bainbridge Island, Cypress Island, Hope Island and Port Angeles farm sites is approximately 55 gallons per facility. The use of sodium hypochlorine or chlorine bleach solutions at the net pen sites is infrequent.

Iodophor solution and chlorine bleach. Disinfectant used in footbaths and to disinfect farm equipment. Small quantities are used through out [sic] the year. Finquel MS222. A fish anesthetic used occasionally during size sampling of juvenile fish during the production cycle.

Medicated Fish Feeds – **Romet 30 - Sulfadimethozine-ormetoprim**. (Described in previous answer above) Terramycin TM 200 (Oxytetracycline HCL) (Described in previous answer above)

Aquaflor - (Florfenicol) (Described in previous answer above)

2017 Applicant NPDES Net Pen Permit Renewal Application Additional Information at 1-3; 2020 NPDES Renewal application.

The PCBs not only will be present in the hatchery feed of the change of species See "Overview" supra, but also will be present in the fish, the fish waste and the water column. Moreover, a substantive and expansive list of the chemicals set forth by the DOE for "fish hatching and rearing facilities" is provided in the Fact Sheet for the Upland Fin-Fish Hatching and Rearing General NPDES Permit. These include: 23 chemicals for "Internal Control", 9 chemicals for "External Control" and 9 chemicals for "Disinfectants/Other". Id at 9.

Applicant's Submission

The Governor's Southern Resident Task Force report was not cited by the Applicant in its NPDES permit application and attachments. Applicant's extensive bibliographies apparently have

not one study about the harm to the Southern Resident Orcas from toxins which significantly contribute to the very demise of this endangered species. As in the Washington Department of Fish and Wildlife (hereafter "WDFW") application, Applicant sets forth only a few paragraphs generally surmising that a level of harm will not be reached by the changes of species in its farms and other commensurate actions.[4]

Incidental Take of Endangered Species

Applicant relies, in part, on the WDFW issuance of its permit issuance to Applicant on the basis of only an MDNS. 2020 NPDES Application, Attachment F. Such reliance is misplaced, because the WDFW permit issuance was a violation of governing federal law. Aside from the incorporation of the above-referenced Attachment D, consisting of a few paragraphs in total on the effects and impact to the Southern Resident Orcas, WDFW undertook no analysis of the harm from Applicant's farms accelerating the extinction of the Southern Resident Orcas. WDFW did not incorporate by reference, cite to or discuss the Governor's Southern Resident Orca November

[4] SOUTHERN RESIDENT KILLER WHALE

Potential Effects from Atlantic Salmon Floating Net Pen Aquaculture Southern Resident Killer Whale (SRKW) are regular inhabitants of Puget Sound. Marine net pens are insignificant in their overall size and are therefore not expected to impact SRKW habitat. Vessels that service these facilities may cause short-term and localized disturbances but are not expected to have any lasting effects. There is adequate space to accommodate SRKW passage around the existing net pen facilities so that any effects on passage are expected to be insignificant (Thom 2010).

No outbreaks of parasites related to net pen operations have been observed in Puget Sound. Therefore, NMFS concludes that the operation of net pen facilities would have insignificant and discountable effects on salmonids regarding sea lice infestation. In addition, NMFS anticipates discountable effects on prey quality because net pen operators comply with NPDES permit requirements related to maintaining water quality and sediment quality. A Not Likely to Adversely Affect (NLAA) determination was supported for listed salmonids in Puget Sound; therefore, SRKW are also not likely to be adversely affected since salmonids are a primary prey base (NMFS 2011).

Other than limited and non-lethal predator control permitted by NMFS, the technical memorandums do not state any concerns of adverse effects to marine mammals in Puget Sound in relation to Atlantic Salmon rearing facilities (Nash 2001). Furthermore, the Washington Pollution Control Hearings Board (PCHB) specifically noted in its 1997 ruling that the operation of net pen facilities in Puget Sound does not have a negative impact on marine mammals Ecology 2007. Therefore, Atlantic Salmon culture in floating marine net pens May Affect but is Not Likely to Adversely Affect Southern Resident Killer Whale. NMFS also concurs with the EPA effect determination of May Affect, Not Likely to Adversely Affect SRKW critical habitat. Existing Cooke Aquaculture Puget Sound marine net pens are required to comply with Washington State water quality standards through NPDES permit compliance. NMFS anticipates effects on prey quantity and quality will be discountable or insignificant within the action are and within designated critical habitat of SRKW. And the potential for vessels or the net pens themselves to interfere with passage within SRKW critical habitat is expected to be short-term and localized and therefore insignificant NMFS 2011. Potential Effects from the Proposed Net Pen Species Conversion

Conversion of the net pen facilities from Atlantic Salmon to triploid all-female Rainbow Trout/steelhead will not change significant threats to Southern Resident Killer Whales through reduced quantity and quality of prey, persistent pollutants that could cause immune or reproductive system dysfunction; oil spills; and noise disturbance from vessels or any other means. Therefore, the action to convert from Atlantic Salmon to Rainbow Trout/steelhead rearing is Not Likely to Adversely Affect Southern Resident Killer Whales. Applicant Submission in Support of Permit to Change Species, Attachment D, WDFW Application; Attachment D, NPDES Application 47-48

2018 report in its MDNS determination.

WDFW declined to ask a single recorded question about the harm or impact to the Southern Resident Orcas by the toxins, or the pollutant species in the subject fish farms. Attachment B, Additional Information: Response to WDFW Questions.

Direct and Indirect Harm to Southern Resident Orcas from Fish Farm Operations

Neither DOE nor WDFW applied for an Incidental Take Permit regarding the Southern Resident Orcas or operations of these fish farms. Neither DOE nor WDFW has developed, let alone received approval of, a Habitat Conservation Plan with respect to the Southern Resident Orcas. Applicant has not applied for an Incidental Take Permit regarding the Southern Resident Orcas or operations of these fish farms. Applicant has not developed, let alone received approval of, a Habitat Conservation Plan with respect to the Southern Resident Orcas.

III. DISCUSSION

A. ESA State Liability

The ESA is "the most comprehensive legislation for the preservation of endangered species enacted in any nation." Tenn. Valley South. v. Hill, 437 U.S. 153, 180 (1978). Congress enacted the ESA "in the plainest of words, making it abundantly clear that the balance has been struck in favor of affording endangered species the highest of priorities. Id. at 194 (emphasis added).

This mandate of the United States expressly encompasses all persons including, but not limited to the partnerships, companies, state agencies, officers, agents and any and all individuals. No one is permitted to act, permit, attempt to commit nor is absolved from actions which violate the ESA.

Specifically, ESA provides:

> (1) Except as provided in section s 6(g)(2) and 10 of this Act with respect of any endangered species of fish or wildlife pursuant to section 4 of this Act it is unlawful for any person subject to the jurisdiction of the United States to-
> (B) take any such species within the United states or the territorial high sea of the United States
> ...
> (G) violate any regulations pertaining to such species or to any threatened species of fish or wildlife listed pursuant to section 4 of this Act promulgated by the Secretary pursuant to the authority provided by this Act.

Id. Section 9

In holding that the definition of "take" includes incidental conduct, the Supreme Court unequivocally instructed that the legislative history of the ESA supports a broad sweep. The Committee Reports that accompanied the bills, that became the ESA, make clear that Congress

intended "take" to apply broadly to cover indirect as well as purposeful actions. The Senate Report stressed that "'take' is defined...in the broadest possible manner to include every conceivable way in which a person can 'take' or attempt to 'take' any fish or wildlife. Babbit v. Sweet Home Chapter, Communities for Great Ore., 515 U.S. 687, (1995). The term 'harm' includes "acts which annoy (wildlife) to such an extent as to significantly disrupt essential behavioral patterns, which include, but are not limited to, breeding, feeding or sheltering. Id. 699 n. 12. (emphasis added).

The expansive reach of the ESA to incidental takes of species, with the greatest care to those listed as "endangered" on the brink of extinction, is compelled by the intent of Congress "to halt and reverse the trend to species extinction, whatever the cost." Id. (citations omitted).

The Act provides an express exception to the imposition of penalties for violations:

If the Secretary finds, after opportunity for public comment, with respect to a permit application, and the related conservation plan that –

. (i) The taking will be incidental;

. (ii) The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;

. (iii) the applicant will ensure that adequate funding for the plan will be provided;

. (iv) the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild; and

. (v) the measures, if any, required under the subparagraphs (A) (iv) will be met; and he has received such other assurances as he may require that the plan will be implemented, the Secretary shall issue the permit. The permit shall contain such terms and conditions as the Secretary deems necessary or appropriate to carry out the purposes of this paragraph, including, but not limited to, such reporting requirements as the Secretary deems necessary for determining whether such terms and conditions are being complied with.

Id. (2) (B) (vi)

B. Judicial accord; Individual, state and local agency liability for incidental harm to federally listed Endangered Species

United States Courts of Appeal have underscored both the need for and imposition of equitable sanctions, specifically injunctive relief for incidental harm to listed species permitted by state agencies.

The Ninth Circuit led the way in imposing vicarious liability in Palila v. Hawaii Department of Land and Natural Resources ('Palila I"), 639 F. 2d 495 (9th Cir, 1981) and Palila v. Department of Land and Natural Resources Hawaii ("Palila II"), 852 F. 2d 1106 (9th Cir, 1981). In both cases, the listed, endangered species at issue was a tiny six-inch bird, a member of the Hawaiian honeycreeper family. The Hawaii Department of Land and Natural Resources had permitted goats and sheep in the palila's critical habitat on Mauna Kea. The sheep and goats were instrumental in preventing the regeneration of the palila's habitat by harming the mamane trees upon which the birds depended.

The Ninth Circuit affirmed the decision of the district court that the goats and sheep were preventing regeneration of the mamane forest upon which the birds depended for their survival. The court held that the State, by authorizing the permit for the grazing of the sheep and goats, violated Section 9 of the ESA. "Harm' pursuant to the ESA "did not require the plaintiffs to produce actual corpus delicti of deceased birds...only that the palila population was near a biologically survivable minimum and the goats and sheep were destroying its only remaining habitat." James c. Kilbourne, The Endangered Species Act Under The Microscope: A Closeup Look From a Litigator's Perspective." 21 Envtl. L. 499, 502 (1991).

In Palila II, the State of Hawaii had introduced feral sheep into the same critical area on Mauna Kea, damaging the endangered bird's habitat. The court again affirmed the district court, requiring the State to remove the sheep entirely from the critical habitat of the endangered bird. In finding that the State was in violation of Section 9 of the ESA, the court reasoned in pertinent part that the sheep and the endangered bird could not co- exist, despite the increasing number of the palila. "The district courts (and the Secretary's) interpretation of harm as including habitat destruction that could result in extinction, and findings to that effect are enough to sustain an order for the removal of the mouflon sheep" Id. at 1110.

Mandatory injunctive relief ordering the states to remove fish and animals that may harm indigenous federally listed endangered species is the requisite remedy. These cases are the law of the Ninth Circuit, which encompasses the State of Washington.

Other federal courts have followed suit. In Strahan v.Coxe 127 F. 3d. 155 (1st Cir. 1997) the federal appellate court affirmed the district court, ordering the environmental agencies in the State of Massachusetts to apply for an incidental take permit for Northern Right Whales and develop a critical habitat proposal to protect the whales from harm. The state agency, the Massachusetts Division of Marine Fisheries, had authorized permits to private parties to use gillnets and lobster pots within the critical habitat.

The court held that the State commercial fishing regulatory scheme exacted a taking in violation of the ESA. "But for" the permitting process, the actions of the private third parties that resulted in an incidental take of the Right Whales, could not occur. "A governmental third party pursuant to whose authority an actor directly exacts a taking of an endangered species may be deemed to have violated the provisions of the ESA." When sections 9 and 10 are read together, these provisions prohibit "acts by third parties that allow or authorize acts that exact a taking that, but for the permitting process, could not take place." Strahan at 159, 163. See Loggerhead Turtle v. County Council, 148 F. 3d 1231 (11th Cir. 1998) (permitted beach lighting, which harmed nesting loggerhead and green sea turtles sufficient allegation under ESA for standing purposes); United States v. Town of Plymouth, 6. F. Supp 2d. 81 (D. Mass 1998) (injunction ordered where municipality allowed off road driving that caused a take of piping plovers in violation of ESA.)

C. Harm to endangered Southern Resident Orcas from Applicant's fish farms and State of Washington approved and pending permits

Each and every fish farm operation of Applicant occurs within the protected critical habitat of the federally listed endangered Southern Resident Orcas.

The open net pens are just that. They exist for the waters of the United States to constantly flow through, for wild fish and bio organisms in the food chain to flow through, and for fecal waste, chemicals, toxins, contaminants in fish farm feed, to enter the critical habitat of the Southern Resident Orcas and their prey. As stated by a leading scientist and researcher in WDFW, "There is something unique about the Puget Sound...what gets in the sound stays in the sound." Encyclopedia of Puget Sound, Puget Sound Institute; "New theory rethinks spread of PCBs and other toxins in Puget Sound" (May 18, 2016.) (emphasis added).

The EPA, NOAA and the Governor's Southern Resident Task Force all agree that primary threats to the very survival of the Southern Resident Orcas are lack of prey and toxins. Applicant's fish farms and the switch to the new species significantly and egregiously thwart the recovery of this endangered species and hasten the pace of their extinction.

These Orcas rely heavily on urban chinook. They will eat other fish, including the "steelhead", "but their preference overwhelmingly is chinook -- and in particular, runs that are themselves endangered or threatened, including Puget Sound Chinook." Seattle Times, "Struggling orcas heavily rely on urban chinook from Seattle area river, new analysis shows" (Updated May 13, 2019.)

As the Governor's Task Force expressly underscored, the "Southern resident orcas and their prey are exposed to an ever-increasing mixture of pollutants in the marine environment." Southern Resident Orca Task Force at 30.

> High levels of persistent toxic contaminants including PCBs PBDEs and DDTs are present in the blubber of Southern Resident Orcas, potentially resulting in harmful health effects including alterations in hormone levels, reproductive distribution or miscarriages, reduced immunity to diseases, neurotoxicity, neurobehavioural disruptions and cancer. The toxic effect of these contaminants is further exacerbated by periods of weight loss, which can redistribute contaminants from fat stores (blubber) to other tissues, increasing the toxic response.

Id.at 31.

A source of these persistent organic pollutants (POP) in fish farms is the feed. "EPA and Ecology are not aware of a feasible way to reduce PCBs in fish feed for hatcheries." Fact Sheet For The Uupland Fin-Fish Hatching and Rearing General NPDES Permit at 20. Significant published scientific literature has set forth the levels of these contaminants, which are uniformly recognized as contributing to the extinction of the Southern Resident Orcas. Several recognized authorities have published measurements of contaminants in fish feed and oils. P. J. Suther et al; "Occurrence of persistent organic pollutants in sediments collected near fish farm sites." Aquaculture 254, 243-247 (2006)

Moreover, the effluent from fish farms does not stay static and the blooms travel throughout the critical habitat of the endangered species. Dilution is not a solution for drifting waste in fish farm settings. Stanford Report, "For coastal fish farm waste, dilution is not an automatic solution, Stanford researchers say." (April 7, 2011)

The use of antibiotics in fish farming – and particularly trout farming – should have set off alarms to the state of significant habitat impact. The Southern Resident Orcas in a depleted state may have a variety of needs, which this resistance may impact. There is great concern about the level of antibiotic resistance endemic in salmonid trout farming. Seafood Watch: Rainbow Trout Consulting Researchers (October 2, 2017).

> Regarding the effect of such antibiotics on native fish populations, antibiotics as administered to salmonids in Chile have been reported in commonly consumed wild fish...it is concerning that several fish species affected are routinely consumed by humans There is also the possibility that excessive levels of antibiotics in sediments and in the water column can affect the phytoplanktonic and zooplanktonic community diversity, potentially in turn affecting the health of animals and humans...

Id. at 45.

Applicant has listed a significant quantity of antibiotics that are currently, and apparently to be administered into open net pens/farm fish therein and potentially into the food chain of the Southern Resident Orcas, the food chain of the Puget Sound and waters of the United States. Seafood Watch scientific studies have necessitated a failing score of 2 out of 10 for chemical use in the famed rainbow trout due to the "high concern". No analysis or even mention of this is included the WDFW MDNS or DOE NPDES statements to date regarding Applicants 2020 permit requests.

The escape consequences of farmed trout, allegedly sterile or not, on the environment is potentially more harmful to the Southern Resident Orcas and their necessary food chain than that of Atlantic salmon. The compendium on farmed rainbow trout in Chile concluded that "rainbow trout are farmed in open systems and the available data...indicate large numbers (greater than 500,000) of fish have escaped since the early 1990s" Id. at 55.

> It is generally agreed that escape and establishment of populations of non-native salmonids do have detrimental impacts on native fish due to predatory and interference competition and widespread ecological damage. Rainbow trout are known to be particularly detrimental in Chile due to their greater potential to establish self-sustaining populations, relative to other salmonids...feral rainbow trout (inclusive of both escaped and intentionally stocked) have been shown to significantly affect native fish populations due to competition for food. ...there is a high overlap of diets between escaped fish and native species, leading to inevitable competition.

Id. at 58 (citations omitted) (emphasis added)

There is a conclusion of WDFW and Applicant that escapes hopefully will be rare and that the trout hopefully, but not conclusively, will be sterile. The problem, however, is the competition for the food by the escaped rainbow trout to the point that those in Chile have had a significant negative impact on survival of other prey species.

Contributing to the starvation of the Southern Resident Orcas is a result entirely incompatible with federal law.

Transmission of viruses and lice themselves onto native wild populations has been extensively documented. A primary concern is that pathogens, old and new, are transferred by the lice to the native wild fish causing high native species mortalities. This is a particular threat to the Southern Resident Orcas who are starving and will eat not only native chinook, but also the threatened steelhead populations.

Species to species transmission has no barriers. Voiseett et al and Vectors "Parasitic sea louse infestations on wild sea trout; separating the roles of fish farms and temperature" (2018); Thorstad et al Aquaculture Environment Interactions "*Effects of a Salmon lice Lepeophtheirus salmonis on wild sea trough Salmon trout – a literature review* " (2015)

D. The DOE prior general and individual NPDES permits issued to Applicant violate the ESA

Applicant's fish farms have and will be involved in an incidental take of the Southern Resident Orcas. The toxins, pollutants, chemicals, potential for escapes, discharge and waste have and will harm the endangered species, from interfering with breeding to advancing actual starvation. The change to a new species only exacerbates the harm to the cherished Southern Resident Orcas.

The general and individual present NPDES permits for Applicant's fish farms were authorized without an incidental take permit or habitat management plan and are violative of ESA sections 9 and 10. The Constitution of the United States commands compliance with the laws of the United States, including the CWA and the ESA. The Constitution and federal laws made under its authority "are the supreme law of the land." Constitution of the United States, Article IV, Clause 2. Accordingly, DOE, WDFW and persons involved as the agents permitting the harm to the Southern Resident Orcas, are in violation of the laws of the United States and subject to injunction.

IV. CONCLUSION

For the foregoing reasons, Applicants current NPDES applications should be denied in full and the prior NPDES issued to Applicant by the DOE allowing discharge into the critical endangered species habitats and harm to the citizens, species and ecosystems of the United States and Washington State, revoked. These are the only remedies consistent with governing law.