October 17, 2014

Mr. Ed Porter, Manager
Aquaculture Policy and Regulatory Initiatives
Fisheries and Oceans Canada
200 Kent Street, Room 8N187
Ottawa, Ontario, K1A 0E6
fpptr-rtppp@dfo-mpo.gc.ca

Dear Mr. Porter,

RE: Comments on Draft Aquaculture Activities Regulation and Regulatory Impact Analysis Statement

Please accept the following as the submissions of the Pacific Salmon Foundation, The SOS Marine Conservation Foundation, Watershed Watch Salmon Society, the David Suzuki Foundation and the University of Victoria Environmental Law Centre on the draft Aquaculture Activities Regulation (AAR). We will first provide some general, overarching comments about this proposed regulation, followed by section-by-section commentary that is focused on the wording of the draft regulations.

General Comments:

The purpose and effect of this draft regulation is to authorize owners and operators of aquaculture facilities to deposit deleterious substances into Canadian fisheries waters, and to carry on works, undertakings or activities that result in serious harm to fish. The Minister must be satisfied that the draft regulations are required for "the proper management and control of fisheries or the conservation and protection of fish."[1] Yet it is clear that the Minister does not have an adequate evidentiary basis for making this determination.

A 2004 report prepared for Environment Canada identified numerous problems with drugs and pesticides used by the industry, and a host of knowledge gaps concerning whether these impacts can be rectified or mitigated.[2] In short, the report provides strong evidence of the deleterious nature of these drugs and pesticides, but little to

[1] Regulations Establishing Conditions for Making Regulations Under Subsection 36(5.2) of the Fisheries Act, SOR/2014-91.
[2] Bright, D. et al., "Use of Emamectin Benzoate in the Canadian Finfish Aquaculture Industry: A Review of Environmental Fate and Effects," 2004. Available online at http://www.watershed-watch.org/publications/files/EnvCan-ReviewofSlice.pdf

support a finding that their continued use will result in the proper management and control of fisheries or the conservation and protection of fish.

The draft AAR completely fails to specify conditions under which the use of drugs and pesticides will result in acceptable impacts to fish and aquatic life. Instead, it relies on the registration process for pesticides and Health Canada's approval process for drugs. Yet in 2010 the Canadian Science Advisory Secretariat reported to the Minister: "There is little in-field environmental evaluation as part of that registration procedure." The Secretariat also noted that "A recent literature review of the fate and effects of emamectin benzoate reports acute toxicity values for a variety of aquatic species … and the lowest NOEC observed in the mysid, *Mysidopsis bahia* (Bright and Dionne 2005)."[3]

The Canadian Science Advisory Secretariat identified 15 recommendations on the use of drugs, pesticides and anti-fouling chemicals, none of which are incorporated into the AAR. The aquaculture industry should not be exempted from the prohibitions in sections 35 and 36 of the *Fisheries Act* unless and until the research has been undertaken and it can be proven that these substances or alternative treatments can be applied in a manner that is not deleterious to fish (as broadly defined in the *Fisheries Act*).

In place of restricting the use of drugs and pesticides the draft regulation offers little more than an after-the-fact submission of an annual report by facility operators/owners documenting their use. This is an unacceptable compromise that will grant open net aquaculture operations a "free pass" for violations of the *Fisheries Act* in exchange for some paper work submitted once a year.

The Regulatory Impact Assessment Statement (RIAS) states that "the Department is committed to avoiding duplicative or unnecessary administrative requirements, while ensuring that environmental protection objectives are met." However, the AAR does not contain any environmental objectives whatsoever. The environmental objectives are found in ss. 35 and 36 of the *Fisheries Act*, and this regulation is designed to approve non-compliance with those objectives. The AAR could provide more specific objectives for aquaculture operations in the form of results-based requirements or performance standards, but fails to do so.

The RIAS is further misleading in stating that environmental risks are avoided "if aquaculture operators are in compliance with specific conditions developed to minimize harm to fish and fish habitat." But the AAR does not contain any such specific conditions, and fully relies on the adequacy of other processes such as pesticide registration. While pesticide labels can provide important rules concerning use, they do not address site-specific application issues, including the cumulative effects on local populations of wild fish. Outside of reliance on the pesticide registration process, the AAR is completely reliant on operators/owners considering "whether there are alternatives to such a deposit and make a record of that consideration."

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[3] Canadian Science Advisory Secretariat, Fisheries and Oceans Canada, "Pathway of effects of chemical inputs from the aquaculture activities in Canada," Research Document 2010/017. Pp. 10, 11. Available online at: http://www.dfo-mpo.gc.ca/Library/342563.pdf

One exception to this for British Columbia aquaculture facilities is found not in the draft AAR, but in the current licensing conditions under the Pacific Aquaculture Regulations. However, these licence requirements could be changed through negotiation with owner/operators, and we would like to see greater incorporation of performance standards in the regulation itself.

We are concerned that government will attempt to use this very weak regulation as justification for expansion of open net aquaculture on the Pacific coast, compounding the already known problems that this regulation fails to address.

Rejection of Alternative Regulatory Approaches

The RIAS does not properly assess the risks and benefits to Pacific coast wild salmon and other fish of this exceptionally weak attempt at regulation. The RIAS notes that alternative means of regulation were considered but rejected:

> *Fisheries and Oceans Canada had considered the option whereby a ministerial permit would have to be obtained prior to the deposit of a deleterious substance. However, this approach was rejected because it significantly increased administrative burden on aquaculture operators without adding value in terms of additional protection of fish and fish habitat.*

The RIAS fails to justify this conclusion. How could a permit-based approach not add value in terms of protecting fish and fish habitat? In fact, DFO is aware of expert advice that the best way to deal with these sorts of impacts is a site-specific approach. In its July 2014 advisory on interactions between wild and captive fish stocks, the International Council for Exploration of the Sea (IECS) noted the importance of local approaches to regulation that take into account site specific circumstances:[4]

> *In order to optimize mitigation, management zones, defined by local hydrography (using circulation models) and biological properties of infectious agents, should be established for each farm or farm cluster. Management zones should incorporate limits to local biomass as well as protocols for coordinated activities such as stocking, disease pathogen monitoring, harvesting, using single age-classes and sea lice treatments.*

A permit approach could fulfill these recommendations. Note also the recommendation that there be site-specific limits incorporated into management. There needs to be a linkage between siting, marine use planning and aquaculture activities regulation. The linkages are not clear in this draft regulation. The need for this linkage is clear not only in the above IECS statement, but is common in other regulation of industrial activities. For example, forest practices in British Columbia are regulated under both planning rules and practices rules.[5] The reason for this is that site-specific operations alone

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[4] IECS, OSPAR request on interactions between wild and captive fish stocks, July 2014. Available online at: http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/Special%20Requests/OSPAR_%20Interactions_of_wild_and_captive_fish_stocks.pdf

[5] See the *Forest Planning and Practices Regulation,* BC Reg. 14/2004, and the *Land Act* provisions for land use objectives, Part 7.1, RSBC 1996, c.245.

cannot account for environmental risks and the cumulative effects of multiple operations across the landscape. Land use planning is an essential component of sound resource management, and it is no different in the marine environment.

The RIAS states that DFO considered but rejected the use of maximum limits for deleterious substance deposits. No rationale is provided for the decision not to pursue this approach.

We do not believe the Minister can approve this draft regulation if she has regard for the factors set out in section 6 of the *Fisheries Act*, as it lacks measures and standards to avoid, mitigate or offset serious harm to fish, and will not provide for the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries.

Section-by-Section Comments:

We will now offer comment on the proposed regulations as drafted, but these comments are not meant to diminish the broader concerns discussed above.

Section 1: Definitions

Additional definitions are recommended. Please refer to comments under section 9.

Section 2: Specified substances

These are the appropriate substances to be regulating at this time, but only if the regulations are specific, performance based, and effective at addressing known problems to fish and fish habitat, in order to justify an exemption from the prohibitions in sections 35 and 36 of the *Fisheries Act.* We do not believe these requirements are met as currently drafted.

Section 3: Conditions applicable to deposits

The conditions specified are too minimal to justify the deposit of the specified substances – drugs, pest control products and biochemical oxygen demanding matter. In short, the Minister has no valid reason to determine that these drugs are not deleterious to fish in the amounts, concentrations and applications typically used by aquaculture facilities. In fact, the Minister does have scientific evidence and advice[6] that the *status quo* conditions applicable to the deposit of these specified substances are harmful to wild fish (as broadly defined in the *Fisheries Act*).

In addition, some of the specified substances are well known to be of very limited effectiveness in treating sea lice due to resistance. So why would the Minister now grant aquaculture facilities a free pass for use of these deleterious substances? Instead, the Minister should be using the fact that these substances are deleterious as a substantial motivation to require aquaculture facility owners/operators to pursue alternative treatments that are not deleterious, or marine aquaculture conditions that are less conducive to sea lice concentrations, and the phasing out of net pen aquaculture over time.

[6] Cited above in footnotes 2, 3, 4.

Section 4: Aquaculture facility

No comment.

Section 5: Drugs

Subsection 5(a) requires that drugs used by an aquaculture facility be "prescribed by a person who is authorized to practise veterinary medicine." Given the breadth of professional veterinary practice, and the unique circumstances of the marine environment and the impacts on non-target fish species, this requirement should be modified to specify that the prescribing veterinarians be qualified in marine species and environmental conditions, as is common in other Canadian regulations requiring specialization within a profession.[7]

The second condition in s.5(b) requires owner/operators to "minimize the risk of accidental deposit of the drug." We expect that there will be enforcement problems with this type of language: it should be augmented or replaced with known measures that establish due diligence.

Subsection 5(c) addresses a critically important issue in very poor regulatory language. Requiring a facility owner or operator to "consider whether there are alternatives to such a deposit and make a record of that consideration" is very weak and likely unenforceable. We recommend that you seek the advice of experienced *Fisheries Act* prosecutors in the Public Prosecution Service of Canada regarding enforceability and charge approval for this section.

This subsection also fails to achieve the intent stated in the RIAS that owners/operators "must first consider alternatives" to drug and pesticide treatments. It does not clearly state that, likely uses the wrong tense, and could lead to after-the-fact justifications for the status quo. Furthermore, the RIAS itself undermines the objective of requiring diligent assessment of alternatives by stating that "These requirements are not meant to set new standards or change aquaculture industry's behaviour, but rather to document the practices they are already utilizing."

Seeking alternatives to drugs (and pesticides) is an important issue that needs to be addressed more effectively. Government should increase the onus on the industry to seriously and diligently pursue alternatives. The IECS July 2014 advice speaks to alternatives as follows:

> The rapid detection and diagnosis of disease was identified as a key prerequisite to reduce antibiotic use. Alternatives to the use of therapeutants include the use of probiotics, essential oils, and phage therapy. Probiotics have been utilized with some success in teleost fish, in crustaceans, and in bivalves. Essential oils in feed have been used to reduce bacterial infection in trout. Phage therapy has also been used successfully in trout culture against *Aeromonas salmonicida*.

[7] For example, see Ontario's Records of Site Condition Regulation, s.6. and British Columbia's Ground Water Protection Regulation, s.9. and Mushroom Compost Facilities Regulation Schedule, s.2(1)(b).

In "Antibiotics in Aquaculture – Use, Abuse and Alternatives," Romero *et. al.* state:[8]

> One strategy for reducing antibiotic use in aquaculture is to implement rearing practices that minimize the level of stress on the fish and that reduce the likelihood that infections requiring antibiotic treatment will occur.

This issue is very important because it affects the health of farmed fish, wild fish, and the humans and wildlife that consume them. We propose that subsection 5(c) be restructured to ensure that it compels the use of alternatives that will not enter into the marine environment where available (i.e. the deposit of drugs and pest control products that will enter into the marine environment should be a last resort). It could incorporate the following requirements, similar to that set out in a DFO slide presentation on the intended effect of the AAR:

> Before prescribing drugs a qualified veterinarian must prepare and sign an assessment of alternative treatments that includes his or her formal attestation to the following:
>
> 1. There are no proven, commercially-viable technologies available to avoid the deposit of the therapeutant into fish bearing waters during its application;
> 2. There are no proven commercially available treatment technologies to render the therapeutant non-toxic to fish;
> 3. There is no provincially or federally certified land-based facility to accept contained wastes;
> 4. There are no commercially available biological treatment technologies available; and
> 5. The use of the therapeutant is the most expedient and effective means of treating fish pests or pathogens which otherwise without the use of, would lead to serious morbidity or mortality to the farmed or wild fish nearby.

Section 6: Pest control products

The comments above with respect to subsection 5(c) apply equally to subsection 6(c).

Section 7: Measures to reduce detriment

This section should be revised to either delete the phrase "other than fish that pose a risk of harm to fish cultivated in the facility or to equipment used in the operation of the facility", or to specify "sea lice," or to otherwise make it clear that it does not apply to wild fish that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery.

As currently drafted section 7 inappropriately puts the owners/operators of aquaculture facilities in the driver's seat by allowing them to decide the economic and

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[8] Romero, et al, "Antibiotics in Aquaculture – Use, Abuse and Alternatives," in *Health and Environment in Aquaculture*. Available online at www.intechopen.com, file:///Volumes/PUBLIC/Aquaculture%20Regulations/Antibiotics%20in%20Aquaculture.webarchive

other trade-offs rather than the regulator. This is achieved by empowering the industry to limit measures to reduce detriment based on their own assessment of:

(*a*) the cost and effectiveness of the available measures;

(*b*) the degree and nature of the detriment that may result from the deposit; and

(*c*) the physical characteristics of the facility and the type of aquaculture that is engaged in.

It is preferable to have a regulation with measurable, verifiable and enforceable standards.

Subsection 7(2) should apply to all aquaculture facilities, not just those producing >2.5 t, and should not empower the industry to avoid or limit measures to reduce detriment according to their own determination of what is cost-effective. We also recommend that you seek advice from experienced prosecutors in the Public Prosecution Service of Canada respecting the enforceability of this section.

Section 8: Soft bottom in tidal waters

This incorporates the Pacific licence requirement for soft bottoms. Why are the hard bottom requirements not incorporated into this regulation?

The 2014 IECS Advice states that:

> *Of greatest concern are the accumulation of particulate organic matter on the seabed (with consequential benthic community effects), locally reduced oxygen levels (both in the water column and on the seabed), and changes in nutrients that may contribute to harmful algal blooms.*
>
> *Responsible husbandry practices, such as optimal feeding and stocking, will also reduce nutrient inputs. Fallowing of sites reduces longer-term effects, particularly in areas where organic matter is liable to build up.*

While a requirement to measure sulfide concentrations in soft bottoms is a step toward this, why does the regulation not specify responsible husbandry practices that will achieve this intended management objective?

The draft monitoring requirements incorporated into this regulation are inadequate and represent a considerable retraction from earlier provincial requirements in British Columbia. There has been a continuous decline by DFO in monitoring requirements, despite the clear indications in scientific literature of significant knowledge gaps. The licence-by-licence and facility-by-facility approach to regulation also fails to address the important issue of cumulative effects of multiple operations. If government is unwilling to fund this needed monitoring, research and cumulative effects assessment it should at least require the industry to do so.

Section 9: Unusual fish morbidity or mortality

The phrase “unusual morbidity or mortality” should be legally defined in section 1 to make section 9 meaningful and enforceable. We suggest that “unusual mortality” should

be objectively defined to specify the number of fish subject to morbidity or mortality, thus triggering a duty to report to authorities. That threshold could vary between cultivated fish and wild fish, and should be much lower for wild fish. For example, the threshold triggering a reporting requirement could be 0.5% of the cultivated fish in a treatment unit receiving pesticide or drug applications, and any morbidity or mortality of wild fish.

The proposed wording is too passive, only requiring reporting "if unusual fish morbidity or mortality…is observed." Section 9 should include a positive duty to monitor for impacts to wild fish within a set distance of a marine aquaculture facility.

The reporting time in s.9(a) should be "immediately," as currently provided in several sections of aquaculture licences for the Pacific Region, or "without delay" as provided in s.38(4) of the *Fisheries* Act. We can think of no rationale that would justify stalling a reporting obligation by 24 hours, and a mix of reporting requirements will lead to confusion.

The reporting obligation should also extend not just to fishery officers but given that these reportable incidents involve other key decision makers, it should include the facility's veterinarian and Health Canada. A procedure should be in place for all other operators to notified of the receipt of a report of the incident.

The proposed wording in subsection 9(e) is inadequate because it permits the reintroduction deposits of the implicated drug or pest control product once the results of the tissue sample analysis of the affected fish have been provided to the Minister. Instead, drugs and pesticides that are associated with unusual fish morbidity or mortality should not be reintroduced by the reporting operator until the Minister provides approval based on examination of the tissue sample analysis and consultations with experts and Health Canada.

Section 10: Annual report

There should be a sanction against submitting a false report.

Section 11: Prescribed works, undertakings, activities and conditions

This section is too open-ended and is more lenient that current case law. For example, ever since the 1978 *R. v. Sault Ste. Marie* decision operators have had to "take all reasonable steps to avoid the particular event" that is an offence. The draft regulation is much weaker because it merely requires "*the owner or operator of the facility" to take "reasonable measures to minimize detriment to fish — other than fish that pose a risk of harm to fish cultivated in the facility — and fish habitat, having regard to the factors set out in paragraphs 7(1)(a) to (c)."* This is unacceptable for the reasons stated in our comments under section 7. It will also render the section virtually unenforceable, because it is so dependent on the state of mind of the owner/operator of an aquaculture facility, even though this would not normally be a factor for a strict liability offence.

As drafted this section is inconsistent with section 78.6 of the *Fisheries Act* which provides that the due diligence defence is only available if the facility operator has "exercised all due diligence to prevent the commission of the offence."

The wording is also inconsistent with several provisions of the Pacific Region aquaculture licences which require their holders to take "all reasonable measures to prevent" things such as the escape of cultivated fish, etc.

The conditions listed in s.11(b) should be more specific: e.g. operating "under an aquaculture licence" is different than complying with the licence. Mere operation under a licence should not constitute a defence to s.35 unless the operator is operating in compliance with the licence. Subsection 11(b)(i) should state "is operating in compliance with the aquaculture licence."

The exception in s.11(b) respecting "other than fish that pose a risk of harm to fish cultivated in the facility" is a significant concern. Do wild salmon bearing sea lice pose a risk of harm to cultivated fish and thus the obligation to take reasonable measures to minimize detriment to the wild salmon not apply? This section should be revised to ensure that it does not prioritize the health of cultivated fish over wild fish.

Section 12: Annual report

There should be a sanction against submitting a false report. In addition, reports should be uploaded to a publicly available website by the owners/operators of aquaculture facilities. Details of the report content would change if our submissions above are accepted.

Section 13: Canadian Food Inspection Agency

This section should be amended to specify that it applies only to cultivated fish, and not wild fish.

Section 14: Coming into force

No comment.

Comments on the Aquaculture Monitoring Standard:

Section III.A.4 and 5: replace "should" with "must" as follows:

1. "Copies of the field note forms and specific requirements for chemical analysis "must" be included with the shipment to the analytical lab.
2. Original field note forms and digital images "must" be stored in a secure cabinet.

Section III.B.1: How does this requirement to notify DFO "upon observation of moribund or dead fish of any life stage" relate to "unusual fish morbidity or mortality" and reporting within 24 hours per s.9 of the AAR?

In conclusion, we wish to stress that it is essential that the Aquaculture Activities Regulation meet and prioritize the overarching objectives of the Fisheries Act, the factors specified in section 6, and the spirit and intent of sections 35 and 36. The current draft fails to do so.

Thank you for considering our comments.
Yours sincerely,

Terry Tebb
Director, Special Projects
Pacific Salmon Foundation

Eric Hobson
President
The SOS Marine Foundation

Craig Orr
Executive Director
Watershed Watch Salmon Society

John Werring
Development Officer
David Suzuki Foundation

Mark Haddock
Environmental Law Centre
University of Victoria

cc: The Honorable Gail Shea, Minister of Fisheries and Oceans
The Honourable Randy Kamp, Parliamentary Secretary to the Minister of Fisheries and Oceans
The Honourable Steve Thomson, BC Minister of Forests, Lands and Natural Resource Operations