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NSARB-2023-001

Nova Scotia Aquaculture Review Board

IN THE MATTER OF: Applications made by **KELLY COVE SALMON LTD.** for a **BOUNDARY AMENDMENT** and **TWO NEW MARINE FINFISH AQUACULTURE LICENSES** and **LEASES** for the cultivation of **ATLANTIC SALMON (*Salmo salar*)** - **AQ#1205x, AQ#1432, AQ#1433** in **LIVERPOOL BAY, QUEENS COUNTY.**

Kelly Cove Salmon Ltd.

APPLICANT

-and-

Minister of Fisheries and Aquaculture

PARTY

-and-

Kwilmu'kw Maw-Klusuaqn Negotiation Office (KMKNO)

INTERVENOR

-and-

Queens Recreational Boating Association (Brooklyn Marina)

INTERVENOR

22 Fishermen of Liverpool Bay

INTERVENOR

Region of Queens Municipality

INTERVENOR

Protect Liverpool Bay Association

INTERVENOR

Affidavit of Dr. Amanda Swim

I, Amanda Swim, of Salmon River Nova Scotia, swear and give evidence as follows:

1. I am the Manager of the Aquatic Animal Health Unit and hold the position of Chief Aquatic Animal Health Veterinarian (Chief Veterinarian) within the Nova Scotia Department of Fisheries and Aquaculture (the Department). The position of Chief Veterinarian is a role defined in the Nova Scotia *Aquaculture Management Regulations* passed in 2015.
2. I am responsible for the management of the Department's aquatic animal health programs which encompass all health management aspects of the *Aquaculture Management Regulations*. In addition, our unit oversees veterinary service and laboratory support to licensed aquaculture sites in Nova Scotia and Provincial Enhancement Hatcheries.
3. I received my Doctor of Veterinary Medicine degree at the Atlantic Veterinary College, Charlottetown PEI graduating in 2004. I am a current member of, and hold licensure with, the Nova Scotia Veterinary Medical Association. I also hold current memberships with the Canadian Veterinary Medical Association, the American Association of Fish Veterinarians, the World Aquatic Veterinary Medicine Association and am past president of the Eastern Aquaculture Veterinary Association.
4. I started my employment with the Department as an Aquatic Animal Health Veterinarian in 2006. In that position, I applied standard veterinary practice to aquatic animal populations farmed on aquaculture sites in Nova Scotia, and also the provincial enhancement hatcheries. I took on the role of Chief Veterinarian in October of 2022 and attached to this Affidavit as **Exhibit A** is a copy of my resume.
5. I have personal knowledge of the evidence sworn to in this affidavit except where otherwise stated to be based on information or belief.
6. I state, in this affidavit, the source of any information that is not based on my own personal knowledge, and I state my belief of the source.
7. The Department conducts an internal review of applications submitted to the Aquaculture Review Board. I oversaw the Aquatic Animal Health Unit's contribution to the review, from an aquatic animal health perspective. We assess the applications taking into account the provincial aquaculture health surveillance programs, legislation, and culturing practices suitable in Nova Scotia.

Aquatic Animal Health

8. Fish health surveillance of cultured fish is a focus of the Aquatic Animal Health Unit. The Marine Finfish Provincial Health Surveillance Program ensures that marine finfish aquaculture sites are being managed in a way that mitigates the presence and potential spread of disease and ensures regular veterinary presence on farms. By monitoring fish health, proactive measures can be instituted if a disease were to arise, to help mitigate risks.
9. There are 5 full time staff within the Aquatic Animal Health Unit: the Chief Veterinarian, two Aquatic Animal Health Veterinarians, an Aquatic Animal Health Program Specialist, and an Aquatic Animal Health Biologist. The roles and responsibilities of the Veterinarians within the Unit include: the provincial finfish health surveillance programs, activities relating to the *Aquaculture Management Regulations* including the Farm Management Plan

Program, health assessment input relating to aquatic animal transfers, file application reviews, and oversight of veterinary care and laboratory supports, to name a few.

10. Operators, their veterinarians, operational staff, and laboratory staff have a duty to report the following occurrences to the Department under the *Aquaculture Management Regulations*:
 - (i) suspicion or detection of certain pathogens in fish,
 - (ii) mortality events above a regulated threshold, and
 - (iii) known or suspected fish escapes.

Provincial veterinarians are involved in the assessment and response of such cases of mandatory reporting notification as outlined in the *Aquaculture Management Regulations*.

11. The Aquatic Animal Health Unit also liaises with Provincial and Federal colleagues involved in aquatic animal health regulation and management activities to help ensure emerging issues relating to fish health are identified and inputs are focused on healthy cultured populations for restocking programs and as a food source.
12. The Department's regulatory oversight is not the only authority related to health management aspects of cultured aquatic animals in Canada. The Canadian Food Inspection Agency (CFIA) addresses aquatic animal diseases of finfish, molluscs and crustaceans through the National Aquatic Animal Health Program co-delivered with Fisheries and Oceans Canada (DFO) with laboratory support. There is mandatory reporting to CFIA of specific pathogens of concern detected in cultured aquatic animals, as well as programs for the monitoring of fish disease and reaction to control outbreaks in certain cases. CFIA's authority also relates to fish movements, aimed to prevent disease spread into Canada, between provinces, and within provinces.
13. In Canada, the National Code on Introductions and Transfers of Aquatic Organisms outlines a consistent process for review of intentional movements of aquatic animals within provinces and territories.
14. Nova Scotia has an Introductions and Transfers Committee to provide recommendations on transfers. A DFO representative chairs the committee with the authority to issue transfer licences under Section 56 of the *Fishery (General) Regulations*. The Department's Aquaculture Division provides input to this committee through the Chief Veterinarian. More specifically, as the Chief Veterinarian, I issue an aquatic animal health transfer permit for finfish entering aquaculture sites in Nova Scotia, in accordance with Nova Scotia's *Aquaculture Management Regulations*.
15. In addition, aquaculture operators have an obligation to report use of therapeutic products to DFO yearly through the federal *Aquaculture Activity Regulations*.

Section 3 Factors

16. The parts of the boundary amendment and new site applications that were evaluated are relevant to several of the factors listed in s.3 of the *Aquaculture Licence and Lease Regulations*. This affidavit is organized by the s. 3 factor most relevant to the Applications evaluated by the Aquatic Animal Health Unit.

Section 3(b): Contribution to Community and Provincial Economic Development

Production Plan

17. I oversaw our Unit's evaluation of a number of aspects of Kelly Cove's production plan for the proposed expansion of the existing site (AQ#1205x) and the two new additional sites (AQ#1432 and AQ#1433) from an aquatic animal health perspective. In this affidavit, my comments apply to all three sites, unless specifically stated otherwise.
18. I evaluated the proposed species and strain from an aquatic animal health perspective. All incoming populations to be considered for stocking at Nova Scotia marine aquaculture sites require an aquatic animal health transfer permit from the Department's Aquatic Animal Health Unit. Kelly Cove has received the required transfer permits prior to each stocking event at AQ#1205.
19. The Saint John River strain of Atlantic salmon is a suitable species to be cultivated in Nova Scotia.
20. The stocking density proposed by Kelly Cove Salmon was evaluated. Stocking density looks at the biomass of fish occupying a specific volume of water (kgs/m³). Densities will vary with life stage, size and species, as well as the cage size and shape. This proposed maximum stocking density of 25 kgs/m³ is reasonable for these sites and this is in line with the industry in general.
21. The Aquatic Animal Health Unit also assessed the cage array and size of the cages. From an aquatic animal health perspective, the proposed cultivation infrastructure has been successfully utilized at this farm and is common within the Nova Scotia and global marine salmonid aquaculture industries. The proposed cage array of 2x10 100m HDPE polar circles (20 in total), appears to be reasonable infrastructure for these locations and the provincial finfish health surveillance program ongoing monitoring of the cultured animals would provide insight of health observations during a production cycle. The AQ#1205 site has been a productive site without known negative aquatic animal health impacts due to cage array and size of cages.
22. Another aspect of the Production Plan evaluated by the Aquatic Animal Health Unit is the 3-month fallow period proposed by Kelly Cove. A 3-month fallow period for a production cycle less than 22 months in length is in line with the Department's recommended fallow period for a production cycle of this length. Nova Scotia's recommended fallowing practices are in line with industry standards practices.

23. As the Chief Veterinarian, I can require operators to adjust fallow periods if, among other reasons, the presence of a pathogen and/or parasite warrant it.

Section 3(d): Oceanographic Environment and Biophysical Characteristics

24. As part of the technical evaluation of Kelly Cove's applications, the Aquatic Animal Health Unit assesses certain aspects of the oceanographic environment from an aquatic animal health perspective.

Currents

25. Current data considered favorable for health of fish at aquaculture marine farms is variable and is based on factors of the site at a particular time (ex. the size of the fish, species stocked). The average current speeds provided in the Development Plan can be considered at the lower range of current speeds for salmonids and health management practices would provide ongoing monitoring and assess any potential negative health impacts. The current speeds are not at levels that would threaten Atlantic salmon critical swimming speeds or abilities to maintain position in the water column.

Salinity

26. The Aquatic Animal Health Unit also evaluated the salinity of the water at the proposed lease sites. The salinity range provided by Kelly Cove was 30-32 ppt salinity and are reasonable values for successfully culturing an anadromous fish such as Atlantic salmon, which spends its adult life in seawater.

Water Quality

27. High and low water temperatures can have negative impacts on fish health, but the risk can be mitigated. The temperature range of -0.4°C to 19.9 °C, as noted in the Development Plan, is within the known acceptable range for Atlantic salmon in the marine environment.
28. Water oxygen content is also described in an operator's Farm Management Plan for continuous monitoring, and explanation of operational changes are required when approaching lower limits of the range for cultured salmonids.
29. The Department's minimum compliance requirements for water quality that must be included in a Farm Management Plan, include up to date daily and monthly water quality monitoring, recording of oxygen and temperature, and strategies for mitigating risks associated with low oxygen and high and low temperatures.

Water Depths

30. Overall depths provided in the Development Plan consider the entire lease area. The Department's staff analyzed known depth data and determined that in the approximate location of the cage arrays the following range of water depths at low tide would be as follows:

- (i) Coffin Island: 13-21m, with enclosure netting reaching a depth of 8-9m;
- (ii) Brooklyn: 14-20m, with enclosure netting reaching a depth of 8m; and
- (iii) Mersey Point: 15-20m, with enclosure netting reaching a depth of 8m.

Given the depth of the enclosure netting and the overall depths at each of these sites, it is unlikely that water depth at these sites will have an adverse effect on aquatic animal health.

Section 3(g): Sustainability of Wild Salmon

Aquatic Animal Health Transfer Permit

- 31. All finfish populations being received at an aquaculture operation in Nova Scotia must have an accompanying aquatic animal health transfer permit issued by the Department prior to movement. This is described within the *Aquaculture Management Regulations*. The transfer permit assures that specific veterinary health management, clinical service and laboratory supports have been involved in the rearing of the animals and satisfactory testing results have occurred associated with the given population. The transfer permit must accompany the animals during transport and remain in the receiving facility records.
- 32. The finfish being stocked at marine sites in Nova Scotia, must be transferred from a facility that participates in the Atlantic Provinces Finfish Transfer Policy which is a Health Policy for the transfer of live cultured finfish. The issuance of a Certificate of Health for Transfer relating to this Policy assures that the animals have been tested, with satisfactory results, according to the requirements of the Policy and veterinary involvement through adequate site visits and sampling has occurred.
- 33. Health testing of fish populations, review of health history, evaluation of vaccination status and test results by veterinarians prior to stocking animals at a marine site, is a strategy to help support the success of the farm and mitigate potential health risks once placed in the leased sites.

Health Surveillance Monitoring

- 34. The marine finfish health surveillance monitoring is comprised of “Provincial Surveillance” visits and “clinical” visits to marine farms throughout the year. A clinical visit involves an initiation of fish monitoring protocols that are acted on by the site management and a veterinary service team. A Provincial Surveillance visit, though it includes fish monitoring by a veterinary service team, is an on-going process of regulated health monitoring which is scheduled and meets the criteria of a pre-determined health monitoring program.
- 35. Surveillance and early detection are considered integral components for effective disease monitoring. To ensure compliance with the provincial health surveillance program a marine aquaculture site must have a minimum of six Provincial Surveillance veterinary visits per calendar year (January to December). At least two of these visits will be performed by the Chief Veterinarian or Veterinary Designate from the Department’s

Aquatic Animal Health Unit. The remaining four visits may be performed by a veterinary service other than the one with the Department. A Provincial Surveillance visit, on average, will occur every 6 weeks for each marine farm. To be considered a Provincial Surveillance visit (and one of the 6 mandatory annual visits), the visit must be performed no sooner than 4 weeks from the previous Provincial Surveillance visit, and no later than 8 weeks from the last visit.

36. During a Provincial Surveillance visit, the veterinarian conducts sampling, examination and diagnostic testing to look for pathogens of concern and any other health issues. The veterinarian reviews records related to health management of the farm which may include mortality records, feed records, inventory, water quality parameters, etc.

Sea Lice Monitoring & Management

37. Sea lice management in the Nova Scotia marine finfish aquaculture industry employs an integrated approach to management. This strategy has all producers in a region, under the direction of a site veterinarian, or Provincial Aquatic Animal Health veterinarians, use a multifactorial approach to combatting finfish pests. These factors include routine monitoring (regular, weekly counts and record keeping), surveillance (review of counts and examining fish by staff at weekly mortality dives), site following, optimum stocking densities, year-class separation, good fish health management, biosecurity protocols, and if required, rotation of chemotherapeutants and coordination of treatments (treatments could include non-chemotherapeutants).
38. The aquaculture licence holder must monitor sea lice levels weekly from April 1 to January 15. Monitoring is conducted by counting and staging sea lice parasites on the skin of fish. Counts may be suspended if temperatures are below 4°C for the well-being of the fish. If climatic conditions preclude a lice count, this omission from the weekly counts must be recorded in the Sea Lice Summary Record. This record must be made within seven days of the date that the scheduled lice count was to be conducted.
39. Sea lice records must be maintained and made available electronically for review by the Chief Veterinarian within 7 days of data collection.
40. Nova Scotia has a history of low infections of *Lepeophtheirus salmonis* (salmon lice). Having low action thresholds is important so new significant infections may be quickly controlled. If treatment is deemed necessary, a Sea Lice Treatment Plan must be completed by the licence holder and submitted to the Chief Veterinarian or Designate for approval.
41. Only products approved by Health Canada can be used for the treatment of sea lice. Treatment products must be used according to product labels and following all health and safety requirements and all Federal and Provincial regulations. If bath treatments were to occur on site, they must be conducted in completely enclosed containment. Sea lice treatments, including both non-chemotherapeutant and chemotherapeutant would be considered for use, depending on the situation and the most up to date information on the treatment efficacies, as these are always evolving/developing.

Mandatory Reporting

42. Along with the marine finfish health surveillance program and sea lice management program, all licence holders have a regulatory responsibility to report elevated mortality events and known or suspected pathogens of concern as outlined in Section 21 of the *Aquaculture Management Regulations*.

Performance Review

43. A performance review of AQ#1205 was also completed. I determined that AQ#1205 has operated in a manner that follows aquatic animal health regulatory processes as outlined within in the *Aquaculture Management Regulations*. Kelly Cove has fully participated in the Nova Scotia marine finfish health surveillance program at AQ#1205 and the provision of veterinary service and laboratory support found adequate. From an aquatic animal health regulatory perspective, Kelly Cove's historical operation at this location is satisfactory.

Section 3(h): The number and productivity of other aquaculture sites in the public waters surrounding the proposed aquacultural operation

34. There are currently two issued aquaculture sites in Liverpool Bay – AQ#1205 and Finleaf Technologies Inc's land-based facility (AQ#1405) for tilapia and koi located in Port Mersey Commercial Park. The addition of the proposed finfish sites (Mersey Point and Brooklyn) will increase the number of aquaculture sites in Liverpool Bay to a total of four.

Biosecurity

35. The proposed expansion and two new sites would not represent an increase in additional operators from a biosecurity perspective. Kelly Cove has stated its company-based biosecurity protocols would be implemented at all three proposed lease sites. These biosecurity protocols relate to personnel and shared public spaces. These protocols are detailed in the FMP and approved by the Aquatic Animal Health Unit.
36. There are no other marine finfish aquaculture companies sharing the identified infrastructure, however, the wharves are used by community fishing vessels and open to the public. Kelly Cove marine finfish sites have wharf usage biosecurity procedures that consider other users of the wharf. The procedures aim to mitigate biosecurity risk through the control of personnel, traffic, vehicles, biologics and equipment. These biosecurity procedures are one of several aspects of a site's Farm Management Plan that is reviewed and approved for implementation by the Aquatic Animal Health Unit.

- 37. The proposed lease sites will institute an all-in all-out production strategy. The three farms will be stocked and harvested in the same seasons. The three farms will then observe the same fallow periods. These strategies are important components of responsible biosecurity to maintain fish health and are considered important aspects of synchronized health management to specific culturing areas.
- 38. I was not physically present before Ms. Menczel-O'Neill when I affirmed this affidavit. I was linked with Ms. Menczel-O'Neill using video conferencing technology.

Sworn to before me by videoconference from Bible Hill, Nova Scotia (location of affiant) to Halifax, Nova Scotia (location of lawyer taking oath) on the 19th day of January 2024.



Caitlin Menczel-O'Neill
A Barrister of the Supreme Court
of Nova Scotia

Amanda Swim

TAB A

2023

NSARB-2023-001

This is Exhibit "A" referred to in the
Affidavit of Amanda K. Swim
affirmed before me by videoconference
on January 19, 2024

A solid black rectangular redaction box covering the signature area.

Signature

CAITLIN MENCZEL-O'NEILL

A Barrister of the Supreme Court of Nova Scotia

AMANDA K. SWIM

NS

Amanda.Swim@novascotia.ca

EDUCATION

- September 2000 – May 2004 **Doctor of Veterinary Medicine**
Atlantic Veterinary College, Charlottetown PE
- September 1994 – May 1998 **Bachelor of Science, Double Major**
Biology & Psychology
Saint Mary's University, Halifax NS

WORK EXPERIENCE

- October 2022 – present **Chief Aquatic Animal Health Veterinarian**
Nova Scotia Department of Fisheries and Aquaculture,
Bible Hill NS
- Manage the Aquatic Animal Health Unit
 - Oversee provincial aquaculture health surveillance & management programs
 - Responsible for the health management components within the *Aquaculture Management Regulations*
 - Oversee the provision of veterinary service and laboratory supports to the aquaculture industry in Nova Scotia
- June 2006 – October 2022 **Aquatic Animal Health Veterinarian**
Nova Scotia Department of Fisheries and Aquaculture,
Bible Hill NS
- Clinical prescribing veterinarian; health and disease management for land-based finfish/shellfish, marine finfish/shellfish farms, and Provincial enhancement Hatcheries
 - Perform biosecurity vessel and facility audits; farm management policy development, and training to government and industry staff
 - Employ Provincial fish health surveillance sampling and testing programs

- Regulatory oversight, assistance in policy development for Fisheries and Coastal Resources Act (Aquaculture Management Regulations)
- Emergency clinical veterinary care provision
- Periodic responsibilities of the Provincial Chief Aquatic Animal Health Veterinarian (Acting Capacity)
- Performing necropsy/pathology reports, fish health summaries/certificates, and water chemistry investigations
- Complete record keeping and communications relating to provincial health surveillance programs and veterinary cases
- Liaise with provincial and federal representatives involved in aquaculture regulatory and health management activities
- Review and approve health management content of Farm Management Plans
- Develop farm management policy and present educational content as required
- Review file applications from an aquatic animal health perspective.

December 2005 – June 2006

Canadian Food Inspection Agency

CFIA Headquarters, Ottawa ON

International Programs - Policy development associated with the import & export of animals & animal products.

March 2005 – December 2005

Canadian Food Inspection Agency

*Mitchell's Pork Plant & Wynyard Poultry Plant
Saskatoon SK*

Swine & Poultry Meat Hygiene Veterinary Inspector; responsible for ensuring Humane Transportation & Slaughter Federal Legislation

September 2004 – March 2005

Central & Westward Animal Hospitals

Small Animal Practice, Saskatoon SK

Locum veterinarian for two locations; provided veterinary medical care to pet animals.

May 2004 – August 2004	<p>Southport Animal Hospital <i>Small Animal Practice, Stratford PE</i> Full-time veterinarian; provided veterinary medical care to pet animals.</p>
May 2002 August 2002	<p>St. Paul Veterinary Clinic <i>Mixed Animal Practice, St. Paul AB</i> Veterinary student full time summer position: provided veterinary support to mainly beef cattle producer clients.</p>
May 2001 August 2001	<p>Canadian Food Inspection Agency <i>Nepean Ottawa, ON</i> Veterinary student full time summer position under the supervision of Canada's Chief Veterinary Officer, involvement with various projects within the Animal Products Directorate.</p>
June 1998 August 1998	<p>Naturalist – Peggy's Cove Whale & Puffin Tours, Peggy's Cove, NS Identified and provided commentary on local wildlife & nature in St. Margaret's Bay.</p>
April 1998 June 1998	<p>Laborer – Coldwater Sea Products – Mussel Farm, Glenhaven, NS Responsibilities included the daily up-keep and filling of mussel sock lines.</p>
May 1998 May 1998	<p>Research Assistant – Bedford Institute of Oceanography, Dartmouth, NS Research assistant aboard coast guard research vessel. Collected samples for haddock fecundity study during ground tows of various locations.</p>
May 1997 August 1997	<p>Creel Surveyor & Researcher – Ministry of Natural Resources of Ontario <i>Algonquin Park, ON</i> Gill netted, tagged, and aged fish of different species. Recorded various parameters and analyzed data from angled fish.</p>

AWARDS & MEMBERSHIPS

Current member of the Nova Scotia Veterinary Medical Association
Current member of the Canadian Veterinary Medical Association
Current member of the World Aquatic Veterinary Medical Association
Current member of The American Association of Fish Veterinarians
Past President of the Eastern Aquaculture Veterinary Association
Recipient of the Atlantic Veterinary College's
 2004 Phibro Award in Aquaculture &
 2003 Van Toever Award in Aquaculture & Leadership
Recipient of the 2004 Canadian Veterinary Medical Association Plaque
award given to a graduate nominated by their classmates for outstanding
qualities of scholarship, leadership and sportsmanship.
Atlantic Veterinary College Class of 2004 Vice President 2002-2004

OTHER INVOLVEMENTS

Past School Advisory Council Chair - Harmony Heights Elementary
Current Home & School Group Playground Project Grant & Funding
Coordinator - Harmony Heights Elementary
Summer Assistant Coach of both recreational baseball & soccer
Member of 3rd Degree Training Truro NS

REFERENCES AVAILABLE ON REQUEST