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14th January 2019,

Stakeholder Submission RE: Surveillance audits, Cermaq Canada's, Dixon Bay, Ross Pass and Millar Channel farms, by SAI Global Assurances Services

Living Oceans expresses our concern regarding the potential lifting of ASC certificate suspensions for Cermaq Canada's Clayoquot Sound farms: Dixon Bay, Ross Pass and Millar Channel.

All three farms, among others, experienced extremely elevated lice loads throughout the entire 2018 sensitive wild salmon out-migration period (defined as March to June). At their peak, Dixon Bay, Millar Channel and Ross Pass recorded 24.83, 30.1 and 34.3 motile lice per fish respectively – up to 10 times Fisheries and Oceans Canada's management threshold. Repeated treatments with SLICE led to the confirmation and spread of SLICE resistance in sea lice on the Vancouver Island West Coast. In addition to the absence of an area-based management scheme to mitigate the outbreak, Cermaq failed to deploy an alternative treatment, hydrogen peroxide, in a timely manner.

Consequently, Clayoquot Sound wild salmon were exposed to an unprecedented amount of sea lice during their 2018 out-migration. Independent monitoring found 96 per cent of wild juveniles carried lice, with a mean of 8.04 lice per fish. Lice counts ranged as high as 50 per fish, leading the researchers to state the sea lice outbreak has "likely had a negative impact on wild salmon in the region". This is particularly concerning given Clayoquot Sound wild salmon populations are in significant decline.

Of equal concern is the outlook for 2019. Cermaq has no approved alternate drug treatment for sea lice and the only permitted bath treatment, hydrogen peroxide, proved ineffective in maintaining appropriate lice levels during the 2018 outbreak. While the company has indicated its intention to bring a mechanical de-louser into service in 2019, it is not expected to be available until "around April". There is no clarity as to what effective method of louse control the company might employ during the March-June sensitive period.

We submit Cermaq Canada's farms are noncompliant with the ASC Salmon Standard as they have failed to meet the varied sea lice requirement, and more importantly, the intent of the sea lice indicator – which is to protect migrating juvenile wild salmon from elevated sea lice loads.

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Given the highly likely irreparable harm to local wild salmon caused by the sea lice outbreak, we submit it would be irresponsible to lift the suspensions and re-grant certification to these three farms. Doing so would erode the credibility of SAI Global, the ASC and their salmon standard and eco-label. Instead the withdrawal of the certificates should be initiated in accordance with the ASC's Certification Accreditation Requirements (CAR): "irrevocable removal by the CAB... of a certificate holder's certification as a result of noncompliance with certification requirements"

Further detail outlining our concerns are provided below.

i. Indicator 3.1.7 In areas of wild salmonids, maximum on-farm lice levels during sensitive periods for wild fish...

Sea lice levels begun to rise dramatically as early as September 2017 at Cermaq Canada's Clayoquot Sound salmon farms, giving way to a serious sea lice outbreak at farms over the 2018 out-migration. All three farms, among others, **experienced dangerously high lice loads throughout the entire 2018 sensitive wild salmon out-migration period** (defined as March to June). At their peak, Dixon Bay, Millar Channel and Ross Pass recorded 24.83, 30.1 and 34.3 motile lice per fish respectively. See tables 1-3 below.

Table 1 – Dixon Bay farm

Year	Date	DFO Motile/per fish (industry) ¹	Cermaq reporting ²	DFO Comments
2017	January	0.21		
2017	February	0.29		
2017	March	0.44		Survey methodology differs from sampling design outlined in licence conditions, but meets or exceeds the requirement
2017	April	0.39		
2017	May	1.34		Area management action planned; Survey methodology differs from sampling design outlined in licence conditions, but meets or exceeds the requirement

¹ <http://www.pac.dfo-mpo.gc.ca/od-ds/aquaculture/lice-count-dens-pou-2011-ongoing-rpt-pac-dfo-mpo-aquaculture-eng.csv>

² <https://www.cermaq.com/wps/wcm/connect/cermaq-ca/cermaq-canada/business+and+people/locations/dixon-bay-2017>

2017	June	0.6		Management action underway; 1st count precluded by a treatment or health management measure
2017	July	0.33		
2017	August	0.48		
2017	September	2.14		
2017	October	3.62		Management action underway
2017	November	3.42		Bi-weekly counts
2017	December	2.82		
2018	January	2.11		Harvesting
	2-Jan		4.23	
2018	February	3.43		Harvesting
	3-Feb		3.03	
	16-Feb		3.87	
	21-Feb		6.6	
2018	March	9.08		Harvesting
	3-Mar		8.23	
	7-Mar		12.9	
	8-Mar		7.13	
	14-Mar		8.97	
	20-Mar		8.63	
	31-Mar		10.17	
2018	April	13.92		Harvesting
	5-Apr		10.98	
	14-Apr		13.53	
	18-Apr		18.93	
	28-Apr		24.83	
2018	May	17.09		Harvesting; Count(s) not required (<4 pens)
	2-May		13.22	
2018	June			Count(s) not required (<4 pens)
2018	July			Fallow

Table 2 – Millar Channel farm

Year	Date	DFO Motile/per fish (industry)³	Cermaq reporting⁴	DFO Comments
2017	March			Recent transfer
2017	April	0.59		
2017	May	4.92		Area management action planned
2017	June			Management action underway; Counts precluded by management action
2017	July	0.68		
2017	August	2.11		
2017	September	8.96		Management action underway
2017	October	7.17		
2017	November	5.43		Bi-weekly counts
2017	December	5.11		Bi-weekly counts
	16-Dec		5.12	
	17-Dec		4.87	
2018	January	6.2		Bi-weekly counts
	2-Jan		6.83	
	3-Jan		5.83	
	16-Jan		5.78	
	19-Jan		6.87	
	24-Jan		6.29	
2018	February	10.07		Harvesting
	1-Feb		6.97	
	6-Feb		8.5	
	16-Feb		13.43	
	17-Feb		17.33	
2018	March	23.55		Harvesting; Survey methodology differs from sampling design outlined in licence conditions, but meets or exceeds the requirement
	2-Mar		20.07	

³ <http://www.pac.dfo-mpo.gc.ca/od-ds/aquaculture/lice-count-dens-pou-2011-ongoing-rpt-pac-dfo-mpo-aquaculture-eng.csv>

⁴ <https://www.cermaq.com/wps/wcm/connect/cermaq-ca/cermaq-canada/business+and+people/locations/millar-channel-2017>

	4-Mar		22.77	
	16-Mar		17.27	
	17-Mar		22.9	
	18-Mar		18.6	
	30-Mar		30.1	
2018	April			Counts precluded by diminished stock (<4 pens)
	1-Apr		29.13	
2018	May			Fallow

Table 3 – Ross Pass farm

Year	Date	DFO Motile/per fish (industry)⁵	Cermaq reporting⁶	DFO Comments
2017	January			Counts precluded by health management action
2017	February	0.42		
2017	March	0.46		Survey methodology differs from sampling design outlined in licence conditions, but meets or exceeds the requirement
2017	April	0.45		Survey methodology differs from sampling design outlined in licence conditions, but meets or exceeds the requirement
2017	May	4.92		Area management action planned
2017	June	0.72		
2017	July	0.3		
2017	August	0.7		
2017	September	2		
2017	October	2.37		
2017	November	4.17		Bi-weekly counts

⁵ <http://www.pac.dfo-mpo.gc.ca/od-ds/aquaculture/lice-count-dens-pou-2011-ongoing-rpt-pac-dfo-mpo-aquaculture-eng.csv>

⁶ <https://www.cermaq.com/wps/wcm/connect/cermaq-ca/cermaq-canada/business+and+people/locations/ross-pass-2017>

2017	December	3.86		Bi-weekly counts
	16-Dec		3.73	
	17-Dec		4.63	
	22-Dec		5.23	
2018	January	5.06		Bi-weekly counts
	1-Jan		3.9	
	2-Jan		4.23	
	16-Jan		6.7	
	17-Jan		6.13	
	19-Jan		4.2	
	24-Jan		5.83	
2018	February	12.7		Harvesting
	1-Feb		5.4	
	6-Feb		11.9	
	16-Feb		12.67	
	17-Feb		7.57	
	27-Feb		22.52	
2018	March	15.14		Harvesting
	2-Mar		13.77	
	3-Mar		10.2	
	4-Mar		15.53	
	15-Mar		13.77	
	19-Mar		13.67	
	20-Mar		23.9	
	30-Mar		29.77	
2018	April	25.08		Harvesting
	1-Apr		16.77	
	2-Apr		20.23	
	14-Apr		34.4	
	15-Apr		25.63	
	16-Apr		23.7	
	27-Apr		29.87	
2018	May	31.21		Harvesting; Count(s) not required (<4 pens)
	1-May		31.88	
	10-May		34.73	
2018	June			Fallow

Consequently, Clayoquot Sound wild salmon were exposed to an unprecedented amount of sea lice over during their 2018 out-migration. Independent monitoring by the Cedar Coast Field Station found 96 per cent of wild juveniles carried lice, with a mean of 8.04 lice per fish.⁷ Lice counts ranged as high as 50 per fish. The Cedar Coast researchers stated, “we can assume that this outbreak of sea lice will significantly decrease the marine survival of salmonids in Clayoquot Sound and will impact adult returns in coming years”. Based on previous outbreak events, they suggest on-farm sea lice mismanagement and SLICE resistance due to excessive treatments were likely the major contributors to the 2018 outbreak. They also suggested environmental factors such as warm temperatures and salinity were not effectively mitigated given the absence of an area-based management scheme. Meanwhile, Cermaq’s own commissioned sea lice monitoring found 40 per cent of coho and chum were infested, with one chum infested with 43 sea lice.⁸

Cermaq has not publicly disclosed any plan for management going into the 2019 wild salmon outmigration that gives any assurance that the events of 2018 will not be repeated. The company is permitted to use only SLICE and Paramove 50 for the control of sea lice and neither proved effective in 2018⁹. The DFO has confirmed that lice in Clayquot Sound were SLICE-resistant in 2018 and Cermaq advised the Clayoquot Sound Round Table that resistance was seen along Vancouver Island’s West Coast as far north as Clayoquot Sound last year. Paramove treatments used in Clayquot Sound farms in June and July failed to bring down area lice counts and resulted in re-infection of treated fish. There is no reason to expect these treatments to be more effective in 2019 than they were in 2018.

Cermaq advised the Clayoquot Sound Round Table in August, 2018 that it was anticipating delivery of a Hydrolicer “around April” of 2019¹⁰ and indicated that this would be their alternative treatment for sea lice. However, the Hydrolicer’s anticipated delivery date leaves the 2019 outmigrating juvenile salmon unprotected from the beginning of March against rising lice levels on the farms.

As per our previous stakeholder submissions on B.C. audits, we find the application of the sea lice variances 88 and 141 problematic as in practice no upper limit on absolute lice abundance, or on lice per fish is applied by CABS; thereby replacing a metric indicator with a loose management objective. DFO manages lice solely through the conditions of licence, requiring “management action” within 15 days of

⁷ <http://www.cedarcoastfieldstation.org/wp-content/uploads/2018/10/2018-10-Juvenile-Salmon-and-Sea-Lice-Monitoring-in-Clayoquot-Sound-October-26-2018.pdf>

⁸ <https://www.cermaq.com/wps/wcm/connect/a08bb1f5-818a-4fc9-8fa5-c0cbc8fafb31/Clayoquot+Wild+Juvenile+Salmonid+Monitoring+2018.pdf?MOD=AJPERES>

⁹ Paramove 50 treatment was reported by Cermaq to be “90-97%” effective but the effect did not survive the reintroduction of fish to the netpens, where ample numbers of motile lice awaited hosts. Losses of fish as high as 15% during treatment were reported at the Clayoquot Sound Round Table, where participants were told that the peroxide treatments would be repeated when conditions permitted: they are hard on the fish, reducing the protective mucous layer and causing a proliferation of caligus lice.
https://www.dropbox.com/sh/yifi3x1qz9pmsz1/AAAdjEN0uJt4uD7DYU0dVJdqa/2018/Aug%2015%202018?dl=0&preview=Clayoquot+Sound+Roundtable+Aug+15+2018+Minutes.pdf&subfolder_nav_tracking=1

¹⁰

https://www.dropbox.com/sh/yifi3x1qz9pmsz1/AAAdjEN0uJt4uD7DYU0dVJdqa/2018/Aug%2015%202018?dl=0&preview=Clayoquot+Sound+Roundtable+Aug+15+2018+Minutes.pdf&subfolder_nav_tracking=1, at p. 5

lice exceeding 3 motiles/per fish. While the farms did initiate harvest as their “management action”, **it took up to 6 months for area harvest to be completed meaning sea lice levels continued to rise to dangerous levels during the sensitive out-migration period.** We submit the farms’ sea lice levels and ineffective action is grossly inappropriate and therefore the ASC certificates for Dixon Bay, Millar Channel and Ross Pass should be withdrawn.

- ii. **Indicator 3.1.1 Participation in an Area-Based Management (ABM) scheme for managing disease and resistance to treatments that includes coordination of stocking, fallowing, therapeutic treatments and information-sharing. Detailed requirements are in Appendix II-1.**

The initial audit reports recognized Cermaq has no an Area-Based Management (ABM) scheme. The ASC requires all farms to have an ABM, even those operated by the same company. The audit reports also referred to Variance Request 145 for indicator 3.1.1 in aim that Cermaq can simply defer to current DFO management in the absence of an ABM scheme; despite the fact that the variance is specific to the ABM stocking requirement only.¹¹

Cermaq’s mismanagement of the 2018 Clayoquot Sound sea lice outbreak demonstrates that the intent of indicator 3.1.1, to ensure that salmon farms do not harm the health of wild fish populations, is clearly not being met. This is a result of no ABM scheme being in place. The ASC Salmon Standard states, “Area-based management (ABM) is a requirement... a lack of coordination can lead to negative outcomes, such as resistance to treatments”.¹² With high lice loads and SLICE resistance the Cermaq farms appear to be a case in point.

Salmon Standard Appendix II-1 (Application and rotation of treatments) states: “Farmers must be able to demonstrate a coordinated treatment plan and evidence that the schedule and rotation of treatments are being implemented.”

The Cedar Coast researchers concluded “Mismanagement of sea lice on farms, including the development of SLICE® resistance through intensive treatment, are thought to be the major cause of higher than normal lice abundances in Clayoquot Sound this year”.¹³ The delay in treating with an alternative treatment (i.e. hydrogen peroxide) was also thought to be causative: “This delay in treatment may have caused increased lice abundance on farms in Clayoquot Sound and an increase in lice spill-off to migrating wild juvenile salmon.” The authors recommend Canadian regulators adopt an ABM approach as a “first step in reducing risk to wild salmon”.

¹¹ <http://variance-requests.asc-aqua.org/questions/vr-145-exception-to-area-based-management/>

¹² Salmon Standard V1.1 p.30

¹³ <http://www.cedarcoastfieldstation.org/wp-content/uploads/2018/10/2018-10-Juvenile-Salmon-and-Sea-Lice-Monitoring-in-Clayoquot-Sound-October-26-2018.pdf>

A past peer reviewed study also found DFO's management policy to be inadequate for meeting ABM requirements for the application and rotation of treatments. Analysis by Bateman et al. (2016)¹⁴ suggest the combination of unusual environmental factors and delayed management action by farms contributed to the factors leading to the 2015 Broughton Archipelago sea louse outbreak. The study found DFO sea lice management policy to be "not sufficient" and instead recommended a cooperative, coordinated ABM approach be adopted. Specifically, the study observed a lack of coordination between farms, as demonstrated by the offset treatment schedules at some farms, including those owned by the same company.

Therefore, in the absence of participation in an ABM scheme (as detailed in Appendix II-1 and not cured by variance 145) and given the demonstrated mismanagement, we submit Dixon Bay, Millar Channel and Ross Pass farms are not in conformance with this indicator.

- iii. **Indicator 5.2.5 Maximum farm level cumulative parasiticide treatment index (PTI) score as calculated according to the formula in Appendix VII;**
Indicator 5.2.6 For farms with a cumulative PTI ≥ 6 in the most recent production cycle, demonstration that parasiticide load [87] is at least 15% less that of the average of the two previous production cycles

At the time of each of their respective initial audit reports, all three farms reported a PTI score of 9.6. We seek clarification on the type, amount and dates of parasiticide treatments. Given the Clayoquot Sound sea lice outbreak and the repeatedly rising and falling levels of sea lice per the farm counts, we suspect that numerous parasiticide treatments occurred, likely leading to a major non-conformance for these indicators.

- iv. **Indicator 5.3.1 Bio-assay analysis to determine resistance when two applications of a treatment have not produced the expected effect**

Evidence shows resistance occurred at Cermaq Canada's Clayoquot Sound farms during the outbreak.¹⁵ In May 2018, Cermaq confirmed they were "seeing resistance to [Slice]"¹⁶; however it was later reported that resistance signs first appeared in January.¹⁷

¹⁴ Bateman, A, Peacock, SJ, Connors, B, Polk, Z, Berg, D, Krkošek, M & Morton, A 2016, 'Recent failure to control sea louse outbreaks on salmon in the Broughton Archipelago, British Columbia', *Canadian Journal of Fisheries and Aquatic Sciences*, vol. 73(8), pp.1164-1172.

¹⁵ https://livingoceans.org/sites/default/files/Lice%20report%20final_0.pdf

¹⁶ https://www.dropbox.com/sh/yifi3x1qz9pmsz1/AAD8y-_88lLbyi23UQQ1__U3a/2018/May%2022%202018?dl=0&preview=Clayoquot+Sound+Roundtable+May+22+2018+Minutes.pdf&subfolder_nav_tracking=1

¹⁷ <https://vancouver.sun.com/news/local-news/drug-free-hydrolicer-treatment-touted-for-fighting-fish-farm-sea-lice>

On August 15, 2018, Jensen advised the Clayoquot Salmon Roundtable that, while they were still using SLICE, Cermaq were experiencing SLICE resistance in the sea lice on their farms. and that there was a progression of resistance to the drug along the whole coast of Vancouver Island.¹⁸ Jensen also noted that despite early harvesting and Paramove treatments, lice levels still failed to drop below the threshold. In fact, in many cases lice levels continued to rise (see tables 1-3 above).

Summary and Action Requested

We submit that Cermaq Canada's farms are noncompliant with the ASC Salmon Standard as they have failed to meet the varied sea lice requirement, and more importantly, the intent of the sea lice indicator – which is to protect migrating juvenile wild salmon from elevated sea lice loads. The absence of an ABM, although the Salmon Standard requires it, also contributed to the high lice loads and resistance.

Further, in the absence of any clear indication that the farms can be managed within the 3 motile lice per fish limit during the 2019 wild salmon outmigration, lifting the suspension of these certificates is clearly inappropriate.

Subsequently we contend, Dixon Bay, Ross Pass and Millar Channel farms should have their ASC certificates withdrawn, not reinstated.

We look forward to SAI Global's timely response to our concerns.

Sincerely,



Kelly Roebuck
Sustainable Seafood Campaigner
Living Oceans Society

¹⁸https://www.dropbox.com/sh/yifi3x1qz9pmsz1/AAAdjEN0uJt4uD7DYU0dVJdqa/2018/Aug%2015%202018?dl=0&preview=Clayoquot+Sound+Roundtable+Aug+15+2018+Minutes.pdf&subfolder_nav_tracking=1