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October 15, 2018

The Honourable Catherine McKenna
Minister of Environment and Climate Change
House of Commons
Ottawa, Ontario K1A 0A6

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RE: Request for Federal Environmental Assessment of Northern Pulp Nova Scotia Corporation's Effluent Pipe Project

Dear Ms. McKenna,

We the undersigned are writing to formally request that you, as Minister of Environment and Climate change, designate Northern Pulp Nova Scotia Corporation's proposed pulp mill effluent treatment project at Abercrombie Point, Nova Scotia, as one that requires a federal environmental assessment under the Canadian Environmental Assessment Act 2012. The proposed new effluent treatment facility includes a ten-kilometre pipe to discharge effluent from a bleached kraft pulp mill into the Northumberland Strait.

Subsection 14(2) of the Act states, in part, that you may order a federal environmental assessment for a project if, in your opinion, the project "may cause adverse environmental effects". We are confident that Northern Pulp's effluent treatment project may cause severe adverse environmental effects impacting multiple species. The following information is a short summary of the adverse environmental effects possible based on the proposed effluent release.

Furthermore, as explained below, we are confident that the anticipated negative impacts of the effluent project touch on several areas of federal legislative authority, namely: fish and fish habitat; aquatic species under the *Species at Risk Act*; changes that impact a province other than where the project is proposed (Prince Edward Island

and New Brunswick); and impacts to the aboriginal rights of Pictou Landing First Nation.

Northern Pulp's proposed effluent treatment project will pipe 70-90 million litres of treated pulp mill effluent containing harmful contaminants every day from the pulp mill into the Northumberland Strait, on to prime fishing grounds. A fact that was missed in Northern Pulp's original map of the discharge location. The Department of Fisheries and Oceans does not maintain maps of specific fishing locations, only generalized areas. The specific information is kept privately by fishers and is ONLY available directly from fishers, any other access to this information is anecdotal.

The Department of Fisheries and Oceans have been shifting their management methods over the years to incorporate a more robust, integrated plan. Ultimately, this means looking at management on a larger, eco-system scale rather than a species-specific or localized scale. This needs to be the case for effluent release as well. A more robust analysis needs to be considered incorporating the bigger picture: physical attributes of the Northumberland Strait, all species fished, their diet, life stages, ideal habitat, bioaccumulation, cumulative impacts and the direct and indirect effects the contaminants will have on all of these. It is not possible to expand on all of these in this short correspondence, but we will focus on some important examples.

The process undertaken by DFO was to identify Ecologically and Biologically Significant Areas (EBSA). This is a valuable tool accepted nationally and internationally for aquatic resource conservation. The Department of Fisheries and Oceans used the EBSA principles: uniqueness, aggregation and fitness consequences to examine the coastal area of the Southern portion of the Gulf of St. Lawrence. The criteria were applied to 32 fish and 23 benthic invertebrate taxa to isolate important areas (IA). Three IAs were recognized in order of priority: Northumberland Strait, St. George's Bay and the eastern end of Prince Edward Island (Figure 1) (Rondeau, A et. Al. 2016).

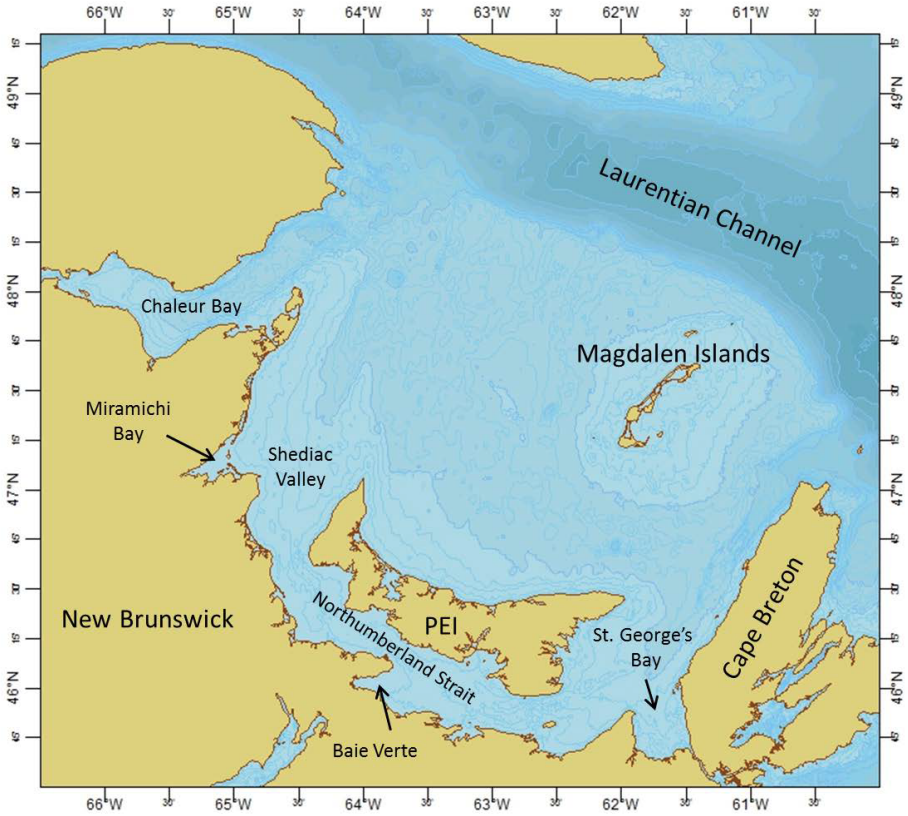


Figure 1: Map of the southern Gulf of St. Lawrence with place names identified. (Prince Edward Island = PEI).

The mean water flow in the Northumberland Strait is west to east and the residence time is weeks to months but this varies with seasons, storms, etc. (AMEC Earth & Environment 2007). There are also 2 gyres located at each end of the Strait (Fisheries and Oceans Canada 2005) affecting the residence time. These gyres have the capability to retain and redistribute particles, being larvae or toxins (AMEC Earth & Environment 2007). These are important to understand when considering different life stages of a species because it corresponds directly with larval drift and settlement.

To give this some context, we can look at lobster larval transport in the Gulf. Based on the previous description above one can assume that anything entering the Northumberland Strait will drift toward the east, up along the Western side of Cape Breton to the Cabot Strait, and out of the Gulf, but the description leaves out the timeline of this taking place. In 2010 Joël Chassé and Robert J. Miller published "Lobster larval transport in the Southern Gulf of St. Lawrence".

They broke down the Southern gulf to 25 larval source-sink areas (Figure 1) to look at the distribution between the time the eggs are released to the time the larvae settle. When the eggs are released they are reliant on the current for transport and only have the capability to swim to the bottom and seek out suitable habitat at stage 4 (3-12 weeks after release). Pictou (area 21) actually seeds areas 23, 24, 22, 20, 18 and 19

(Figure 2). Seeding in areas 18 and 19 are to a lesser degree but still shows a distribution from east to west, exemplifying the weak current present in the Northumberland Strait. These models were run for the larval and post-larval season, June 1st to September 30th, over a 10-year period. This shows lobster larvae are retained in the Northumberland Strait for up to 120 days while a product of the current and some actually end up west of where they were released rather than east; completely contradicting the description our harvester working group is being given by Northern Pulp and their consultants. This model showed that particular circumstances result in east to west currents lasting days to weeks (Hanson and Comeau 2017).

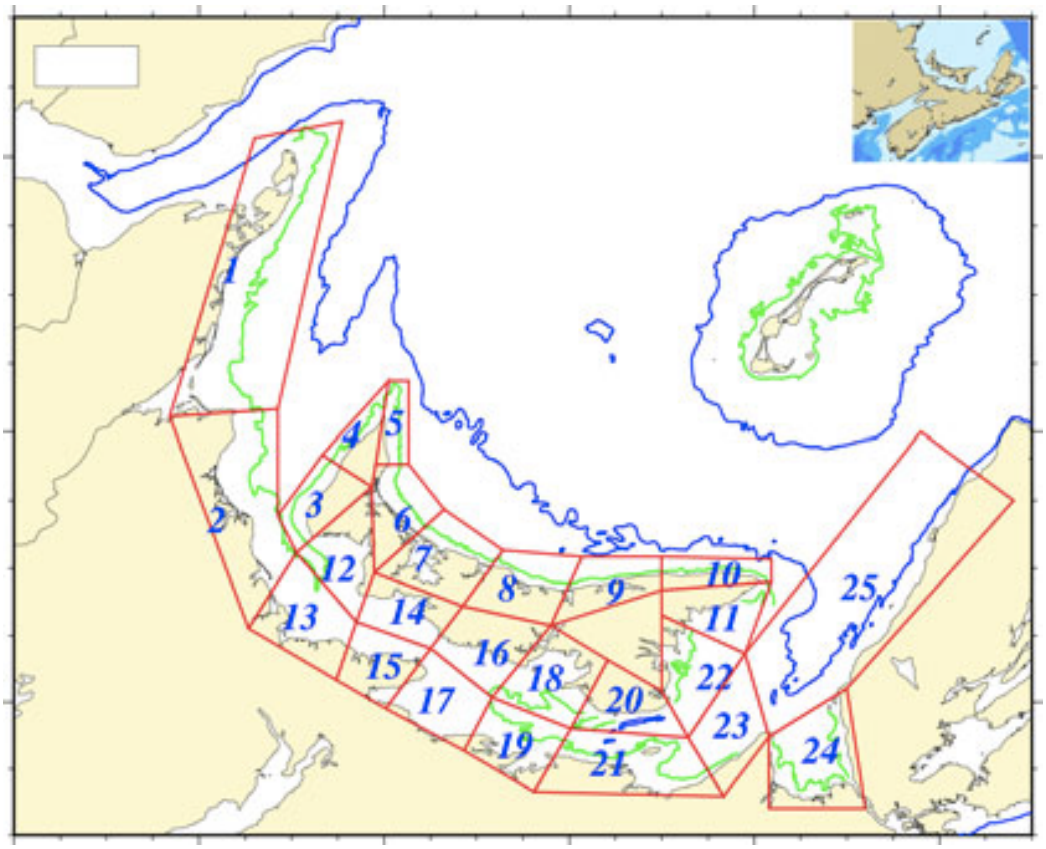


Figure 2: 25 larval source-sink areas from Chassé and Miller, 2010.

Building on this unique characteristic of the Northumberland Strait we can expand the scope of the eco-system from lobster to nutrients and contaminants and their effects on specific species.

There are two major types of bleaching processes, elemental chlorine free (ECF) and total chlorine free bleaching (TCF). In ECF, ClO_2, H_2SO_4, and other chemicals are used in a acidic environment to help enhance the stage of lignin oxidation (Kamali and Khodaparast, 2014). This method can create chlorinated pollutants such as chloroform, dioxins and furans (EPA, 1997).

Other contaminants released include heavy metals such as mercury, zinc, cadmium chromium, along with organics, alkylphenols, and oxygen depleting nutrients.

Every report presented by Northern Pulp states: “the location chosen provided the best dilution and mixing and thus the **lowest potential for long-term cumulative effects** on the fishery and socio-economic environments”, or, “located sufficiently into the Northumberland Strait to have **minimal impact** on water quality”, or “is **not likely to result** in potential adverse effect”. These statements are not acceptable to harvesters of the Northumberland Strait.

The Northumberland Strait is less than 20 metres deep over a large central area. Northern Pulp’s proposed outfall point was at a depth of only 10 metres. Northern Pulp’s proposed effluent release would include increased TSS (985 kg daily) as presented by the Stantec Receiving water study and explained via personal communication during the working group meetings with Northern Pulp.

As well, there are multiple risks relating to the presence of ice in the proposed outfall area. Some of these risks are recognized in the Preliminary Receiving Water Study, August 11, 2017 in section 4.2.2, pp 4.80-4.81. Briefly, ice is present in the Northumberland Strait for 4-5 months a year. Both surface and below surface ice is present. The Preliminary RWS notes that “…ice scour is possible and should be anticipated anywhere in Pictou Road and the Northumberland Strait area.” The report also cites an example of an MT&T cable which was “severed by ice keel at a water depth greater than 18m towards the Woods Island, PEI side of the Northumberland Strait.”

Issues relating to ice include damage to diffusers and the pipe itself, as well as difficulty in timely identification of inaccessibility to repair damage to the pipe during periods when ice is present. Additional issues include how ice presence would affect dispersion of contaminants in the effluent released into the area.

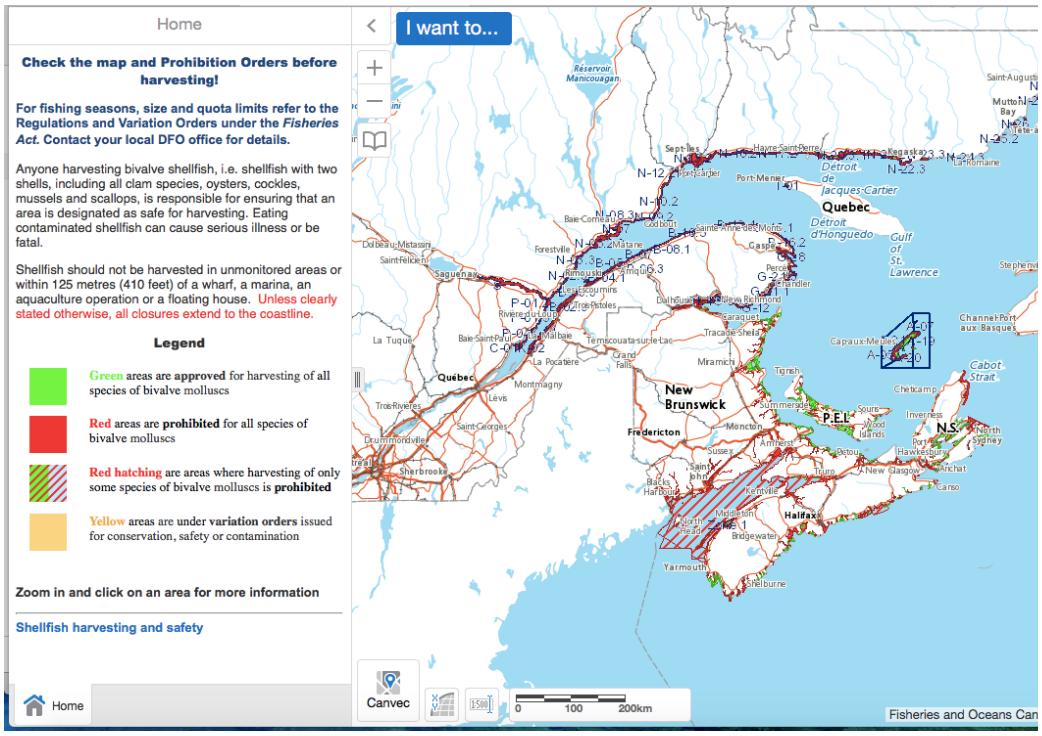
Table 1 shows a **brief summary** of the work that has been down over the years proving the negative effects of some of these contaminants. The majority of this research focuses on each contaminant independently and it’s effect on a specific species. There is very little work done to look at the cumulative effects of the slurry of toxins present in the effluent. Contaminants are often studied for their acute impact on marine life, but their long-term and chronic effects can be very important, especially on growth and reproductive health. Sublethal effects are very important to monitor, as is described by Daoud et al. 2014 and 2016. The emphasis here is that this is only a brief look at research completed. The sub-lethal effects are not listed below because there is too much information to capture in this brief submission.

Table 1: Brief summary of work completed identifying contaminants and their negative effects on specific species in the Northumberland Strait

Contaminant	Name	Species	Stage	Effects	Ref
Alkylphenol	4-di-methylbenzylphenol (Comp 1, 2, 3, 4)	*H. americanus*	Adults	Hemolymph Hepatopancreas presence	William and Laufer 2004, Jacobs et al, 2012
Alkylphenol	BPA, Comp 3	*H. americanus*	Larvae-stage II to IV	Survival drops moult delayed	Laufer, H., Baclaski, B. and Koehn, U. 2012
Alkylphenol	BPA, Comp 3	*H. americanus*	Adult	Shell hardening affected	Laufer, H., Chen, M., Johnson, M., Demir, N. and Bobbitt, J.M. 2012
	PNP	*H. americanus*	Larvae-Stage I	96-h LC50 = 71 µg/L	Lussier et al. 2000
		Pleuronectes americanus	Larvae	96-h LC50 = 17 µg/L	Lussier et al. 2000
		Mulinia lateralis	embryo-larvae	96-h LC50 = 37.9 µg/L	Lussier et al. 2000
Bleached craft meal effluent-chlorinated compounds		*H. americanus*	Adult Larvae	Mortality (only)-resistant at natural levels	Carlisle et al. 2009
Endocrine disruption compounds	Nonylphenol, estrogen, metals etc...	*Fish*		A VAST SUBJECT	Van den Heuvel, 2010
Combination of Chlorine and temperature increase		*H. americanus*		Higher toxicity when increase in temperature	Capuzzo, et al. 1976
Sublethal levels		*Lots on multiple fish species*		IMPORTANT SUBJECT	

BPA or Comp 6: bisphenol A; Comp 3 : 2,4-bis-(dimethylbenzyl) phenol; Comp 1: 2-t-butyl-4-(dimethylbenzyl)phenol; Comp 2: 2,6-bis-(t-29-butyl)-4-(dimethylbenzyl)phenol (MON-0585 a Monsanto mosquito larvicide); Comp 3: 2,4-bis-(dimethy;-benzyl) phenol; Comp 4: 2,4-bis (t-butyl)-4-(dimethylbenzyl)-6-butylphenol; Comp 5: 4-cumylphenol.

As mentioned above the cumulative effects of these contaminants have not been the focus of research. The request of this harvester working group is to have an in-depth look at cumulative effects completed. It has been pointed out to this harvester group that there are paper mills in British Columbia discharging into coast waters. When looking at what is happening surrounding those plants we found large bivalve closures due to the presence of biotoxins (Figure 3). This group is not putting the blame solely on those pulp and paper mills present in BC, but they feed into the cause of these closures. The harvesters of Nova Scotia, Prince Edward Island and New Brunswick cannot afford to see these kinds of complete closures in the Northumberland Strait and surrounding areas.



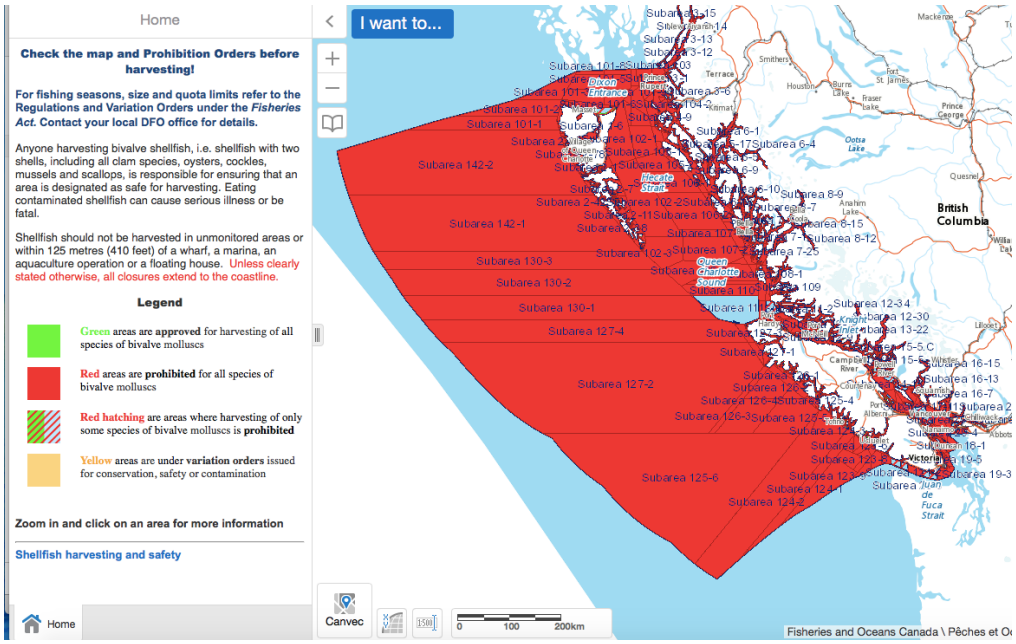


Figure 3: Bivalve Closures in British Columbia and Eastern Canada due to presence of biotoxins.(https://inter-w01.dfo-mpo.gc.ca/Geocortex/Essentials/Viewer/Index.html?viewer=CSSP_Public_En_Site)

The Northumberland Strait is home to numerous important and declining species. For instance, the central portion of the Strait acts as a major nursery for juvenile Atlantic Herring (Hanson and Comeau 2017). There are also very few herring spawning beds left in the Southern Gulf and one of those beds is located not far from the mouth of Pictou Harbour (Surette et al. 2016).

The Winter Skate and lady crab populations “almost certainly represent undescribed endemics” (endemism is the ecological state of a species being unique to a defined geographic location). Unfortunately, without crucial intervention to decrease adult mortality, Winter Skate has a high likelihood of becoming extinct before description of the species can be completed. (Hanson and Comeau 2017).

White hake are also reported in St. George’s Bay and the eastern end of the Northumberland Strait and this is also the only remaining spawning area and critical summer feeding area for them. Given the endangered status of this white hake population, according to COSEWIC 2013, concentrations of this species, specifically the adolescents in the three IAs, intensify the significance of these areas (Rondeau et. Al. 2016).

Atlantic Sturgeon is another species rare in the Northumberland Strait and was listed as threatened by COSEWIC in 2011. In early October 2018 there was an Atlantic Sturgeon caught in a herring net off Caribou, NS. This was explained through personal

communication along with pictures. The Sturgeon was previously tagged and was released healthy from that boat. This adds to the species of importance directly in the area.

In conclusion, this letter is a **brief** review of factual information we have identified. It is far from exhaustive based on the work completed surrounding the Southern Gulf of St. Lawrence and more specifically the Northumberland Strait. The information is widespread, focusing on but not limited to:

- the uniqueness of the area,
- ecologically and biologically significant zones,
- current nutrient loading
- current anoxic areas,
- species of interest in the area
- the delicacy of ocean acidification in the Northumberland Strait
- warming waters in the Gulf of St. Lawrence and the Northumberland Strait
- the changing eco-system in the Gulf from 2016-current

There are numerous reviews completed stating that more work is needed to better understand things like the nutrient loading and the corresponding anoxic zones. Continued effort needs to be made to better monitor ocean acidification as well as the changes in the ocean eco-system.

Although we are requesting that a Federal Environmental Assessment be conducted there is a lack of concrete scientific evidence proving the effluent is safe. Based on the importance of this ecological area to our collective fisheries, the proposed project cannot proceed.

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Sincerely,

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Maritime Fishermen's Union, President

Ronnie Leighton
Gulf Nova Scotia Fleet Planning Board, President

Andrea Paul
Pictou Landing First Nation, Chief

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Prince Edward Island Premier Wade MacLauchlan