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Dear Minister Heyman and the B.C. Environmental Assessment Office:

Re: reform of the province's environmental assessment process

We commend your government on this important step to reform the woefully inadequate British Columbia environmental review process which currently engenders a widespread public distrust and cynicism. We would urge the following changes to the BC EA process:

1. One of the fundamental flaws is the underlying premise that the function of the BC Environmental Assessment Office (EAO) is to facilitate projects to come to fruition whenever possible through mitigation, rather than to critically evaluate them with the full

possibility that they will be rejected. Rejection of unsuitable projects should be a completely normal part of the process, and not a rare anomaly.

2. All projects must undergo an Environmental Assessment (EA), and no politician or bureaucrat should be given the power to exempt projects from review.
3. In order to save government and public resources, a proposed project must undergo a rigorous preliminary feasibility review with clearly defined criteria to ensure that it will meet ecological sustainability requirements, BC greenhouse gas reduction targets, and will likely gain indigenous consent, before passing on to the next stage of assessment. This initial assessment must be conducted by an independent panel of scientists and citizens whose decision cannot be ignored, amended or overturned by politicians.
4. 'Site-specific' consideration or 'splitting' projects to enable site-specific reviews must be removed from the permitted terms of any project review. Mandatory, legally entrenched and defined, meaningful cumulative effects analysis done by independent scientists must consider upstream to downstream effects of projects, and must be based on comprehensive data that includes regional and global implications (such as the habitat of migratory bird and marine creatures). Wherever possible, mandatory co-operation on cross-border habitats and ecosystems must be secured. Legal definitions of ecological limits will end 'interpretations' of guidelines by proponents.
5. Projects must not be allowed if they contravene UN and other international conventions Canada and BC have signed. We must co-operate and work actively with Alaska, Washington, Oregon and California to protect the health of the North American West Coast. BC's environmental assessments must be based on the legislated duty to address accountability under the Species at Risk Act, Migratory Bird Act, Fisheries Act, Canada Marine Act and BC Environment Management Act, without influence from special interests lobbyists and politicians.
6. Projects must not be considered in areas where legally binding and scientifically rigorous ecosystem-based management area plans (including permanently conserved critical habitats) are not already in place. In areas of highest conservation priority, projects must not be considered at all.
7. A formal section of the assessment must give equal weight to the economic value of the existing intact ecosystem, including health and cultural benefits that will be affected by a proposed project: weight must also be given to not easily assessed non-monetary values such as community sense of place and well-being from viewing wildlife and landscapes.
8. The project proponent must be removed from their role as lead for the environmental assessment process: this is a fundamental flaw in the environment assessments that have taken place at DeltaPort over the years (see below). Vancouver Port Authority continues to be the lead agency and decision-maker on all projects in the Fraser estuary and lower Fraser, which has resulted in wholesale habitat loss.
9. Proponents currently prepare their own technical data for review by government scientists and bureaucrats often under pressure to approve decisions. Science must be independent and subject to mandatory peer reviews, with decisions open to review and appeal by the public.
10. The EAO agency and the process itself must be designed and funded to ensure independence from political or bureaucratic interference and the pressures of interest groups and lobbies. Meaningful accountability and transparency for process, regular publicly available reports and timelines for action must be implemented, with major

- public input based on full access to documents. The agency must be designed so that political short term gain must not trump long term sustainability planning.
11. The process whereby federal requirements to review are surrendered to the BC Environmental office or vice versa must be ended, unless rigorous independent environmental review are also legislated at the federal level to be safe from political interference. British Columbia must rigorously defend its own environmental management, when the federal government's reviews are inadequate.
 12. The standard operation of Crown corporations – particularly BC Hydro - and ministries should be reviewed for compliance with an improved EA process. Directors and Boards of Crown corporations should not have precedence over meaningful environmental reviews. The whole Site C approval process has been a travesty, an international embarrassment. The conduct of the Port authority concerning the expansion at DeltaPort has been a disgrace.
 13. Standard procedures within ministries that affect ecological systems – issuance of logging permits and water bottling licences – must be reviewed as a comprehensive policy and project under the EAO.

Our Society has participated for many years in environmental assessment processes, primarily the numerous expansions of DeltaPort at Roberts Bank, which have resulted in great harm to the ecosystem of the world's greatest salmon river, BC's mighty Fraser River; and we offer some details which illustrate the inadequacies of the environmental review processes which have sanctioned this widespread destruction. The past two decades have seen the federal government discard its constitutional duty to safeguard the waters and lands of Canada by dismantling or ignoring major federal environmental protection laws (Species at Risk Act, Fisheries Act, Canadian Environmental Assessment Act, Navigable Waters Protection Act), silencing scientists in the DFO and Environment Canada (EC) and politicizing government bureaucracies whose foremost duty is to care for the environment; this has been coupled with the determination of the former BC government to gut its public service and bulldoze through a series of energy and transportation projects with scant regard for the environmental effects on the Fraser River or any adherence to the spirit of existing environmental laws. The BC and federal governments then abandoned the duty to protect the Fraser River and essentially handed over control for regulation of the river and estuary to the Port of Vancouver (officially Vancouver Fraser Port Authority, VFPA): thus this non-accountable body run by a Board of Directors largely appointed from the industries that operate on the Fraser River and benefit from industrialization (with no seats for environmental groups) runs the process and gives the approval for those projects.

With the power to approve projects on its own or federal land, and the benefit of public tax dollars to provide billions of dollars in servicing infrastructure for projects, VFPA is making critically important decisions on as many as three hundred projects a year drastically affecting the health of one of the most ecologically important rivers in the world, while defying and ignoring laws, municipal concerns, hard-fought protective legislation and Species at Risk requirements.

Under the auspices of the VFPA, a series of disingenuous and disquieting environmental assessments for major projects on the Fraser River have failed to enforce the legislated requirement for credible cumulative environmental effects from past, current and future projects and have collaborated with proponents to facilitate the splitting of projects to avoid Panel

Reviews and allow site-specific impact statements. The most infamous of these was the use of DFO lawyers – salaries paid for by the public – to advise the Port on how to argue for a splitting in the Deltaport Third Berth and Terminal 2 review, to avoid a Federal Review Panel. The Port has ignored Species at Risk Strategies, directives and scientific recommendations from DFO and EC, as well as significant public input from knowledgeable local conservation organizations. It has ignored public anger and frustration with this blatant and arrogant dismissal of grave concern from scientists and public service groups about consequences of significant loss of river habitat. With the Port essentially managing the process and the inevitable rubberstamping of approval, the entire approval process for projects became an international spectacle that dismayed Canada's global conservation partners. Under the jurisdiction of the Port, we have now reached the crisis stage where Fraser River sockeye, once an abundant keystone British Columbian species, should be listed under the Species at Risk Act partly because the Fraser River has suffered such massive damage to salmon habitat.

The former provincial and federal governments advanced their plan for industrialization of the lower reaches of the Fraser River by aiding and abetting the Port's unscrupulous conduct to avoid meaningful environmental assessments, and then claiming they have no authority to counteract the Port's decision, while the Port discounts the cumulative effects of this industrialization. Thus CEAA could write to the BC Environmental Assessment Office to inform them that the shipping of LNG from the proposed WesPac Tilbury Marine Jetty Project was "beyond the care and control of the proponent, along with the designated shipping route within the South Arm of the Fraser River, from the Project's marine terminal to the pilot station at Sand Heads." (Letter from CEAA to B.C. EAO, August 24, 2015). The proposal for an annual passage of 90 LNG barges and 122 LNG carriers through the Fraser estuary, Boundary Pass and Haro Strait out to the Pacific appears to be therefore without oversight by any agency

In 1988, a Federal Review Panel rejected an application to build a jet-fuel facility on the Fraser River in Richmond, based on the grounds of unacceptable risks to public safety and river ecology from this flammable and toxic fuel, but in 2016 the Port of Vancouver and the BCEAO approved a similar project. Situated on earthquake-prone ground, this facility will allow large tankers to travel up the Fraser River's south arm for the first time. Environmentally damaging dredging will ensure clearance for these large tankers, and chronic or accidental spills during fuel transfers between tankers and storage tanks will spread rapidly on the river and into the estuary. A large spill or rupture would endanger this globally recognized habitat and life for eighty fish species, including endangered federally listed salmon and sturgeon, orca pods and migratory birds. These large tankers will be traversing the critical habitat of the SRKW, with a risk of a spill or ship strike and more noise pollution (Save the Fraser River Delta Ecosystem from Mega Projects, April 2016 page 41, 53, 54).

This project should have been the subject of a federal Review Panel because of the purview of DFO and Environment Canada with the Species at Risk Act, Fisheries Act and Migratory Bird Act, governing the five salmon species runs, herring, sturgeon, orca, and millions of birds that need the estuary. The terminal site is coded RED in the now defunct Fraser River Estuary Management Plan (FREMP) habitat mapping system, the highest coding for habitat designated

for protection, and both the BC and federal government should have refused to allow the destruction of this fish habitat on federal crown water lots. .

The proponents also claimed the shipping terminal (WesPac Midstream) was a separate project from the Fortis LNG project, splitting projects to avoid a full environmental impact study of a project that will require a pipeline, storage and process of LNG, electrical transmission lines, significant and constant dredging to allow large tankers to turn in the river, and the transport of large volumes of toxic and flammable gas through perilous navigation channels that wind through SARA critical orca habitat. The project also ignored cumulative effects of associated habitat loss on the Pacific west coast ecosystem, as well as omitting an inclusion of up and downstream greenhouse gas production from extraction to use.

Despite projects of such significance that they would automatically require a Federal Review Panel, and despite the fact that these projects involve federal ports and navigation laws and take place on federally protected habitat, waters and lands, the CEAA abdicated environment review responsibility by allowing the BCEA to conduct some assessments through ‘substitution’ or ‘equivalency’ agreements, which can allow decisions to be made in part by government ministers; this was despite BC’s stated determination to push through the LNG industry. Our inadequate EA process ignored the danger from a proposal that will bring over a hundred LNG ships or barges up the river annually and require constant dredging that will affect endangered salmon, oolichan, sturgeon and SRKW. Russian scientists have documented the ‘severe’ freefall of what was once one of the largest salmon runs in their country when an LNG terminal opened in the migratory estuary: scientists believe it was due to the accompanying noise, light and dredging (.“ (Save ... Projects, page 125-6 Otto Langer).

Project proponents aimed for provincial environmental review with its cursory and limited function, involving no consultation with the federal Minister of Transport and no real federal CEAA process or public role for DFO and Environment Canada. Commenting on the unsuccessful court challenge of the project by the citizen group VAPOR, the judge noted that the public had been “constrained by the law and disengaged from the environmental process.” (Comments by Madam Justice Dillon, January 24, 2016). With fourteen options, the decision to use a marine terminal was one of the most dangerous environmental options (Save the Fraser River Delta Ecosystem from Mega Projects, April 2016 page 56, 58- 59).

A 2011 report by B.C.'s Auditor General reprimanded the BCEAO because “Adequate monitoring and enforcement of certified projects is not occurring and follow-up evaluations are not being conducted”: the report also noted, "EAO's oversight isn't sufficient to ensure compliance and enforcement, or to avoid significant adverse impacts."

Thus the remaining 20% of original Fraser River habitat was in the hands of a partnership of the self-governing, industry-controlled VFPA and the Christy Clark government, both of which had widely stated plans for continued industrialization of the Fraser River: the Port speaks openly about its desire to develop the remaining 200 pockets of Fraser River industrial land. With its complete control, the Port has pushed through mitigation and compensation plans that have degraded and failed. The Port has not donated any land at all for conservation because their ultimate goal is the complete industrialization of the Fraser: rather they have been buying up

nationally superior farmland that also serves as critically important migratory bird habitat, for the expressed purpose of expansion.

Currently nine mega projects threaten the Fraser and the Salish Sea ecosystem. The Gateway Transportation Project has already completed four of these projects: the 40 km four lane South Fraser Perimeter Road, the Golden Ears and the Port Mann Bridge/Highway 1 Project and the Deltaport Third Berth and accompanying railway upgrades. These projects were bulldozed through the Fraser River habitat, much of it on the banks of the river in the space of a few short years, all built with the loss of irreplaceable wetland and fish habitat as well as forests and small woodlots that served as critical nesting and foraging areas. The edges of the protected areas of Burns Bog and indigenous historic cultural sites were lost, and destruction continues as development continues to nibble away at remaining habitat. The South Fraser Perimeter Road impacted Species at Risk (Pacific Water Shrew and Streambank Lupine) living on federally owned lands to be used for the road, which should have triggered an automatic Review Panel Assessment, but CEEA ignored this requirement and sidestepped this legislative safeguard by allowing splitting of projects and piecemeal assessments (Save the Fraser River Delta Ecosystem from Mega Projects, April 2016 page 62-73, 88-95).

Given the ecological importance of the Fraser to this province, nation and the planetary community, the destruction of habitat crucial to endangered fish and marine species, each of these projects alone should have triggered a Federal Review Panel and a major BC environmental review. These Gateway projects were all interconnected and should have been assessed collectively with a cumulative effects assessment under a Review Panel Process as required under the Canadian Environmental Assessment Act. Instead, piecemeal assessments and project-splitting for site specific reviews allowed them to be built without Review Panels or consideration of cumulative effects, discounting habitat loss and fragmentation of remaining habitat, resulting in permanent loss of riparian fish habitat, some red-coded for highest value to at risk species.

The Gateway Transportation Collaboration Forum (Transport Canada, B.C. Ministry of Transportation and Infrastructure, Translink, Greater Vancouver Gateway Council (GVGC), and Port Metro Vancouver) has no environmental members: the Vancouver Gateway Council is an industrial body of lobbyists. But voices that would speak for the wild creatures and the habitat of the Fraser River have been silenced or ignored.

The Port approved the construction of a facility to export up to 4 million tons of US thermal coal from Fraser Surrey Docks (largest coal exports in North America) with just a permit and no real environmental assessment, despite massive BC public opposition. Coal dust will drop into the river and the ocean, with deleterious effects on fish and marine mammals, impeding photosynthesis, clogging lungs and gills and impacting crustaceans as it settles to the ocean floor. This release of a deleterious substance into the waters is an offence under the Fisheries Act. There was also no accounting for the impact of coal-carrying vessels for noise or possible spill, and no climate change impact consideration for the extraction and future use of the coal (Save the Fraser River Delta Ecosystem from Mega Projects, April 2016 page 49).

More planned new terminals and bigger ships further along the river will require dredging, and the lowered river bed will alter the salt wedge and impact river and shoreline habitats, fisheries and adjacent farmlands. A deeper river could well lead to the loss of highly productive, red-coded riparian marshes and other habitat due to ship wake erosion and slippage of river banks into deeper waters. These significant alterations in the Fraser River ecosystems will impact numerous species, including federally and provincially listed species, which are dependent on the interactive habitats of the river, shorelines, waterways, ditches, farmland and Burns Bog.

Deep dredging also threatens migrating salmon fingerlings. Fuel and LNG tankers and pipelines will transect critical salmon habitat, and pose dire risks of spills either in the river or its tributaries and wetlands, the estuary or the Strait of Georgia. There is no safe time of the year for spills as Fraser River salmon and other fish are always in the area incubating eggs and embryos, overwintering as juveniles and then appearing as migratory adults, all eventually squeezing through the lower Fraser River; but a spill during the migration of an endangered species could spell the end of that species. More industrial activity affects water flows and decreases air and water quality in adjacent streams and the river itself, with pollution settling on the adjacent farmland or on the water or wildlife habitat (Save the Fraser River Delta Ecosystem from Mega Projects, April 2016, page 28, 36-45).

Through all these vacuous project approvals, the Port and governments have still failed to address the legally required cumulative effects of Tilbury LNG, South Fraser Perimeter Road, the Golden Ears and the Port Mann Bridge/Highway 1 Project, Deltaport Third Berth, more Burns Bog loss, Terminal 2, WesPac Tilbury Marine Jetty Project, Fraser Surrey Coal Shipments, and Vancouver Airport Fuel Delivery Project. Effects of the increase in greenhouse gases triggered by construction and sustained by use were required under cumulative effects, but ignored, despite decades of public frustration with the scientific inadequacy of joint government and VFPA review.

The VFPA's sole mandate is the promotion of the industrialization of the lower Fraser and its estuary, but the government has the higher duty of protecting the environment. Crown corporations are instruments of government and people, and under the Minister's control and responsibility.

Since its inception, DeltaPort has been steadily increasing its size in the Fraser estuary, despite warnings from international conservation partners and Canadian Review Panels. There has never been a vigorous conservation plan or comprehensive cumulative impacts assessment for the estuary to determine the extent of damage and irreversible loss the Port has already inflicted on this internationally important estuary. Terminal II will be the final nail in the coffin of the Fraser estuary.

The first expansion produced unpredicted dendritic channel formations that continue to slip today, despite mitigation efforts. DFO and conservation organizations have repeatedly listed concerns with the impact of DeltaPort operations: obstruction to migrating fish, increased resulting predation of those fish, incremental loss of nearshore fish feeding and nursery area with changes to eelgrass vegetation, lighting impacts, fuel spills, effect on juvenile Dungeness Crab, increased noise level and collision risk for resident Orca feeding in the area, footprint of roads,

container storage and parking, increased storm water into inter-tidal habitat, erosion and impacts of required dredging, etc. Environmental reviews did not consider the cumulative effects of these impacts on top of previous expansions, and allowed the Port to ignore the vital value of Roberts Bank for endangered SRKW, over 2 billion juvenile salmon and as many as 5 million migratory birds as the only Canadian feeding and resting stop on the Pacific Flyway.

In defiance of a 1979 Federal Environment Assessment Panel Review, the Port widened the causeway, dredged a ship-turning basin and built two container terminals. In 2003 the VPA presented a proposal for a Third Container Berth and a new Terminal 2, but to avoid a Review Panel Assessment, and with the collusion of DFO lawyers, withdrew Terminal 2 from the proposal to gain approval for Third Berth and avoid a complete cumulative effects assessment.

At one point the CEAA allowed the Port to set 2003 as a baseline for environmental effects, despite widespread development before that date, which could have been ascertained through maps, past studies, reports and photos. As a result earlier widespread damage to the Fraser ecosystem was not considered, including the extensive habitat destruction incurred by the construction of the Tsawwassen Ferry terminal and the earlier DeltaPort constructions. The cumulative effects of the proposed Gateway Transportation Projects, including the South Fraser Perimeter Road, were not included even though the combined habitat destruction and effect on interactive habitat would be perilous. It also avoided addressing the major erosion and deterioration of habitats in the inter-causeway between the Ferry Terminal and Deltaport, nor questioned the effects on shorebirds of introduced eelgrass on the sandbanks.

The Port of Vancouver now wants to build a 445 acre man-made island and expand the causeway in the very heart of the Fraser estuary to accommodate more container ships and industrial activity: but this project will irreversibly damage the ecosystem by obliterating 445 acres of critical aquatic habitat, including the critical biofilm found in the Roberts Bank mudflats. The new island will cause changes in currents and salinity in the area. The doubling of the Port's operation with proposed Terminal 2 will see increases in chemical and fuel spills and runoff from ships and equipment, affecting water and air quality and increasing the surface film of pollution through which the orca pods must surface to breathe. Since the federal government left the Proposed Recovery Plan for Southern Resident Killer Whales to languish for almost twenty years after this iconic species was first declared Endangered, why is it now considering Terminal 2 in Orca Critical Habitat?

The entire area of Roberts Bank is designated critical habitat under SARA, but the Port has continued to expand in this critical habitat. Under SARA, critical habitat must be legally protected from destruction within 180 days of being identified in a recovery strategy or action plan. Why then has Roberts Bank not been formally protected for Orca? Can there be a higher priority for protection than the feeding grounds? Was the federal government holding off on the Orca Recovery Plan to allow the Port time to approve its own expansions?

The Port claims to balance science and the environment but in reality ignores both the overwhelming scientific evidence and calls for a full cumulative effects assessment of development on the Fraser River. Notwithstanding the associated threat of noise, vessel collisions, ship strikes and toxic spills, vessel traffic through SARA-identified SRKW habitat is

virtually unregulated, despite the congested confines of the Fraser River, Gulf Islands, Strait of Georgia and Salish Sea. The Tilbury LNG proposal projects will ship LNG and jet fuel through the narrow lower Fraser River and out the shipping routes to the Pacific Ocean, risking catastrophic environmental damage as they traverse through waters that are some of the most dangerous in the world, with powerful currents and strong winds, as well as rocky shores. The limited environmental assessments of these projects mean that risk analysis for disaster from tanker shipwrecks and spills has not been done.

Despite efforts since the 1960s to protect Roberts Bank, we now have an industrial complex with a coal terminal and 3 container berths smack in the heart of the greatest salmon river in the world and the most important estuary in Canada, fragmenting the environmental integrity of the Fraser estuary and the surrounding waters. By 1977 the BC government had issued two Orders-in-Council which recognized the habitat value of crown water lots and land, with initial plans being already underway for the Roberts Bank Wildlife Management Area. Despite this strong conservation zoning, in 2006 the Port successfully lobbied the B.C. government to rezone 35% - more than a third! (2 852 acres) of the 8154 acres of critically important remnant inter-tidal marshes at Roberts Bank from conservation to industrial use for Port expansion before finally bowing to international pressure and creating the Roberts Bank Wildlife Management Area with the remaining acres.

The Port purchased this Roberts Bank Crown Water Lot (Parcel A) primarily for future expansion (the proposed Terminal 2 would triple the Port's current size). Jim Cox, Vice President of Infrastructure Development for the VPA informed the Corporation of Delta thus (July 28, 2005 letter): "the entire water lot is being acquired to provide design flexibility and to ensure that federal crown has control over not only the terminal site but also the land and water areas surrounding the proposed terminals for vessel, road and rail access. Parcel A will accommodate the D3 project and the T2 project when it is proposed."

Bowing again to international and domestic pressure, the BC and federal governments declared the Fraser River delta a RAMSAR site, but excluded the Roberts Bank Wildlife Management Area and the productive eelgrass beds in the vicinity of the Deltaport coal and container Terminals. But Roberts Bank is a critical habitat not found elsewhere in the estuary because of the specific mix of fresh and salt water with tides and temperatures that occurs at DeltaPort, creating unique nutrients not found anywhere else in the estuary and in other areas only in lower-nutrient production.

The recent transfer of two BC crown water lots on Roberts Bank – with no public discussion - to the federal government for Port development must be withdrawn (Order-in-Council 31). This follows on the heels of the 2006-8 transfers of 2852 acres of water lots in the same area to the federal government, where it was used for DeltaPort Third Berth expansion. In the Roberts Bank Terminal 2 Project Description Executive Summary September 2013, the Port confirms this intent, "Approximately, 117 ha of the Project will be constructed on federal lands managed by PMV. Approximately 52 ha of the Project will be constructed on submerged lands that are currently provincial Crown lands with no zoning designation. PMV has expressed an interest to the Province of BC to access these lands".

It also appears that clean fill for the proposed 445 acre Terminal 2 site cannot be found as sources themselves contain PCBs, which would further contaminate the site and its salmon and SRKW, already suffering the highest toxic level of all marine mammals on the planet (Mega... page 17). Any presumption on the part of the federal and BC government that Terminal 2 can be expanded without severe damage to the remaining intact habitat of Roberts Bank ignores fifty years of scientific research. These water lots are located in the federally designated SARA critical habitat for the endangered SRKW, as well as for migrating salmon, and millions of migratory birds. Canadian Wildlife Service's report on the Fraser River delta concluded: "no comparable sites exist along the Pacific coast between California and Alaska."

There can be no more failing attempts at mitigation or compensation for the loss of any more habitats: to suggest otherwise ignores the dire fact that only a fraction of the original habitat remain along the lower Fraser River. With the termination of the Terminal 2 proposal, these crown water lots must be returned to BC for inclusion in the Roberts Bank Wildlife Area.

During the last two decades since the SRKW was declared endangered, despite Roberts Bank being identified as critical feeding area for the entire BC population of orcas, the Port has been expanding for decades without any safeguards for the whales. How will the goals to "Protect the access of Resident Killer Whales to their critical habitat" and "Continue efforts outlined in Broad Strategy 3 to ensure disturbance from human activities does not prevent access of Resident Killer Whales to their critical habitat." work in the face of proposed Port expansion complete with significant increased risks to these creatures from collisions, underwater noise levels, salmon population drops and pollution. All three pods of endangered B.C. southern resident orcas live most of the year in Orca Pass, which is the shipping lane to and from DeltaPort, where Terminal 2 will bring another 260 more vessels through Orca habitat.

Port Metro Vancouver (PMV)'s projections are misleading and have been manipulated to justify further expansion: its forecasts and statistics are widely disputed by economists and public organizations, and it has never published a credible economic or cost/benefit analysis nor ever acknowledged the economic value of the natural ecosystems in the area. It proclaims a lack of industrial land despite massive industrialization of the lower mainland coasts and Fraser River. In the face of collapsing salmon runs in the Fraser, British Columbia and Canada must turn from any more industrialization of this estuary, and instead conserve what is left and attempt to rebuild. The Port can build elsewhere: the wild creatures have nowhere else to go.

For the past twenty years, the BCEAO and Canadian Environmental Assessment Agency (CEAA) have both failed to require a credible cumulative effects assessment for all the proposed projects in the lower Fraser, so that the Fraser is now in a crisis and a complete cumulative effects assessment of the Fraser River and its watersheds must be done, to understand how much habitat has been lost, to assess the current state of any mitigated habitat from project developments, and to study how climate change will affect the existing habitat. We need to assess the cumulative impacts of these ports, airports, industrial complexes, housing developments, rail lines, highways, and bridges, etc., and all the infrastructures needed to implement these projects. Disturbance to the Fraser River habitats and water flow has occurred from shoreline modification, pile driving, ground stabilization works, construction, dredging, forest destruction, sedimentation and pollution affecting water quality issues. Dredging for a deeper river and increased shipping has likely led to the loss of riparian marshes due to ship

wake erosion and slippage of river banks into deeper waters. Port development has significantly affected area farmland. This study must also consider the combined impact of all fishing, indigenous as well as commercial and recreational interests, and the effect of pollution and climate change on fish and habitats. Warmer water is stressing fish and limiting migration to spawning grounds (Save the Fraser River Delta Ecosystem from Mega Projects, April 2016, page 28, 36-45).

This data will form the basis of all future benchmark proposals, and will aid in conservation planning. Such a study must consider the impacts of these projects on interdependent and interactive habitats and ecosystems, as well as the wider cumulative impacts of increased industrial activity and shipping in the Fraser River and the marine areas that lead to the Pacific, particularly on orcas and humpback whales, chinook and all the other species of salmon and their prey species, sturgeon, eulachon, and herring, etc.

The Port of Vancouver has been permitted to ‘enhance or mitigate’ habitat destruction incurred during its various projects by altering existing habitats on public assets or crown land in the Fraser delta, rather than setting aside conservation areas in perpetuity. Under ‘Habitat Banking or Habitat Enhancement Programs’, the Port has been allowed to attempt to increase habitat value on existing habitat areas in order to obtain credit for further habitat destruction in areas they wish to develop such as Roberts Bank subtidal habitat. These activities such as cleaning areas or removing a few logs are often found to do more harm than good, as they are not based on credible science

(www.vancouver.sun.com/technology/port+metro+vancouver+cited+greenwashing+contentious+habitat+restoration+works+boundary/8860896/story.html). (Mega .. Otto Langer).

Labelled enhancement, such work is essentially superficial when placed against the massive loss of habitat for which the Port is responsible, and in no way offsets cumulative habitat destruction. With only 15 to 20% of the habitat left, and 80% lost to development and industrialization, there can be NO MORE HABITAT LOSS. We have reached the saturation point for development in the Fraser River, evidenced by the near collapse of its wild creatures. Are we going to push them all to extinction?

“It has to be appreciated that we now only have remnant marsh and habitats remaining along the river. Only about 20 percent of what existed over 100 years ago remains. Why would the federal government design a program that will nibble away at this last 20 percent?Port Metro Vancouver and the Department of Fisheries and Oceans are indeed taking us and the habitat that still supports world class populations of wildlife and salmon down a slippery slope.” (Otto Langer retired Senior Biologist, DFO, March 14, 2014).

Environmental assessments under the auspices of the Port have assumed that habitat destruction was acceptable, with mitigation as a public sop: the deliberate omission of cumulative effects assessments and the splitting of projects into smaller, site specific assessments have allowed the Port to pretend that each project’s habitat loss is slight, thus avoiding addressing the irreversible and significant loss of habitat from all those projects combined. The policy of no more net habitat loss is too late, we have already incurred too much loss, and we must begin to aggressively take back habitat. There must be strict designations and legislated protection for

remaining habitat, and innovative, carefully researched public purchases and habitat restoration attempts.

Consideration must be given in environmental assessments to the natural value of ecosystems, or example, fishing and farming on the Fraser River are keystone industries. The Pacific Salmon Commission indicated the 2012 Fraser River sockeye salmon run of 2.3 million fish was worth approximately \$25 million. The Fraser River estuary and Fraser Valley produced over 62% of BC's gross farm receipts (approximately \$1.6 billion) in 2012 (Ibid). The Fraser River's recreational fishery provides roughly 7500 jobs, half of the support industry jobs in BC. "Sport fishing generates \$180 million a year....Not to be overlooked are the many social and cultural benefits the Fraser's fisheries provide through recreation, tourism and enhancement of our way of life." (The Economic Importance of the Lower Fraser River July 2014 Prepared by the Richmond Chamber of Commerce).

Tourism and the esthetic value to communities from retention of natural habitats is another benefit to healthy ecosystems. DFO reports, "On the Canadian Pacific Coast in 1998, 285,000 whale watchers generated direct revenue of approximately \$14 million and a total revenue of approximately \$108 million. Whale watching also possesses the ability to stimulate additional tourism activities contributing economically to coastal communities and encouraging related industries. Whale watching has become a vital industry for at least eleven coastal communities in British Columbia with the creation of new jobs and businesses. Communities like Tofino, a former fishing community on the west coast of Vancouver Island, and Telegraph Cove, a former sawmill town on the east coast of Vancouver Island, have been transformed by the economic benefits of whale watching. Whale watching in Pacific Canada has also become an important source of foreign currency as the majority of whale watchers are non-Canadians." (Backgrounder on Whale Watching DFO). Bear in mind this is a twenty year old statistic.

Figures for BC birding ecotourism are not available, but Nature Canada reports that in 2006 the 20% of the American population who watched birds spent \$36 billion on their activity (<http://naturecanada.ca/news/birdwatchers-have-a-positive-effect-on-the-economy/>). One would expect that number to be significantly higher ten years later.

A report by the David Suzuki Foundation entitled Valuing the Aquatic Benefits of British Columbia's Lower Mainland Nearshore Natural Capital Valuation, November 2012, attempts to value the Georgia Strait aquatic ecosystems (including the principal watersheds draining into it). It reported that

"The marine floor, salt marshes, eelgrass beds, estuaries, beaches, and rivers and lakes of the study area provide carbon sequestration to the residents of the Lower Mainland and globally. Anywhere from 1 billion to 19 billion tonnes of carbon are stored in these areas, yet they are increasingly being degraded, resulting in a release of stored carbon. In the period between 1990 and 2008 B.C.'s CO₂ emissions increased by 32 per cent..."

"...the value of carbon storage capacity for the study area [was] at \$40 million to \$44 million per year. Extrapolating these results to the findings of the Lower Mainland case study, we find that the conversion of wetlands to golf courses, agriculture, and landfills has resulted in costs ranging from \$2.3 million to \$4.7 million in lost carbon sequestration and storage value."

The hidden values that natural habitat offer such as flood control, carbon sequestration, water regulation and waste processing as well as the value of tourism and community esthetics to tax bases are rarely publicized, despite their vital role. The Vancouver Sun reported that a major flood on the Fraser River could do as much as \$30 billion worth of damage as Canada's most costly natural disaster. With climate change increasing the threat of flooding, Canadians must be educated on the preventative value of wetlands and natural habitat and the importance of preserving the remaining Fraser River wetlands. . Natural areas like marshes and eel grass beds help regulate disturbances such as floods, possible earthquakes or tsunamis, and climate change effects as well as regulating water flow and waste purification, thus ameliorating the tremendous costs associated with artificially managing these processes.

In contrast, the true cost of industrialization of natural areas must be publicized: destruction of habitat leads to more costs from events like flooding. The economic losses from the effects of global warming that Terminal 2 would produce through its operations, including vessel emissions associated with shipping goods from factories to the Port of Vancouver, and then distributing to consumers, will put the purported economic benefits of the expansion in proper perspective, particularly when added to the lost natural benefits as outlined above.

We thank you for your attention to our concerns.

Yours very truly,
BC GREAT BLUE HERON SOCIETY



Gillian Anderson
Chair