March 3, 2019

Suzanne Smith
Assistant Manager
Office of the Auditor General
PO BOX 9036
Stn Prov Govt
Victoria, BC V8W9A2
Via email: ssmith@bcauditor.com

Re: **Auditor General’s Request for Input on Wetland Management in BC**

Dear Ms. Smith,

BC Nature (the Federation of BC Naturalists) represents more than 50 naturalists’ clubs and more than 6000 members province-wide. Our membership consists of dedicated naturalists, including scientists, who are connected to and have expertise about British Columbia’s landscapes and the diversity of organisms that inhabit them.

As a member of the Wetland Stewardship Partnership, BC Nature attended the January 29, 2019 meeting where partners addressed the Office of the Auditor General’s forthcoming wetland management review. Attached find our response to the question, “What areas present the biggest threats to the provincial government’s management of wetlands?” along with some of our views about the protection of wetlands in BC. Apologies for not providing you with our input sooner.

We thank the Office of the Auditor General for undertaking this review and we look forward to reading the findings and helping to implement the recommendations.

Yours truly,

Alan E. Burger, PhD
President: BC Nature
(Federation of BC Naturalists)

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Provincial Wetland Management and Conservation Issues

- We ask that the BC Government make wetland conservation a serious priority. Wetlands comprise a relatively small percentage of BC's total landscape (~2% is fresh water), yet have extremely high social, economic, and ecological values.

- A decision framework based on eco or natural capitalism principles (dollar values on ecological goods and services) would help rectify previous choices that favoured industrial development that resulted in negative impacts upon wetlands. Decisions about wetland conservation must account for these ecological values or functions: water quality, base flow support (e.g., aquifer recharge and discharge), peak flow reduction and erosion control, organic matter production and export, nutrient cycling, carbon cycling and sequestration, biomass production, and wildlife habitat, especially as it pertains to species at risk. Decision makers must adequately account for the objective (i.e., science based) values of wetlands as well as their important intrinsic values.

- We express concern about threats to the hydrological processes that influence wetlands. We believe that one of the primary threats to wetlands is their direct or indirect drainage. The depth, duration, and frequency of water inputs control the development of clearly distinguishable communities along a moisture and topographic gradient. The amount, quantity, and quality of surface and ground water input to wetlands can often be managed to protect wetlands. This management is particularly relevant where human activities influence the amount or ratio of impervious to non-impervious surfaces (e.g., urban watersheds) and/or make large changes, either singularly or cumulatively (e.g., logging). Both human and non-human influences must be taken into account.

- The unintended consequence of wetland manipulation, coupled with the effects of climate change, requires policy flexibility. Government managers must remain responsive to environmental changes and be willing to adjust rules so that wetland ecosystems retain their functions. We recognize that the possibility of rule changes may be considered a threat to management and those industries exploiting the wetlands, so education is needed.

- We cannot overstate our serious concerns about the effects of climate change. Wetland habitats depend upon various water inputs affected by climate change (e.g., rain, runoff, groundwater, tidal). Changes to normal water conditions, such as temperature and chemistry, threaten species that include wetlands in their life histories.

- Raising dykes in response to rising sea level threatens wetlands. Our dykes and other water management infrastructure require examination as changes in water conditions and extreme weather events have impact upon the persistence and expansion of wetlands in front of (e.g., estuaries, salt marshes) and behind (e.g., flood plains). Some governments purchase lands ‘behind’ the dykes, so that new dykes can be positioned further inland, thereby resulting in additional areas of brackish water and intertidal wetlands when the former dykes are removed or breached.

- Greater government regulation, enforcement, and resources are required to manage invasive or introduced species that threaten wetland health, function, and wetland dependent native species. Existing invasive species management programs in BC work proactively and
effectively; thus, we suggest that similar programs specifically target wetlands, particularly in coastal environments.

- We suggest rectifying the serious lack of inventory and appropriate management (e.g., setbacks, connectivity) of wetlands, particularly small and medium, across BC. Decision-making requires inventories for the achievement of conservation goals and adaptive management. Inventory needs to include permanent, ephemeral, and underground water bodies. Smaller wetlands contribute to the well-being of their surrounding ecosystem and provide critical habitat for a number of species at risk (e.g., tailed frog, western toad, spade foot toad, pacific giant salamander, Garry oak plant and invertebrate species) as well as species not at risk. The Provincial government should conduct or require inventory of all wetland types and sizes on crown lands, and manage them for a sustained future.

- The Province needs to implement a B.C. standardized wetland inventory system/protocol, as previously discussed by the WSP. A user friendly, open source central data collection system and repository, merged or linked to existing data, will enable regulators and developers to know the status of wetlands. Private industry, registered professional biologists, foresters, agronomists, and federal, local, indigenous, and regional governments must be required to share all resource inventory, monitoring, and/or research information collected on wetlands, particularly those on provincial crown lands. Proprietary issues around data submission and use needs to be resolved on a provincial level. A standardized wetland inventory instrument for professionals will necessarily be technical; the addition of a parallel, shorter, simpler form would encourage input from citizen scientists.

- The backlog of data entered into government databases needs to be made available. Currently a lack of in-house Provincial government coordination on data entry and sharing limits input into central repository systems such as SPI or the CDC. In the absence of adequate data, government should take a threats-based management approach, by ameliorating past threats and addressing current and future threats.

- A lack of monitoring makes it difficult to determine the success of mitigation measures and to assess adequate compensation. Previous assessments have disclosed an absence of or inadequate monitoring of ‘created’ or ‘enhanced’ wetlands. When monitoring has occurred, the results show limited success in establishing well functioning wetlands. Thus, 1) compensation is ineffective, with the loss of wetlands and the likelihood of continued loss; and 2) regulatory and enforcement systems to follow up on monitoring and compensation works are proving inadequate. Should compensation even be considered and allowed? If so, what requirements must be put in place to ensure its effectiveness (e.g., bond, compensation ratio (2:1, 4:1, other), follow-up monitoring, legal accountability if not successful). Those responsible for inadequate compensation should be held accountable. The environment and the public should not bear the negative impacts caused by individuals or corporations benefiting from their failure at wetland protection or compensation.

- We have deep, ongoing concerns about the mismanagement of the Fraser River estuary wetlands and provincial Wildlife Management Areas in the Fraser River delta. The Fraser River estuary serves as an internationally recognized wetland of global importance. It is a designated global Ramsar site, a Western Hemispheric Shorebird Reserve Network (WHSRN) site, a globally significant Important Bird and Biodiversity Area (IBA) and is classified under that international program as an “IBA in danger”. It includes an internationally significant peat
wetland: Burns Bog. The Fraser River Estuary wetlands feed and shelter migratory birds, particularly waterfowl and shorebirds, salmonids, and serve as a nursery area for many invertebrates. The estuary supports a network encompassing many ecosystems and a great diversity of interdependent species. Management of the estuary has taken an “industry, transportation network, and development-first” perspective since the 1800s. As a result, many of the functions of the estuary and its ecosystems have been highly compromised, and are failing to fulfill their natural potential. Examples include:

- the dramatic shrinking of salmon and eulachon runs;
- the decline of native species of birds and animals, particularly those dependent on salmon, such as the endangered southern resident population of orcas;
- the encroachment on habitats by non-native species, both flora and fauna;
- the increase in non-native rodents (two species of rat) associated with shipping ports;
- the increase in non-native shellfish and plants that have altered the composition of tidal flats with a likely impact on shorebirds and waterfowl;
- port development on Roberts Bank that risks breaking the chain of the Pacific Flyway;
- the loss of harvest opportunities for indigenous people.

These are just a few of the numerous impacts on the estuary that have been extensively documented in literature and indigenous spoken history. A first step in addressing the backlog of problems suggests one central agency linking all the jurisdictions at every level of government, with binding power to protect functioning ecosystems, and to begin the slow crawl back to restoration where possible. In the past, FREMP attempted to do this. We need a renewed effort (FREMP on steroids) to get a truly comprehensive and effective approach to controlling the rampant loss of habitats. Major federal trade and industry initiatives, provincial under-funding, the Vancouver Fraser Port Authority, and an out-of-control land valuation situation are driving the Fraser River estuary to extinction as a functional wetland. Nothing less than a high level, federal-led initiative with substantial funding will begin to address the inconceivable loss of this priceless wetland asset.

- LNG plants and other related fossil fuel projects (e.g., Delta Port expansion, Surrey coal transfer facility) continue to impact and threaten wetlands and species that use them.

- The ongoing construction of dams (e.g., Site C) continues to be a major threat to wetland habitat in BC.

- Ongoing industrial development on properties adjacent to or connected to wetlands are fragmenting them and compromising their function. Burns Bog continues to suffer from neighboring industrial development, including the South Fraser Perimeter Road. We would like to see the Provincial government, as one of the four responsible parties of the Burns Bog Covenant, take leadership in fulfilling its role to protect the integrity of this very important and unique wetland.

- We express concern about the continued loss of wetlands for agricultural purposes, in particular, large-scale monocultures and the spread of greenhouses. Few regulator constraints on agriculture activities exist to protect wetlands. Large areas of once rich natural wetlands, such as Pitt Meadows, Richmond, Abbotsford, North Delta, Tsawwassen, and Ladner have been and are being lost, to monocultures and suburban development. These areas become biodiversity deserts, with no semblance to their natural condition, function, and value. Greater regulatory requirements need to be placed on the agricultural sector to maintain remaining wetland habitats, and incentives need to be offered to encourage effective wetland restoration.
• Pollution threatens wetlands and the species that depend upon them. We support government policies, regulations, and enforcement dealing with impacts from pollution. Some of the human activities that directly or indirectly pollute wetlands or water bodies connected to wetlands include:
  o forestry (e.g., sedimentation, herbicides),
  o agriculture (e.g., live stock wastes, nitrification - nitrates, pesticides and herbicides),
  o transportation (e.g., chemicals from vehicles - brakes, oil leaks),
  o fossil fuel (e.g., natural gas, coal, oil) extraction, processing, and distribution. Key areas of concern include Northeastern BC and projects such as Fraser Surrey docks, Roberts Bank Superport, and Westridge Marine Terminal.

• Irresponsible outdoor recreational activity threatens our natural environment, including wetlands. Threats relate to the type, amount, extent, duration, timing, severity, and location of activities. For example, riders commonly use motorized off-road vehicles on crown lands all over the province throughout the year. Certain enforceable regulations discourage users from impacting sensitive habitats, but many of our members have witnessed direct or indirect impacts to wetlands and associated habitats and wildlife. Behind these impacts lies a lack of government management that results in a free-for-all and ‘it’s my right to use crown land’ mentality. Increasing recreational use on or very near to intertidal marshes in the Lower Mainland (hunting, kayaking, canoeing, photography, off-leash dogs) raise concern. Some sensitive intertidal marshes should be ‘no go’ for any human activity.

• Forestry related issues of concern include:
  o a lack of wetland inventory,
  o a need for more specific research (e.g., fish and wildlife use, woody debris recruitment, relationship between riparian and wetland environments),
  o management requirements to understand and prevent impacts (e.g., shading, changes to water conditions, hydrological connectivity) from forestry activities (e.g., harvesting, roads).

• Forested wetlands lack the recognition they deserve as ecosystems more varied than their surroundings (especially second growth), with their water, high humidity, thermal attenuation of climatic extremes, often increased diversity of vegetation types, and service as refugia for many species of plants and animals. Small and non-fish bearing streams that contribute to the maintenance of forest wetlands lack adequate protection.

• Priority needs to be placed on ensuring the protection or restoration of wetland habitats as soon as possible so that their species, in particular those at risk, can survive and recover. Examples of species at risk that depend on wetlands in BC include Oregon spotted frog, Pacific water shrew, Western painted turtle, and Vancouver Island beggarticks.

• Since provincial Crown Land occupies 94% of owned land in BC, our government plays an extremely import role in wetland management and conservation. The Province’s current Acts do not adequately protect wetlands (e.g., FRPA and other Acts do not protect small or ephemeral wetlands). We require consistency in policy, laws, regulations, inventory, responsibility, and monitoring across all levels of government. Current protection tools such as Wildlife Habitat Areas, Wildlife Management Areas, and Old Growth Management Areas do not effectively, efficiently, or adequately protect wetlands. We need a results based system of ecosystem and species management that includes wetlands. The Provincial government...
requires a comprehensive plan, with adequate resources, to take effective actions to conserve wetlands now and in the future.

**Solutions include:**

An overall management framework that addresses wetland conservation in the short and long term and legally required management steps to ensure sustainable outcomes;

Legal requirements of policy makers and government officials to weigh all current and expected negative environmental impacts of human activities on wetlands with science-based consideration of potential consequences for their environmental, social, and economic sustainability;

Employment of a mitigation system that follows the following sequence: avoid the impact; minimize the impact; rectify through restoration; reduce or eliminate the impact over time; compensate for the impact by replacement, enhancement, or substitution; and monitor the impact and the compensation project;

Protection of existing native wetlands and creation of many more effective wetlands;

Education of government, industry, and the public to the immense importance of sustaining and restoring the ecological health and viability of the Fraser River estuary;

Provide adequate resources to achieve these solutions and work immediately and rapidly to implement them.

**Important Literature**


Unknown author. 2003. Agencies, organizations and individuals supporting wetland conservation in BC.

