Submission to the Government of British Columbia
Ministry of Environment, Water Policy Branch
By the Environmental Law Centre and
The Land Trust Alliance of BC

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Water Act Modernization

1. Introduction

We are pleased to provide you with the submission by the Environmental Law Centre and Land Trust Alliance of British Columbia on the *Water Act* modernization process.

The Environmental Law Centre provides public interest environmental law services to community organizations and individuals throughout BC, and delivers most of its programs through law students in the Environmental Law Clinic at the University of Victoria. For more information see www.elc.uvic.ca.

The Land Trust Alliance of BC is an umbrella organization dedicated to the stewardship and conservation of our natural and cultural heritage through support of land trusts, conservancies and others. We provide education, research, communication and financial services. Our close to 100 members include over 30 local and two province-wide land trusts working in many communities throughout the province. Many of these land trusts work together on particular conservation or stewardship projects and campaigns. For more information go to http://www.landtrustalliance.bc.ca.

A land trust is a non-profit, charitable organization committed to the long-term protection of natural and/or cultural heritage. Such an organization may own land itself, or it may enter into conservation covenants with property owners to protect or restore natural or heritage features on the owner's land. Land trusts also engage in stewardship, restoration and management of lands. The words "land trust" and "conservancy" are often used interchangeably. Land trusts are independent non-government organizations; however they frequently work in partnership with governments, foundations, businesses and other organizations in achieving shared conservation goals.

Most land trusts are concerned with protection and conservation of our natural heritage. That natural heritage has at least two components – land and water. While land trusts can protect and conserve land and terrestrial resources through purchase or donation of the fee simple interest, lease or conservation covenant, conservation of the water component is much more difficult.

Water is an indicator of ecosystem health and function. Streams, including rivers, lakes, creeks, springs, ravines, and wetlands, include not just the water flowing through them, but the food webs and nutrient cycles that operate within their beds and banks, the sediment loads they carry, the deltas they form near their terminus, and even parts of the coast or inland seas into which they empty. Streams are a complex mix of physical structures that include plants, animals and insects that together are needed to ensure full function. They are complex systems that do critical, yet complicated work.

In addition to providing water for drinking – fundamental for human survival – these systems also supply agricultural, industrial and municipal uses, sustain terrestrial and aquatic flora and fauna, and maintain instream services such as flood control and purification of human and industrial waste. Over the long term, healthy freshwater systems are critical for sustaining these services for future generations and to maintain the ecological capacity to adapt to environmental changes such as global climate change.

At a more local level, it makes little sense for land trusts to protect and conserve land if they cannot take steps to also conserve and protect the adjacent riparian areas, the stream- or lake-bed and the water. Protection of the health of the entire ecosystem is required, not just the terrestrial component. Land trusts are part of the larger group of water users that submits that there is a pressing need to protect instream flows for conservation.

We submit that science-based instream or environmental flow standards that are linked to groundwater use are the fundamental basis of continued water sustainability. In a province as ecologically diverse as British Columbia, implementation of these provincial instream flow requirements are best governed at a local level where adaptive management, monitoring and enforcement can be responsive to local conditions and foster a more active and productive dialogue amongst the water user community.

In summary, focusing on instream flow needs and water governance, our primary recommendations are that the Province of British Columbia:

1) enact statutory requirements for the establishment of instream flows across the province with a baseline requirement that the instream flows are in sufficient quantities to meet ecosystem needs;
2) make instream flow standards science-based and vary them in accordance with seasonal fluctuations in timing and flow;
3) prioritize instream flows over other water uses;
4) regulate groundwater use, and integrate groundwater management with surface water instream flows to manage water supplies as a whole;
5) devolve some aspects of water governance and management to a regional or watershed level;
6) implement watershed planning, monitoring, and instream flows through devolved governance bodies with enforcement authority; and
7) subject watershed-based instream flows and governance to a provincial framework to ensure consistency.

2. Overview: Meeting climate and water management goals through water law reform

The BC government recognizes that changes to the *Water Act* are necessary to address BC's climate change and water management goals in the context of a growing population and increased variability in water supplies.[1] The government has developed a *Climate Action Plan* with the aim of reducing greenhouse gas emissions by 33% by 2020.[2] That plan implicates water management by encouraging the development of clean and renewable energy,[3] and by calling for adaption strategies.[4] The latter includes increased water conservation and efficiency to better protect water supplies and hydropower generation. In light of these water management goals, the government has developed its *Living Water Smart* strategy. This strategy includes commitments to flood prevention, and stringent conservation targets that call for 50 percent of increased municipal demand to be met through conservation by 2020.[5]

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[1] *Water Act*, R.S.BC 1996, c. 483.
[2] BC Government, "Climate Action Plan – Highlights", online: LiveSmart http://www.livesmartbc.ca/attachments/highlights.pdf.
[3] *Ibid.*
[4] BC Government, "Climate Action Plan – Section Five: Adaptation", online: LiveSmart http://www.livesmartbc.ca/attachments/section_five.pdf.
[5] BC Government, Living Water Smart, "Living Water Smart: British Columbia's Water Plan", online: LiveSmart http://www.livingwatersmart.ca/docs/livingwatersmart_brochure.pdf.

Living Water Smart also commits to modernizing BC's water laws. Under the resulting *Water Act* modernization process, the provincial government has identified four key areas for reform: 1) stream health and aquatic environments, 2) water governance, 3) water licencing, and 4) groundwater management.[6] For stream health, identified actions include updating water laws to recognize and protect instream flow needs.[7] For governance, commitments include increased citizen participation, watershed-level planning, and adaptive management.[8] While this submission will touch on all four areas of reform, its focus is on the two areas of environmental health and governance.

We submit that in order to meet the province's conservation, efficiency, flood mitigation, and demand management goals, it is imperative that the modernized *Water Act* shift from outdated development-focused supply management to progressive conservation-focused demand management. The recognition of the interrelationship of ground water and surface water through regulation of both sources is necessary to appropriately address the water balance in any watershed. To that end, reforms to the provincial water licencing scheme can correct existing over-allocations and allow for flexibility in adapting to changes in climate and water supplies.

The starting point for the water allocation (better termed watershed health) framework is the protection of instream flows. Watersheds require enough water left in streams and aquifers to provide for ecosystem health. This is the platform for the continued viability of water supplies and the environment.

In most areas of the province, water governance is handled by the provincial government at the regional scale. There is little opportunity for the broader water users' community, including conservation organizations, to be involved in crafting local solutions to watershed issues outside of commenting on water licence application requests. There is considerable and growing literature indicating that localized management and solutions, within a provincial performance-based context, can create more collaboration and watershed-specific solutions for water management issues. A more appropriate goal for the provincial government is to help to address the need for instream flows, meet climate and water goals, provide better allocation and dispute resolution systems, and integrate groundwater and surface water management.

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[6] BC Government, Living Water Smart, "Water Act Modernization", online: LiveSmart http://www.livingwatersmart.ca/water-act/.

[7] *British Columbia's Water Act Modernization: Technical Background Report* (2010), online: Living Water Smart http://www.livingwatersmart.ca/water-act/docs/Water Act modernization_tbr.pdf, at 8 [*Water Act Modernization Technical Report*].

[8] Adaptive management refers to governance that addresses impacts from climate change. *Water Act Modernization Technical Report*, *supra* at 26.

Governance is a way to tie all four *Water Act* modernization goals together, and it can create local solutions based on watershed conditions.

The remainder of this submission will address these latter two issues – instream flows and governance – in greater detail.

3. Instream flows (ISFs)

3.1 Why instream flows?

Mandatory instream flows (ISFs) are critical to addressing the first *Water Act* modernization goal, which is to "protect stream health and aquatic environments." Instream flows are specified quantities of water that are left *in situ* (in a waterbody) for baseline ecological processes or environmental use. From a human-centric perspective, protecting streams and other aquatic environments is important because they provide valuable ecological services and infrastructure. Healthy water systems purify water supplies, dilute and break down waste, and support food supplies and industries. They provide energy, mitigate floods, and recharge groundwater supplies. When water systems are over-allocated, they break down and are unable to properly recharge and renew. When the hydrologic cycle is broken or degraded, these human uses and benefits are jeopardized.[9] Protecting water systems is also important from a strictly ecological and sustainability perspective: it ensures the continued viability of habitats and species for their own sake, fostering biodiversity and overall ecosystem health.

Moreover, while it is essential to take a whole ecosystem approach to valuing ISFs, it is also notable that ISFs are important to addressing legal requirements and policy recommendations for fish protection. Increasing ISFs to improve the sustainability of this culturally and economically significant resource helps meet these obligations and initiatives, and in turn benefits ecosystem health as a whole.[10]

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[9] Brandes et al., *At a Watershed: Ecological Governance and Sustainable Water Management in Canada* (Victoria: POLIS Project on Ecological Governance, University of Victoria, 2005) at 53 [*Watershed*].

[10] The federal *Fisheries Act* prohibits "any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat" without a permit (*Fisheries Act*, R.S.C. 1985, c. F-14, s. 35(1)). Over-allocating water from a stream and failing to ensure there is enough water to sustain fish may constitute such harmful impacts. Section 5 of the provincial *Fish Protection Act* is not yet in force, but enables the Minister to consider fish needs when making water allocation decisions (*Fish Protection Act*, S.BC 1997, c. 21). Should this provision be enacted, it too would provide further legislative support for requiring instream flows. The importance of ISFs to salmon conservation was also addressed in the final recommendations of the BC Pacific Salmon Forum, which included valuing the ecological services of watersheds, considering such services in resource management decision making (BC Pacific Salmon Forum, "Final Report and Recommendations to the Government of British Columbia" January 2009, online: http://www.pacificsalmonforum.ca/final/BCPSFFinRptqSm.pdf, at 11 ["Salmon Forum"]). With the Cohen Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River currently underway, similar recommendations are likely to be issued again in the near future.

This multitude of ecological services and benefits is already under threat from high human demand for water, limited supply, increasing variability and strain due to climate change, and population growth in some areas of the province. These stresses make it even more important to protect water systems to ensure environmental health.[11]

Finally, providing for ISFs protects groundwater supplies (and vice versa). Groundwater and surface water is inextricably linked, and the health of surface streams and their ecosystems is necessary to maintain the health of groundwater supplies.

In addition to being a critical tool for ensuring ecological sustainability, implementing ISFs would bring BC into line with international practices in modern, proactive water management. The European Union's (EU) Water Framework Directive requires member states to achieve the "good ecological status" of their water bodies, and directs them to consider instream flows in their environmental protection measures.[12] Japan's 1997 River Law states that protection of the aquatic environment is a key part of water management.[13] In Australia, the 1994 Council of Australian Governments framework required recognizing the environment as a legitimate user.[14] In Oregon, state-held rights

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[11] Canadians are second only to the United States in per capita water use rates (Oliver Brandes & Deborah Curran, Water Licences and Conservation: Future Directions for Land Trusts in British Columbia (Victoria: POLIS Project on Ecological Governance, University of Victoria, 2008), at 3 [*Land Trusts*]), and use more than twice the amount used in European households ("Stop hosing down your driveway", Editorial, Maclean's (19 April 2010) 4). While we have a perception of abundance in supplies, the majority is non-renewable (Marc Nelitz, Tanis Douglas & Murray Rutherford, *Freshwater for Fish and People: Moving Towards "Living Water Smart"* (Vancouver: Pacific Fisheries Resource Conservation Council, 2009), at 12 [*Freshwater*]). In addition, around 90% of our population lives in the far south, often in drier regions like the Okanagan or East Coast of Vancouver Island, while about 60% of Canadian water supplies flow north (*Land Trusts*, *supra* at 3). Within BC, many water supplies are already at capacity. For example, in the South Okanagan 235 of 300 rivers and streams are already fully allocated, meaning there is no further water available for new users (*Land Trusts*, *supra* at 4). Demands will increase with as BC's population grows by a forecast 1.4 more million more people in the next 25 years (Ministry of Environment, Press Release, 2008ENV0064-00845, "Living Water Smart: A Plan for Water Sustainability" (3 June 2008), online: BC Government News Archive http://www.news.gov.bc.ca/Default.aspx). Much of that population growth will occur in major urban centres, including areas already dealing with high water demands, such as Victoria, Nanaimo, and the Central Okanagan. At the same time, water supplies will be subject to greater fluctuation and shortages as climate change fluctuates precipitation rates and reduces water storage in snow packs and glaciers (see for example *Freshwater*, *supra* at 13; *Water Act Modernization Technical Report*, at 3; and British Columbia, Ministry of Forests and Range Climate Change Task Team, *Preparing for Climate Change: Adapting to Impacts on British Columbia's Forest and Range Resources* (2006) at 57, online: Ministry of Forests and Range http://www.for.gov.bc.ca/mof/Climate_Change/preparing.htm [this report lists small icepacks and reduced summer flows as anticipated impacts of climate change]).

[12] EC, *Commission Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy*, [2000] O.J. L 327, online: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0060:EN:NOT ["EU Water Framework Directive"].

[13] Tamai, N, "Principles and Examples of River Restoration, in River Restoration in East Asia", edited by Parish et al., (Kuala Lumpar, Malaysia: Global Environment Centre and Department of Irrigation and Drainage, 2005).

[14] The Council of Australian Governments' Water Reform Framework, Water Resource Policy, at para. 4(b), online: Environment Australia http://www.environment.gov.au/water/publications/action/pubs/policyframework.pdf.

to ecological flows have been identified as one of the reasons for improved ISFs in the Walla Walla River.[15] As these examples show, providing for ISFs is consistent with progressive water management.

In light of the importance of protecting baseline water flows, and evidence of emerging widespread practice, we submit that the province must mandate quantitative instream flows to ensure environmental needs are sufficiently provided for. Requiring that ISFs be addressed provides guidance to decision makers dealing with water allocations, and co-ordinates water conservation and environmental protection goals across governments, ministries, and regions. Explicit requirements for ISFs can overcome the piecemeal, discretionary approach that exists in current water management under the *Water Act*. Under this statute there is no consistent, province-wide approach to evaluating the need for and maintaining ISF. If ISFs are addressed, land trusts can concentrate on the land-based natural and cultural heritage values.

3.2 What should ISFs look like?

3.2.1 Science-based and adaptive based on watershed needs

Science-based ISFs enable consistent decision making and provide standards that are logically defensible. They can help to provide optimal instream conditions that can be adapted over time.[16] Adaptive science-based ISFs are also necessary to properly respond to the uncertainties associated with climate change, and the variation that occurs with changes in watershed uses, population growth and resource development.[17] Finally, having science-based standards ensures that baseline ecosystem needs can take priority over other water uses and are less subject to changing policy priorities.

Science-based ISFs will require sufficient research and monitoring. This is not a "single-issue" expense, but rather an opportunity to collect data towards a variety of conservation initiatives.[18] Research and monitoring will also contribute to the development of practical water allocation plans and sound watershed governance, both discussed below. We recommend that the provincial government explore the potential

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[15] *Freshwater*, *supra* at 7.

[16] See *Freshwater*, *supra* at 18, where the authors explain that hydrological stream system information is needed to make good decisions and apply best practices.

[17] A standard based on historical data is prone to fail to account for these factors, whereas a science-based standard will allow ISFs to be adaptive and respond to such conditions. See for example *Freshwater*, *supra* at 9, 15.

[18] For example, recommendations made by the BC Pacific Salmon Forum, which are intended to ensure the viability of our salmon stocks, include managing watersheds and resource industries as ecosystems and monitoring systems – including ISFs – to measure ecosystem health. The data collected will contribute to sound resource-use decision making (Salmon Forum, *supra* at 7). The Forum also recommends the creation of a science secretariat (15).

to fund such research and monitoring through the imposition of surcharges on water use.[19]

Science-based ISFs should be nuanced for different geographic regions and in accordance with seasonal fluctuations in flow needs and temperature. This is necessary to address ecosystem health comprehensively, including riparian habitat and water quality.[20] Periodic updates are also important to ensure ISF requirements adapt to new circumstances and information.[21]

Finally, in order to address the full range of ecosystem needs and services, we submit that the quantitative measure for ISFs will usually have to be higher (more water left in the stream) than is suggested in some current flow level standards. For example, one existing guideline, the Hatfield standard, allows up to 90% withdrawal of the mean annual discharge, and focuses only on fish.[22] This allows for very low flow levels that are unlikely to adequately provide for full ecosystem health, in particular for wetlands and areas of seasonal inundation. In some watersheds even low levels of withdrawals can be harmful.[23] Moreover, it is particularly important to provide sufficient, rather than bare minimum, flows to ensure resiliency of ecosystems in the face of climate change and other stresses.[24]

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[19] This approach is used in South Africa (*Watershed*, *supra* at 52). Note that if this approach is used, measures should be taken to protect low-income residents from disproportionate impacts.

[20] Sources supporting variability that mimics seasonal fluctuations include Arlene j. Kwasniak, "Quenching Instream Thirst: A Role for Water Trusts in the Prarie Provinces" (2006) 16 J. Env. L. & Prac. 211 at 214; *Watershed*, *supra* at 51-52; and Annear et al., *International Instream Flow Program Initiative: A Status Report of State and Provincial Fish and Wildlife Agency Instream Flow Activities and Strategies for the Future* (Cheyenne, WY: Instream Flow Council, 2009), at 83 [*Instream Flow Program Initiative*].

[21] An example of this approach to ISFs is the Council of Australian Government's Water Reform Agreement, which requires states to set reviewable water allocations for the environment based on best available scientific information (Sandra L. Postel, "The Forgotten Infrastructure: Safeguarding Freshwater Ecosystems" (2008) 61:2 J. Int'l Affairs 75 at 79; and Lee Godden, "Water Law Reform in Australia and South Africa: Sustainability, Efficiency and Social Justice" (2005) 17 J. Envtl. L. 181 at 189.

[22] Hatfield et al., *Instream flow thresholds for fish and fish habitat and guidelines for reviewing proposed water uses: Synopsis* (15 January 2004), online: Ministry of Environment http://www.env.gov.bc.ca/wld/documents/bmp/instreamflow_thresholds_guidelines_synopsis.pdf.

[23] *Watershed*, *supra* at 51.

[24] This links with recommendations made regarding the viability of freshwater fish in the Cariboo-Chilcotin area. Suggestions included "develop[ing] adaptation strategies that perform well across a range of future outcomes, and are robust to uncertainties" (Nelitz et al., *Evaluating the vulnerability of freshwater fish habitats to the effects of climate change in the Cariboo-Chilcotin: Part 1 – Summary of technical methods*, prepared for BC Ministry of Environment, Fraser Salmon and Watersheds Program, and Pacific Resource Conservation Council (Vancouver, ESSA Technologies & Pacific Climate Impacts Consortium, 2009), at 18). By developing an ISF standard that allows more than the barest minimum, we better enable river systems to adapt to change.

3.2.2 Legally required priority standards

Statutory requirements for provincially-mandated ISFs are the clearest way to establish baseline watershed standards.[25] Strong requirements will be long-term, take priority over other uses, and provide for an orderly adaptive management process for their evaluation. Such an approach mandates ISFs and gives legal recognition to the environment as a legitimate water user.[26] Legal protection of ISFs provides greater certainty for both investors and the environment. Clear priority schemes for water can improve monitoring and accountability.[27] They can also help avoid conflict and assist with dispute resolution.[28]

Given the importance of clear, legally-entrenched ISF requirements, a statutorily-mandated ISF standard is preferable to ISF guidelines. The *Water Act Modernization Technical Report* suggests the there would be sufficient checks in guidelines to ensure their effectiveness. However, the suggested mechanisms of publishing reasons for decisions and expanding appeal rights are time and resource intensive, and burdensome to both government and public interest organizations. Guidelines also have the potential to be applied inconsistently, leading to increased uncertainty in water entitlements and potential uses.

One option for framing ISF standards is through a watershed "cap" on withdrawals that is flexible and adaptable, and mimics natural volume changes.[29] No allocations beyond the current cap limit would be allowed, although the limit itself could be adjusted from time to time in response to environmental conditions and needs. This sets a clear threshold on how much water is available for other uses, and can help stimulate demand-side management measures.[30] Another approach, used by South Africa, is to

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[25] The Instream Flow Council, a North American organization, states that "[a]n effective instream flow program should ensure a clear legal basis for protecting instream needs." (*Freshwater*, *supra* at 18.)

[26] These reforms are recommended by the Instream Flow Council. See Freshwater, at 18, and ISF Program Initiative, at 81-82. Such steps are important, as efforts to provide for ISFs in various North America jurisdictions have shown a need for greater legal and policy support (*Freshwater*, *supra* at 16).This is also consistent with progressive views on the role of environmental rights. For example, Ecuador become the first state to enshrine such rights in its constitution ('Rights of Nature', Constitucion de la Republica del Ecuador, Title II, Ch. 7, adopted September 2008, available at: http://www.asambleanacional.gov.ec/documentos/constitucion_de_bolsillo.pdf), and many U.S. municipalities have also legislated environmental rights (see Community Environmental Legal Defense Fund, at www.celdf.org). Also see the discussion under Part 3.1 of this submission.

[27] For example, a lack of clarity as to the legal status of ISFs, and their enforceability, led to problems in monitoring and accountability in Australia (Godden, *supra* at 190; and Council of Australian Governments Working Group on Climate Change and Water, "Report to Council of Australian Governments March 2008" (2008), online: Council of Australian Governments Water Reform Framework http://www.environment.gov.au/water/australia/coag.html#wg at 33).

[28] *Freshwater*, *supra* at 9.

[29] *Watershed*, *supra* at 51.

[30] *Watershed*, *supra* at 51.

set aside a "reserve" of the amount of water needed to maintain ecological health. Again, this amount should account for natural fluctuations in the timing and quantity of flows.[31]

3.2.3 Apply province-wide through provincial or watershed based standards; Use interim measures where necessary

Given the importance of ISFs for ecological and thus watershed health, it makes sense that ISFs apply province-wide. They clearly are needed in over-allocated watersheds; and there is a strong argument for their establishment even in areas where water supplies are not yet considered stressed to avoid such conditions in the future. Even seemingly abundant rivers are likely to change and/or be subject to increased demands, and it is easier and less expensive to proactively address ecological needs now rather than waiting until ecological needs are in conflict with other demands.[32]

Two options for setting province-wide ISFs are to: (1) develop a single, consistent, province-wide standard for ISFs, such as a percentage of mean annual discharge at different times of the year or (2) set ISF minimums on a watershed by watershed basis, based on regional hydrology. A single, province-wide standard may provide simplicity and clarity, but would not be attuned to local conditions and needs. Therefore it is unlikely to provide appropriate environmental protection. This could be somewhat mitigated by adjusting the standard over time as additional information becomes available. Alternatively, localized needs could be addressed under this approach by allowing watershed agencies or regional governments to impose a more stringent standard.

Although a province-wide standard would be a welcome improvement to the *status quo*, fixing ISFs on a watershed-by-watershed basis is preferable.[33] This ensures local conditions and needs are addressed, and better facilitates drawing on local knowledge (including First Nations traditional knowledge). Under this approach, it would also be useful to establish a provincial framework for establishing ISFs on a regional or watershed basis. This ensures the creation of sufficiently stringent standards and that they apply with equal strength across the province.[34]

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[31] Postel, *supra* at 79.
[32] *Watershed*, *supra* at 51.
[33] This approach is recommended, for example, in At a Watershed (55), and is used in such jurisdictions as Florida and Arizona. In Florida, watersheds set levels for ISFs and other surface and ground waters. These levels vary by season (*Watershed*, *supra* at 55.)
[34] A similar approach is proposed, for example, in New Zealand, where a national standard will guide regional councils in fixing instream flows (New Zealand, Ministry for the Environment , "Proposed National Environmental Standard on Ecological Flows and Water Levels Questions and Answers", online: Ministry for the Environment

Regardless of whether ISF levels are set provincially or on a more local basis, it is prudent to apply interim ISF requirements until more detailed, finalized ISFs are established. Such interim measures ensure that environmental health is protected during the research and development stage.[35]

3.2.4 Integrate with groundwater management

The regulation of groundwater is necessary to ensure the effectiveness of surface water ISFs. Given that both water supplies are interconnected, addressing one without addressing the other will inevitably fail to provide for ecosystem health.[36] Integration can address the problem of limitations on surface water use being met with increased groundwater extraction.[37] Integration also harmonizes standards for ecosystem health. For example, under the EU Water Framework Directive, member states must ensure enough water is left in groundwater supplies to allow them to recharge, minus water needed for surface ISFs and wetlands.[38]

3.3 Instream flow through conservation licences & water reserves

The Land Trust Alliance of BC and the Environmental Law Centre do not support securing instream flows through "conservation" licences and water reserves specifically because of the following. Current conservation licences pose a variety of problems to facilitating whole ecosystem protection, including requiring the construction of "works" and a narrow focus on fish and wildlife. They also rank behind more senior licences.

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http://www.mfe.govt.nz/laws/standards/ecological-flows-water-levels/workshops-ecological-flows-water-levels-faqs.html).

[35] This approach has been taken in other progressive jurisdictions. For example, in developing its ecological reserves, South Africa first establishes interim reserves, and then sets final reserves based on the classification of the water source (*Watershed*, *supra* at 54). New South Wales sets interim measures to address ecological needs, and then implements detailed ISF measures under water management plans (Poh-Ling Tan, "Legal Issues Relating to Water Use" in *Property: Rights and Responsibilities – Current Australian Thinking* (Land & Water Australia, 2002) 13 at 28). New Zealand has also proposed interim flow measures as part of the National Environmental Standard on Ecological Flows and Water Levels (see N.Z. Ministry of Environment, "Proposed National Environmental Standard on Ecological Flows and Water Levels: Discussion Document" (March 2008), online: Ministry for the Environment http://www.mfe.govt.nz/publications/water/proposed-nes-ecological-flows-water-levels-mar08/index.html, at ix).

[36] See for example, *Freshwater*, which states that it is important that water planning consider both surface and ground water in conjunction (9).

[37] This has been the reaction in BC and Australia, where surface water restrictions simply led to increased groundwater use, because it wasn't as extensively regulated (*Freshwater*, *supra* at 11).

[38] *Watershed*, *supra* at 57.

More generally, this approach has the effect of privatizing water by allocating all water supplies for either consumptive or conservation use.[39] It makes private actors (licencees) responsible for enforcing public ISFs and shifts accountability to private organizations. It removes an adaptive management function from government and relies on disputes between users, including conservation users, to determine the optimal water allocation in a watershed. It would be difficult for those private organizations to get enough funding to provide proper protection consistently across the province. Many land trusts simply do not have the resources to effectively use privately-held ISF licences as a conservation tool. This approach is also ill-suited to larger river systems. Finally, as mentioned above, the costs of acquiring meaningful senior water licences will be too prohibitive.[40]

Similar problems can be attributed to the use of water reserves, currently provided for under s. 44 of the BC *Water Act*. To date, reserves have primarily been used for future uses such as human consumption or hydropower. They are static, not adaptive, as they reserve a specific amount of water in a waterbody and do not provide a mechanism for responding to changing environmental conditions.

While there are some hybrid public/private models aimed at protecting ISFs and sharing management and monitoring,[41] enforcement responsibility for overall ecological health is unclear, and the cost burden is unduly placed on private parties, rather than shared with the government. The approach that is arguably more adaptive and fiscally prudent is to use the provincial government's existing management jurisdiction of water as a public resource to reinforce its protection as a public good.

3.4 Conclusion: Instream flows

In sum, ISFs are vital to social, economic, and environmental sustainability in BC. A science-based ISF standard in all areas of the province can adapt to fluctuate with seasonal water flow variability. As a statutorily mandated standard, the ISF would have a legal status that prioritizes the environment. Optimally, standards would be set on a watershed basis, to address local hydrology, knowledge and needs. However, it is important that a provincial framework govern how the standards are implemented to ensure adequacy and consistency. Interim measures can effectively address immediate

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[39] *Land Trusts*, *supra* at 19.
[40] Many of these concerns are raised in *Land Trusts*, *supra* at 19.
[41] The Instream Flow Council describes providing both public and private rights to water for ISF purposes (*Freshwater*, *supra* at 18). Examples of shared management and monitoring include in the Western United States conservation licences are held by both governments and land trusts. In Oregon, land trusts purchase water rights, which are then converted to instream flow rights and held by the state. Monitoring is conducted by both the land trust and the state. This allows for joint public-private management (*Land Trusts*, *supra* at 32)

issues where detailed assessments or further watershed planning is needed before flows can be finalized. It is necessary to establish ISFs with reference to the integrated nature of surface and groundwater, and groundwater use must also be regulated to prevent ISF savings from being negated by increased groundwater use. Finally, conservation licences and reserves are a poor substitute for providing legislated ISFs for which the provincial government is responsible.

An optimal way to address these ISF recommendations is to implement them regionally through devolved governance such as watershed agencies, as discussed further below.

4. Governance

Water governance, the process by which decisions are made about water and the hydrology of watersheds, has historically rested primarily in provincial government jurisdiction in most regions of BC Provincial staff as decision-makers receive input from affected water users on applications for new water licences. There has been very little collaborative water governance amongst water users throughout regions or watersheds, making it difficult for localized organizations such as land trusts to be involved. Further, water governance has relied on an outdated rights-based approach with senior licences taking precedence over more junior licences regardless of the value of the activity that the licensee's use of water supports. This centralized model of water governance is based on a static legislated framework that is nonetheless applied inconsistently across the province. It does not guarantee instream flows are taken into account, nor does it allow for more collaborative problem-solving as the availability of water becomes more compromised in some areas like the Okanagan and the east coast of Vancouver Island.

A key part of modernizing the *Water Act* is to create a more collaborative approach to water governance that engages water users and focuses on the watershed or river basin as the appropriate scale for decision-making. Overcoming the preoccupation with fixed water entitlements in a finite resource will likely require devolution of adaptive management, within a provincial framework, to a regional or watershed scale. To this end we largely rely on the "Watershed Agency" model described by Curran and Brandes, referenced throughout the Discussion Paper and Technical Background Report.[42]

[42] Oliver Brandes & Deborah Curran, *Setting a New Course in British Columbia: Water Governance Reform Options and Opportunities* (Victoria: POLIS Project on Ecological Governance, University of Victoria, 2009), referenced in *Water Act Modernization Technical Report*, *supra*.

4.1 Watershed-level governance

Governing water at a watershed level within a provincial performance-based framework for, for example, instream flows provides a hydrologically appropriate scale at which to integrate land and water decision-making in BC One such model is watershed authorities or new commissions of regional districts based on local representation making planning and long-term water management decisions within a watershed or other ecological unit (such as groups of watersheds or sub-basins). Watershed agencies would monitor the activities in, and impacts to, each watershed to meet provincially mandated objectives.

Watershed agencies may be the optimal governance model for several reasons. The shared responsibility inherent in an agency approach creates significant potential to meaningfully engage First Nations, local governments, local conservation organizations and broad water users' communities. It draws on expertise available outside government, including traditional ecological knowledge, the know-how of conservation organizations, landowners, farmers and fishers, and the expertise of planners and ecologists. A collaborative approach increases social resilience, responsiveness and adaptability. It can make for better decisions and dispute resolution.[43]

Robust watershed agencies would include representation from, at a minimum, First Nations, the scientific community, land trusts or conservation organizations, farmers, industry and local governments. Local government representation is needed to ensure water management is linked to land use planning, which has a significant impact on watersheds. Land use decisions over time would be integrated with watershed health planning created with the watershed agencies.

To be effective, agencies must be empowered to make long term management decisions within provincially-mandated standards, and they must have regulatory enforcement authority. Agencies will be required to make decisions that have an impact on current water use taking into account long term sustainability goals. This will especially be the case in watersheds where there is already competition for scarce water resources or increased drought risk.

4.2 Science-based approach to planning

Decision-making at a watershed scale will be defensible only within a science-based framework of ecosystem relationships, which necessarily include the ecosystems'

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[43] *Watershed*, *supra*.

human inhabitants. Ecological science, which has evolved primarily over the last several decades and was not in existence at the time the BC government developed the existing *Water Act* regime, increasingly shows that human health and welfare is inextricably tied to the health and welfare of the province's natural ecosystems.[44]

Effective governance also means a shift from the current sector-focused water allocation and management to a holistic ecosystem-based approach. Watershed agencies are at an appropriate scale to consider the cumulative effects of decisions in a watershed, which to date have not been consistently represented in the water licence application-by-application approach to water management where a number of ministries and agencies make decisions that each has a small impact in the same watershed.[45]

Watershed health plans (sometimes known as water allocation plans) quantify supply and demand and allow for an assessment of how much water can be allocated for consumptive uses while still providing for ecological needs. They are a useful tool to properly account for ISFs, and assist in providing certainty to stakeholders and resolving conflicting demands.[46] Effective watershed health plans are integrated with land use planning, and plan for shortages or droughts.[47] Competency is further secured by ensuring water savings from efficiency measures implemented by licence holders are transferred to instream uses.[48]

The use of watershed plans is integrally linked to governance models. An effective method of implementation would be to conduct planning through regional governments or watershed agencies, and to focus initially on priority watersheds facing the greatest demands and threats.

Watershed health plans also implicate water licensing. Plans will be hindered in highly allocated areas if watershed authorities lack the ability to curb existing licences to meet

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[44] See e.g., Carlos F. Corvalán, Tord Kjellström, & Kirk R. Smith, "Health, Environment and Sustainable Development: Identifying Links and Indicators to Promote Action" (1999) 10:5 Epidemiology 656.
[45] Brian Wilkes, "Collaborative Watershed Governance: Workshop Overview and Results from the Focus Groups" 2008, online: http://www.livingrivers.ca/dox/081102Workshop%20Overview%20-%20Wilkes.pdf; and Salmon Forum, ***supra*** at 7.
[46] ***Freshwater***, ***supra*** at 9. For example, Water Allocation Policies have proven useful on Vancouver Island (***Water Act Modernization Technical Report***, ***supra*** at 6-7). In Oregon's Walla Walla River basin, improved ISFs have been attributed in part to the development of various water management and use plans (and the resulting flow agreements) (***Freshwater***, ***supra*** at 6-7).
[47] ***Freshwater***, ***supra*** at 9.
[48] ***Freshwater***, ***supra*** at 8.

ISF needs.[49] Plans therefore need to be binding. Finally, sufficient resources, implementation and monitoring are all important factors in making such plans work.[50]

4.3 Provincial oversight

To ensure that the provincial public interest in sustainable water management prevails within a local watershed context, it is necessary for watershed agencies to operate under a provincial framework of standards and objectives. A provincial framework also ensures provincial water goals and targets, such as those set out in the *Living Water Smart* plan, are addressed. Transparency in governance implies, at a minimum, annual reporting on local conditions. The provincial government can be responsible for compiling and evaluating data related to watershed health indicators to ensure that watershed agencies are accountable for meeting both local and provincial goals.

An example of high-level direction that guides flexible, local decision making is the EU Water Framework Directive.[51] The directive provides a central framework but is implemented locally. A plan for each river basin establishes a detailed account of how the objectives set for the river basin (relating to ecological status, quantitative status, chemical status and protected areas) are to be reached within the time frame required. Each plan describes the river basin's characteristics, reviews the impact of human activity on the waters in the basin, estimates the effect of existing legislation and the remaining "gap" to meeting these objectives, and describes a set of measures designed to fill the gap. All interested parties are involved in all aspects of the preparation of the river basin management plan, which also involves significant public participation.

4.4 Conclusion: Governance

Governance reforms are long overdue to improve water management and planning. Optimal governance reforms would delegate governance to a watershed level, operated by watershed agencies comprising a variety of stakeholders. This approach applies local knowledge to address local needs and conditions within a broader provincial public policy context of water sustainability. Effective management is conducted with an ecosystem-based approach.

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[49] This is a concern in Alberta, where extensive planning went into the development of the Saskatchewan River Basin Water Management Plan. It is unclear how effective the plan will be in protecting ISFs because the area is already highly allocated and water managers lack the ability to reduce existing allocations (*Freshwater*, *supra* at 7).
[50] *Freshwater*, *supra* at 9.
[51] EU Water Framework Directive, *supra*.

These watershed-based governance reforms have the potential to improve water management itself, but are also an opportunity to address the other three *Water Act* modernization priorities. Watershed governance reform provides an ideal opportunity to improve planning and enforcement of ISFs, properly implement joint surface and groundwater regulation, and better address new and existing allocations and demand management initiatives.

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