Chapter 4
Changing Currents: A Case Study in the Evolution of Water Law in Western Canada

Oliver M. Brandes and Deborah Curran

Abstract New social, economic and environmental priorities are challengeing the Canadian water law regime. Water law in western Canada, a direct product of the colonial legal system and European settlement, illustrates many of the emerging tensions associated with a modern water management regime in flux. In an age of increasing hydrologic uncertainty with drier summers followed by more extreme storm events, lawmakers are seeking to increase resilience both for the environment and also for the institutions and the laws that govern freshwater resources. In Canada evidence of an evolving water law and management regime is already apparent—from developments in Aboriginal law that are changing how and who governs water, retreat by the federal government as an active participant in water resource management, to increased provincial efforts to fill that void.

This chapter explains the structure and foundations of Canada's approach to water law, in particular in western Canada; and explores how water law is changing, and what this reveals about the potential of a twenty-first century approach to water management and governance. It will explicitly review the primary allocation regimes that exist across Canada: modified common law riparian rights in the Maritime provinces and Ontario; Quebec's civil law tradition; the authority management approach in the North; and the prior allocation system that underpins the prairie provinces and British Columbia. Through this discussion the chapter will set out the foundational principles that characterize the current approach to western water law. Investigation into the recent law reform in British Columbia provides the focus to better understand Canadian western water law and to identify characteristics of an emerging regime based on partnership and with an explicit emphasis on

O.M. Brandes (✉)
POLIS Project on Ecological Governance and Centre for Global Studies, University of Victoria, 1700, STN CSC, Victoria, BC V8W 2Y2, Canada
e-mail: omb@uvic.ca

D. Curran
Faculty of Law and School of Environmental Studies, University of Victoria, 1700, STN CSC, Victoria, BC V8W 2Y2, Canada
e-mail: dlc@uvic.ca

S. Renzetti, D.P. Dupont (eds.), *Water Policy and Governance in Canada*, Global Issues in Water Policy 17, DOI 10.1007/978-3-319-42806-2_4

protecting water for nature. This case study explores how modern water governance requires a more collaborative approach where all governments, rights holders, and stakeholders have roles and responsibilities, with creative integration of top-down and bottom-up planning and decision-making. The example of British Columbia demonstrates how this water law regime is "changing the current"—evolving gradually toward a more collaborative and adaptable system with the promise of its new *Water Sustainability Act*.

4.1 Introduction

Water law and management in Canada, as in much of the world, is changing. The existing approach to water allocation and the supporting legal entitlement regimes are unable to address the modern challenges of water management. The issues facing freshwater management are numerous and are introduced and explored throughout this volume. Some of the most crucial drivers of change include conflicts associated with increasing water use and intensified resource extraction, under resourced governments, the assertion of rights to water by Indigenous peoples and others seeking a more direct role in decision-making, and changing hydrology due to climate instability.

With the social, economic and environmental priorities of the twenty-first century, changing settlement patterns, and a growing population concentrated along the southern border, it is increasingly clear that Canada's water law regimes are no longer able to address the requirements of modern water management. A changing climate has significant implications for water management and manifests in more extreme extremes such as frequent and increasingly severe drought and floods coupled with a longer-term trend toward persistent and prolonged water scarcity. Top-down management by senior governments is not sufficient in the face of the nuanced challenges facing water managers and watersheds across Canada, and indeed the world. Partnership, stewardship, and dealing with the uncertainty of perpetual change will be the hallmarks of successful water law and management regimes in the future.

In Canada, water law and management regimes are one of the last frontiers of environmental regulation where decisions are based on insufficient real-time science about ecosystem needs. The knowledge gaps include basic information such as how much water is available, and how much water is actually being used (Curran and Brandes 2012). Fundamentally, these regimes still reflect their outdated colonial origins that emphasized settlement of the land for development, agriculture, and mining.

Water law in western Canada, a direct product of the colonial system and European settlement, illustrates many of the emerging tensions and growing pains associated with modern challenges and a water management regime in flux. As Jim Mattison, the former comptroller of water rights for British Columbia recently remarked:

> the water allocation system is—and always has been—about the orderly distribution of water for economic development (Mattison 2016).

This comment from the provincial government's former most senior water decision-maker reflects the fact that water users and governments are still primarily concerned with driving economic development. Access to water is a critical element of growing cities, local breweries, and food production; it also continues to support the existing economic foundation of mining, manufacturing, and energy development.

Early evidence of a new paradigm for water law is emerging in Canada (Brandes et al 2014; Curran 2015). Developments in Aboriginal law are shifting how and who governs water. This shift is accelerated by a significant retreat, since the 1990s, by the federal government as an active participant in water resource management. As a consequence of this dynamic, provincial governments and an increasingly active civil society are attempting to fill the water governance void (Curran 2015).

This chapter has two primary purposes: to explain the structure and foundations of Canada's approach to water law, in particular in western Canada; and, to explore how water law is changing, and what this reveals about the potential of a twenty-first century approach to water management and governance. The chapter first outlines the legal foundation of how Canada governs its freshwater resource and describes the existing jurisdictional arrangement governing water and the primary allocation regimes that exist across Canada. This discussion sets out the foundational principles that characterize the current approach to water law across the country and highlights emerging trends in law reform.

Second, the chapter delves into the British Columbia example to investigate the primary principles of western water law and how they manifest in the existing legal structures. In an age of increasing hydrologic uncertainty, typified by drier summers followed by more extreme and less predictable storm events, lawmakers are seeking to increase resilience both for the environment and for the institutions and laws that govern freshwater resources. Using the recent law reforms in British Columbia, this discussion explores how water law is evolving to address the limits of the existing system. It also explores the potential for a new paradigm based on partnership and with an explicit emphasis on protecting water for nature.

The British Columbia case study provides an example with which to examine the underlying principles related to water entitlements and allocation (quantity), and to plumb more deeply into western water law generally. Recent reforms, including the introduction of the new *Water Sustainability Act* and a more explicit consideration of environmental flows, represent emerging trends and new directions in water management.

There is a growing recognition that water law needs to change—and, indeed, is already changing—in the coming decades more than it has over the past century. The British Columbia example highlights how an updated legal system offers the potential to better balance social, ecological, and economic needs going forward. Although the case study focuses on the West, the implications are relevant across Canada—perhaps even globally—as they reveal emerging trends and the potential for new structures for water laws in Canada and beyond (Curran and Mascher 2016; Brandes et al 2014).

4.2 Water Jurisdiction and Allocation Systems in Canada

4.2.1 Jurisdiction Over Water

Canada is a constitutional federation. The Constitution of Canada distributes powers between the federal and provincial governments to make laws related to ownership and management of resources, including fresh water (Constitution Act 1867; Muldoon et al 2015; Hogg 2007). This structure has an explicit colonial origin, yet hundreds of indigenous nations with rich and varied cultures, governance regimes, and sophisticated indigenous legal systems preceded European contact (Borrows 2002; Napoleon 2007). Most of these nations still exist today and have constitutionally protected Aboriginal rights.

Fundamentally, fresh water is a simple element; however, its flowing nature can make management and governance complicated and challenging. The word "water" does not appear in the Canadian Constitution. It is described as a "fugitive resource" because it defies tidy division into federal and provincial jurisdictions (Pearse and Quinn 1996). The laws governing freshwater management in Canada involve a complex swirl of overlapping jurisdictions, including numerous agencies and departments, and a range of actors including federal, provincial, Aboriginal, and local governments. In essence the Constitution sets out an approach of shared responsibility for water management, but does not specifically articulate overarching responsibility to any one level of government. This shared and multijurisdictional approach is also used in other sectors such as agriculture and health. Constitutional sharing of responsibility creates overlap, and sometimes contradictions in jurisdiction, and usually is only partially able to address the social and ecological interactions associated with water.

Canada's approach to water law in general, and water allocations in particular, varies significantly from province to province. In Canada, the thirteen provinces and territories have primary responsibility for the regulation of ground and surface water, with water generally owned and managed by these sub-national governments due to their ownership and management of public or Crown land (Percy 1988).[1] Clear federal interests also exist in defining Aboriginal water rights, trans-boundary (including interprovincial) waters, waters on federal lands, and issues concerning navigation and fisheries. The most common approach to dealing with conflicts or uncertainties over jurisdiction is for governments to create negotiated agreements with one another, rather than to test the constitutional or legal authority to act unilaterally (Bailey 2008).

The provincial governments are generally understood to hold the primary role in water management with constitutional powers that include:

[1] For example, section 5(1) of British Columbia's *Water Sustainability Act* (2014) contains the Crown ownership provision stating "The property in and the right to the use and flow of all the water at any time in a stream in British Columbia are for all purposes vested in the government, except only insofar as private rights have been established under authorizations."

- power to make laws concerning property and civil rights, including regulation of the use of property and land use (e.g., drainage);
- jurisdiction to regulate "local works" and undertakings;
- power over Crown land, with limited provincial ownership of all public lands (including water);
- ownership and management of natural resources;
- regulatory authority over all municipalities/local governments, including the power to authorize and regulate municipal water (e.g., water quality standards and the qualifications of municipal employees engaged in water quality management);
- matters of a local or private nature; and,
- natural resources, forestry and hydroelectric energy.

The three Canadian territories (all in the far North) do not have independent constitutional status but have powers similar to the provinces with the federal government holding the ultimate authority to legislate with respect to any territory in Canada.

The federal government also has constitutional powers over a number of areas that directly or indirectly relate to fresh water. Examples include:

- sea coast and inland fisheries;
- navigation and shipping;
- international or interprovincial works and undertakings, which the courts have interpreted cover pipelines;
- federal works and undertakings;
- canals, harbours, rivers, and lake improvement; and
- Indians and lands reserved for Indians.

The federal government also has the power to implement treaties, such as the 1909 *International Boundary Waters Treaty* with the United States.

Two highly relevant but rarely used broad federal powers related to the environment—therefore affecting water—are the "peace, order and good government" (POGG) and federal criminal law power. "Peace order and good government" provides the power to uphold federal laws, which regulate matters of national importance.[2]In one critical water law case, the federal government was found to have the power under POGG to make laws concerning ocean dumping even when dumping occurred in water under provincial jurisdiction (*R v. Crown Zellerbach Canada Ltd.* 1988). The federal criminal law authority is also important for environmental protection because the federal government can enact a law for the protection of public health and safety that prohibits an activity, or that carries a penal sanction—powers that serve as an important control over pollution.[3]

[2] For example, *Interprovincial Co-operatives v. Manitoba* (1975) stands for the principle that interprovincial pollution of fisheries is a matter falling under the federal power over POGG.

[3] In *R. v. Hydro-Québec* (1997), the S.C.C. decided that the federal government has the authority to pass legislation that criminalizes harm to the environment, which can often relate to water or water

4.2.2 Water Allocation Systems and How They Work in Canada

Water allocation refers to the system of rules and procedures that give access to water by granting licences or approvals to use water. As de Loë et al (2007) note, by regulating the availability and priority of access to water for consumptive and non-consumptive uses, water allocation systems influence economic productivity, social and cultural wellbeing, and ecosystem quality.

Many provinces and territories have recently passed water policies or new water laws and begun a concerted process of modernizing water allocation systems as a strategic priority. Some examples include:

- Alberta's *Water for Life* reforms, initiated in 2003 with renewal in 2008 and ongoing implementation (Alberta Environment 2003; AEP 2016);
- Ontario's *Clean Water Act* and its comprehensive source water protection program, started in 2006 (OMECC 2016);
- British Columbia's *Living Water Smart Plan* and *Water Act Modernization* process started in 2008 (BC MoE 2008; BC MoE 2016);
- Quebec's updated water laws in 2009, confirming the collective nature of water (Quebec Government 2009);
- Northwest Territories' *Northern Voices Northern Peoples* initiative with a completed territorial strategy released in 2010 (GNWT 2010; GNWT 2016); and
- Saskatchewan's recent launch of its *25 Year Water Security Plan* in 2012 (SWSA 2012).

Included in these broad strategies are explicit reforms to modernize allocation systems such as: the modified water markets in Alberta; a hybridized prior allocation system in British Columbia; updated permitting and licensing in Ontario and Quebec; and initiatives in Saskatchewan to better define priorities to optimize water use in the public interest. All such reforms have at their core a focus on streamlined approvals and licensing, attention to monitoring and compliance, protection of ecosystems and environmental flows, and addressing localized crises of drinking water-quality, droughts, and floods, or persistent water scarcity. Other drivers of reform include longer-term concerns about equitable sharing of the resource, preservation of social and cultural values such as rural economic development, and improving water efficiency and conservation (Woods and Pentland 2013).

In most Canadian law, water rights or entitlements are not a property right. Instead, they are a right of use where the Crown asserts ownership of the water and permits licence holders to use water under terms and conditions that may change (Brandes and Nowlan 2009; Curran 2014b; Percy 1988). This is fundamentally different from the situation for Canada's neighbours in the United States, where once vested these "usefructory" rights (rights to use) can become constitutionally protected property interests. In the United States, water can be sold, leased or trans-

bodies. In other words, the protection of the environment may constitute a criminal law purpose under Part 3 of the criminal law test.

ferred in other ways and can be protected as a property right (*Thayer v. California Dev. Co.* 1912; Norman and DuMars 1989, p 351).

In practice, however, although not legally treated as property rights in Canadian law, licensed water entitlements (and even common law rights associated with groundwater) exhibit many of the characteristics of a property rights regime, and are treated by the public and political processes as property rights. This is due, in part, to their perpetual nature—many water licences in Canada have no expiry—and the fact that governments have extremely limited ability to amend licences without concerns regarding the threat of compensation. The ongoing effort in British Columbia to transform groundwater use, historically governed under the common law "rule of capture," into licensed entitlements under the legislative regime demonstrates this tension. Government officials view this historical use as a quasi-property right that affects their ability to deny or substantially limit water use through the licensing process with an active interest in avoiding claims of compensation by existing groundwater users. From a policy perspective, this represents a kind of de facto property rights regime for water (Furubotn and Pejovich 1972; Schlager and Ostrom 1992).

Surface water rights in Canada were initially based on the English common law rule of riparian rights. The riparian system evolved into distinct systems that address the differences in climate, geography, and development priorities across the nation, (Lucas 1990; de Loë et al 2007), including:

1. ***Regulated riparian model***—Licensing and permitting, overlaying the traditional court-made riparian rights doctrine. Under this system, direct water users who use more than a set volume must have a permit from an administrative agency to use a specific volume of water. Ontario and some of the Atlantic provinces use this system.
2. ***Civil law tradition***—A hybrid system based on riparian rights and adapted from a civil law tradition and augmented by legislation. Quebec uses this system.
3. ***Prior allocation***—A system that enshrines the first-in-time, first-in-right (FITFIR) principle, where government grants the right to use water by licence while requiring the "beneficial use" of the diverted water from its source. British Columbia, Alberta, and Manitoba use this system.
4. ***Authority management approach***—A system where government delegates responsibility for allocation decisions to regional or resource boards, or to other administrative bodies. Although this system is primarily used in the North by the three Canadian territories—Nunavut, the Yukon, and the Northwest Territories—Saskatchewan also uses a modified version of this approach with responsibility delegated to a government agency.

Groundwater rights evolved differently from surface water rights. In the English common law tradition, groundwater was treated more often as an exclusive right.[4] English judges applying common law principles to water conflicts extended riparian rights to groundwater flowing in defined channels, while the "rule of absolute cap-

[4] Providing liberty to extract, but not a right to prevent others from doing the same. See, for example, *Acton v. Blundell* (1843), and *Chasemore v. Richards* (1859) where groundwater law was based on the rule of capture (fundamentally a no-liability rule).

ture" applied to all other sources of groundwater: landowners could use the water under their soil regardless of any injury to their neighbours. The law treated these two sources of water differently, despite their interconnectivity as part of the same hydrologic system.

Evidence of the historical distinction between surface and ground water is still apparent, as many water allocation systems in Canada do not adequately protect groundwater (Council of Canadian Academies 2009; Nowlan 2005; Rivera 2005). British Columbia is just now beginning a general licensing or permitting system for groundwater withdrawals for non-domestic users. Until 2016, anyone could drill a well without regulatory permission, often in places with interconnected surface water systems. Indeed, even with the new law, the provincial government still permits this practice for domestic uses. Naturally, this creates significant challenges for a comprehensive or holistic approach to water management.

Notably, drought or limited supply have not yet heavily tested allocation systems in Canada. In addition, water managers have only rarely needed to curtail use among existing licensees (Nowlan 2012; Rivera 2005). Where shortages have occurred in the past, the responses of provincial regulators and local governments have emphasized voluntary temporary restrictions usually confined to irrigators or urban use. Other approaches, in more severe situations, include the use of temporary orders or enforcing existing licence conditions.

It most cases, management of drought across Canada relies heavily on ad hoc bureaucratic discretion. This approach generally lacks a structured approach for dealing with water scarcity—one that guides decisions and ensures fairness, economic efficiency, and environmental protection.

4.3 The Origins of Western Water Law—Foundational Principles in the Current Context

The North American tradition of water management and governance is premised on State or Crown ownership of the resource. This approach originated during a time when water was seen as "limitless" and the focus was on promoting settlement and creating certainty for economic development. The water management and law regime evolved out of a need to foster this frontier resource economy and serve the needs of the growing settler population with an emphasis on providing some level of certainty in the water supply for gold mining and agricultural development (Wilkinson 1992; Harris 2013).

"Western water law" is a term referring to the various freshwater allocation systems created to address the unique challenges of topography, climate, and precipitation patterns faced by settlers of the North American West in the late 1800s (Johnson and Dumars 1989).[5] In contrast, the eastern seaboard was similar to England's envi-

[5] Many water law scholars maintain that no true western water law exists in Canada, that Saskatchewan has not followed this kind of water law tradition for decades, and that all the other western provinces have modified it extensively; however, it is our viewpoint that these general

ronment, making it easier for early colonists to extend and apply the English water laws and customs that led to the riparian rights system still largely in effect in the East. The "arid" West challenged the colonial riparian rights laws governing water entitlements, forcing an initial evolution to address the need for certainty in investment, and for more significant water diversions further from source streams and rivers to support mining and agriculture, and to deal with the climatic variability in the western region (Hutchins 1971; Harris 2013).

The foundations of the current legal system emerged during this early pioneer period, and much of the original approach to water management remains intact even today. In the broader realm of environmental management and governance, this continued reliance on historical institutional and legal architecture is rare; but for water management in Canada many of the same legal principles and decision-making structures have remained intact since the enactment of the original provincial water legislation around the beginning of the twentieth century (Brandes et al. 2015; Curran 2014a; Brandes 2014). British Columbia's *Water Act* of 1909 codified the principals of the prior allocation doctrine for the province, which remains virtually unchanged in the various updates, including the most recent *Water Sustainability Act* (2014). A similar situation exists in Alberta and Manitoba under their updated water laws: the *Water Act* (RSA 2000), and the *Water Rights Act* (CCSM 2015; Percy 1988).

In this examination of the evolution of water law, it is useful to consider the foundational principles of the western water law system and to examine how they continue to have an impact on water management today. The four principles are (Percy 2004):

Principle 1: Crown asserts ownership over water resources

The primary foundation of the colonial legal system is the assertion of Crown (or State) ownership of water. In Canada, under western water law the Crown declares its ownership over water resources and then grants the beneficial use of a specific volume of water to landowners and to those in possession of infrastructure such as mines or hydroelectric facilities.

Principle 2: Water is allocated and diverted on a first-come, first-serve basis

British Columbia allocates water according to a prior allocation system,[6] also known as "first in time, first in right" (FITFIR). This is a priority ranking system based on date of licence issue and intended to provide certainty in water use. During times of scarcity, water licences with the earlier priority dates entitle their licensees (senior licence holders) to take their full water allocation over more junior licences, regardless of the purpose of water use. In principle, this system uses this dated prior-

principles and underpinnings do still exist and reveal important patterns in the evolution of law and governance, thus western water law still provides a useful framework.

[6] Prior *allocation* is the Canadian system and is distinguished from the western US system of prior *appropriation*. In Canada the priority date is based on the date at which the senior government granted permission, while the US system is predicated on the date of first use, or when the water was first appropriated.

ity approach all the way down the line until all the water is gone in fully allocated systems or during years of scarcity.

Principle 3: Requirement to "use it or lose it"

A common feature of western water law is the concept of "beneficial use." Western water law requires licensees to make beneficial use of the water they divert, to ensure they are not hording or creating speculative water licences. If water is not used for a specified period of time (for example, 3 years in British Columbia), the provincial government may cancel the rights. This provision is intended to offset concerns associated with FITFIR as it offers one of the few opportunities for government to cancel or alter water entitlements. It is an important counter measure to the relatively static and rigid nature of FITFIR.

In British Columbia, as in the rest of western Canada, legislators have not defined beneficial use, and both the courts and water-related tribunals have not interpreted the phrase in the water law context, which creates significant ambiguity. In practice, beneficial use has come to mean the payment of annual administrative fees associated with water licences and adherence to the terms of water use licences.

Principle 4: Water as a resource for economic development

Allocated water is first and foremost for human use and economic development, and the legal regime treats water as a resource with little attention to the cultural or ecological aspects of water as a socio-ecological condition. Ecological considerations, including baseline hydrological needs, are not explicitly considered in most decisions related to water use and licensing in Canada (Nowlan 2012; Brandes 2005; Brandes and Nowlan 2009). There are only minimal provisions to require formal consideration of ecosystem needs—sometimes called environmental flows—and the rigour with which ecological considerations factor into licensing decisions is highly variable. Also, scientific information about ecosystem needs, including data on even basic environmental flow thresholds, varies widely across Canada (NRTEE 2010).

Water law and allocations in Canada are becoming increasingly complex. Various legal and administrative amendments have been introduced to address emerging concerns such as water scarcity, bulk water exports, the need for shorter-term more flexible temporary permits, provisions to enable local water planning frameworks, and dated time limits on entitlements. In light of these changes, it is time to revisit the foundational principles of water law in Canada.

4.4 Critiques of Western Water Law

The most contentious of these foundational principles are the assertion of Crown ownership and the FITFIR allocation system, both of which continue to present challenges across western Canada. This is true even with the most recent legislation in British Columbia, the new *Water Sustainability Act*, which fails to address the historical colonial systems that privilege government ownership and management over traditional indigenous law. Many view that the authority and legitimacy of

government action, including licensing and creating entitlements to water, rests on a legal fiction that the Crown "owns" the water (Phare 2009).

A recent Supreme Court of Canada decision clearly established that Aboriginal rights and title can no longer be ignored without significant legal implications (*Tsilhqot'in Nation v. British Columbia* 2014). It has been described as a legal "earthquake" and reinforces the notion that British Columbia cannot have a functional water law regime until First Nations are involved in a meaningful way that respects their constitutionally affirmed rights.[7]

Even within the confines of the existing system, Indigenous peoples have clearly been using water the longest and, based on legal recognition through the provincial FITFIR system, Indigenous peoples should be entitled to the oldest water rights. Yet, when British Columbia developed its water law regime in the early 1900s, the provincial government did not consistently grant Indigenous peoples the most senior water rights in quantities that would secure their continued livelihoods (Matsui 2009).

British Columbia missed the opportunity to address this inequality in the new *Water Sustainability Act* by not explicitly acknowledging Aboriginal water rights.[8] The Province continues to assert Crown ownership over all water in British Columbia, which is problematic for many Indigenous people and Aboriginal governments who have outstanding claims over the land and water of their traditional territories in the province (Wilson-Raybould 2013).

In addition, the FITFIR system offers the illusion of certainty for investment and development. The reality is that, as watersheds experience low flows due to shifting hydrology or periodic drought, the system has limited utility in allocating water that both keeps ecosystems functional and ensures robust local economic activity (Brandes et al. 2015). The most senior licence holders may not be beneficially diverting water for the most economically valuable uses. While administratively convenient, FITFIR is a rigid system that provides for senior water users to have priority over all other economic and environmental uses, unless the Crown intervenes, which historically is a rarity.

The more senior licences and their uses are often "locked in" because the government granted many of the oldest rights in perpetuity or with no end date. Only recently have governments begun granting newer licences with specified terms. These perpetual and fixed uses can be problematic as social and economic contexts and priorities change. Conflicts over water can also be amplified as changing hydrology creates more uncertainty and variability year to year, resulting in uncertainty for

[7] The need for the Province to work with First Nations in a meaningful way that respects their constitutionally protected rights is clearly illustrated in the British Columbia Environmental Appeal Board's September 2015 decision to revoke Nexen Inc's water licence in part because the Province failed to consult in good faith with the Fort Nelson First Nation. See *Chief Gale and the Fort Nelson First Nation v. Assistant Regional Water Manager* (2012).

[8] No colonial court has recognized a specific Aboriginal water right, but courts have acknowledged rights to conditions that support Aboriginal water rights, such as the right to fish.

even some senior licensees about how much water they can divert in the dry months of August and September.

Another concern associated with FITFIR is the lack of incentive for the efficient use of water. Hydrology, technology, best practices, and industry standards all change over time; however, it is not possible to change or modify how water is used or how much is used under licences. This inability to adapt coupled with the "use it or lose it" principle create a powerful incentive to protect licences since non-use can result in the loss of the rights to divert water. In effect the "use it or lose it" principle encourages, or even mandates, waste in the FITIR regime.

The overall lack of attention to nature's limits associated with the current approach to water law has significant impacts on watersheds, fish populations, and ecosystems. Failure to consider and protect environmental flows results in periodic (and often persistent) water shortages for fish and other species, as well as for overall watershed health and function. Overallocation is also a growing concern as water users continue to expect ongoing access, even in the face of changing hydrology and increasing scarcity. The result is mounting conflict between users, the environment and the economy when water is not reliably available.

An example of the impact of this lack of attention to the basic ecology of rivers, streams, and lakes is seen in the Cowichan River watershed on eastern Vancouver Island, British Columbia where salmon are regularly trucked upriver in the fall and released to spawn due to insufficient water. Unrestricted licensed water withdrawals continue in the area, and the capacity to store and holdback water for release at critical times is lost due to the opposition by private landowners claiming that requirements interfere with their riparian access (*Weir v. British Columbia* 2013).

This failure to attend to ecological needs is reinforced by the paucity of reliable information about the amount of water available in most watersheds, and when and how much of the water is being used (Woods and Pentland 2013). The lack of credible and reliable information extends to limited groundwater mapping, insufficient hydrometric information, and minimal climate projections. These major gaps in data are a Canada-wide problem that becomes more acute when attempting to make evidence-based decisions. The situation is reinforced by licences that do not require users to monitor and report actual water use, and by systematic cuts to provincial or federal comprehensive information management systems (NRTEE 2010).

4.5 The Evolution of Water Law—A Case Study in British Columbia

Although transforming the existing system—based on the legal foundations discussed above—will take time and a significant commitment to rearrange the static, top down approach to water management, interesting potential exists in British Columbia's new *Water Sustainability Act* with immediate opportunities for improvements.

British Columbia is an economically, ecologically, and socially diverse place that reflects a full suite of water-related issues. The province includes some of the driest places in the country, such as the Okanagan in the central interior; coastal rainforests; Canadian heritage rivers, such as the Cowichan and Kicking Horse; and globally significant rivers such as the Skeena, Fraser, and the headwaters of the Columbia and Mackenzie rivers.

British Columbia's hydrological and geographic diversity includes watersheds encompassing a range of ecosystems from arid grasslands and coastal temperate rainforest to high alpine source waters. Water uses in the province in many ways mirror those in other parts of Canada. This includes highly concentrated geographic water use in the south and along the coast and in urban watersheds that produce significant agricultural commodities. There is intensive water use for energy production, including large-scale hydroelectric generation, and run-of-the-river and hydraulic fracturing in the north- and south-east interiors. Roughly one-third of the population relies on groundwater, similar to the national average.

Although not facing the level of scarcity and water crisis unfolding in the western United States, recent drought events further challenge the current approaches to water management and law in the province (Christensen and Brandes 2015). For example, in the last two decades, British Columbia has faced an increasing number of droughts, floods, and other water issues, including conflicts over water use, streams running dry, declining aquifer levels, and degraded watersheds (Brandes et al. 2016).

In 2015 alone, several regions in British Columbia experienced pronounced water shortages (Pynn 2015; CBC 2015; Leighton 2015). Canadian heritage rivers such as the Cowichan River on Vancouver Island have had some of the lowest flows in recent history (Fumano 2015). Some watersheds faced fishing closures due to warm water temperatures and low-flow conditions, which put fish stocks in jeopardy (BC FLNRO 2015; Sienuic 2015). Throughout the summer of 2015, reservoir levels also rapidly declined in several areas: Metro Vancouver's reservoir storage dropped dangerously below its normal range in July (Metro Van 2015), and the reservoir levels in Campbell River reached historically low and critical levels, and the community was within weeks of running out of water (Campbell River Mirror 2015).

With this changing "waterscape" as backdrop, British Columbia's recent law reforms provide a useful opportunity to explore how the core principles of western water law are beginning to fracture and adapt to the changing world of water, offering insights into a path forward.

4.5.1 British Columbia's New Water Sustainability Act

In May 2014 the Province of British Columbia enacted the new *Water Sustainability Act* (WSA or "Act"), which replaced the 106-year-old *Water Act*. The new Act is the result of an extensive modernization process driven by numerous specific commitments in British Columbia's 2008 *Living Water Smart Plan* (BC MoE 2008). It

came into force on February 29th, 2016, and is now the cornerstone of British Columbia's legal framework for water.

The *Water Sustainability Act* is a framework, or enabling legislation, which means that the critical details of the legislation will be determined in supporting regulations developed over the next several years. From a sustainability perspective, while many of the most promising elements of the Act are not yet in place, this new law portends a different kind of regime that emphasizes partnerships and begins to address some of the more serious challenges associated with the lingering foundations of western water law.

The Act has the potential to be a strong piece of environmental legislation, including features that promise to protect and restore British Columbia's fresh water and offer significant potential for improved outcomes on the ground (and in the water) (Curran 2014c; Gage 2014; WWF-Canada 2014; ORC 2014). Highlights include: regulating groundwater for the first time; environmental and critical flow protections; the establishment of "water objectives" that improve links between water quality and quantity and land and water management; incentives to increase water use efficiency; more detailed measurement and reporting; and improved planning and governance through localized and binding plans and provisions for shared or delegated decision-making.

Instead of reviewing the legal minutia of the new Act, the remainder of this chapter focuses on the broad strokes of how this new law begins the necessary evolution away from of the foundational principles associated with western water law, although significant historical influences remain, which may, ultimately, impede its effective implementation.

4.5.2 Contested Crown Ownership

The new Act reaffirms the assertion of ownership over water flowing in streams, lakes, and ground water. This is highly contested by Aboriginal peoples across Canada and especially in British Columbia where the majority of the province is unceded traditional lands and waters (i.e., where no treaties exist). This chapter does not discuss Aboriginal water rights in any detail; however, the importance of this issue and the fundamental flaw it highlights for the legitimacy of the western water law system cannot be overstated.[9]

The Provincial government has failed to acknowledge and quantify Indigenous water use in the new regime or in each watershed's water balance. This type of "exclusion solution" will not be legally feasible in the future as the law continues to

[9] The US Indian reserved rights doctrine (Winter's Doctrine) addresses this concern to some extent. It arises from a 1908 Supreme Court case that recognized an implied federal reserve right to water in a sufficient amount to fulfill the purpose of Indian reservations (see Brooks 2005) There is no legal principle that mirrors this protection for basic water entitlements for Indigenous people in Canada.

evolve in its recognition of Aboriginal rights and title. Canada's legal landscape is constantly changing, and the recent Supreme Court of Canada decision, *Tsilhqot'in Nation*, illustrates this dynamism. The Tsilhqot'in decision confirmed that any provincial laws that operate to extinguish Aboriginal title are illegal, including, by extension, those that relate to fresh water (*Tsilhqot'in Nation v. British Columbia* 2014).

The Province's failure to recognize Aboriginal water rights under the *Water Sustainability Act*, if unaddressed, will have legal and operational repercussions for the provincial water law regime as a whole. Courts could invalidate parts of the provincial licensing and permitting regime in regions where insufficient consultation and accommodation has occurred and Aboriginal title found. This lack of consideration of the extent of existing and future water entitlements amplifies uncertainty for the current and future licensing system.

4.5.3 First in Time, First in Right (FITFIR) "Off-ramps"

FIFFIR remains firmly entrenched in the British Columbian legal regime. This is problematic, especially as it now extends to groundwater and there is increasingly a need to adapt to changing hydrological cycles, economic demands, and social priorities.

As discussed, FITFIR creates a rigid system that locks in historical—often suboptimal—uses. Yet, the new Act does begin to erode this aspect of western water law by building on existing administrative remedies. Various short-term government interventions that prioritize water for fish and ecosystems over licence priority are possible and increasingly streamlined under the new regime. This includes temporary orders to deal with acute shortage or threats to fish populations. Also, a number of FITFIR "off-ramps" are now in place, but not yet tested, under the new regime. These off-ramps include the ability to prioritize domestic and critical environmental flows during periods of water shortage ahead of all other licensed uses, and the ability to initiate legally enforceable water sustainability plans that can suspend, add conditions to, and even claw back existing licences.

A crucial dimension of the Act in addressing the rigidity of FITFIR is the ability to review existing licences—even those with no termination dates. Such a review can include amending licence conditions and terms, for example, for the express purpose of water conservation, environmental flow protection or the more efficient use of water. The comptroller of water rights or a water manager may notify licensees of a review any time after February 29, 2046 (30 years after the date the Act came into effect) or 30 years after the granting of a new licence or review of the terms and conditions of their licence (*Water Sustainability Act* 2014, s.23).

Arguably these various alternatives and off-ramps have the potential to render FITFIR increasingly irrelevant in some of the more serious or persistent low-flow scenarios.

4.5.4 Incentives for Efficiency and Water Sustainability Planning

Incentives for efficiency, improved planning and, importantly, the potential for innovative forms of governance lie at the heart of the new legal regime. Beneficial use is better defined and clarified in the Act itself with explicit requirements to use water as efficiently as practicable. Further specificity can be developed through new regulations, and decision-makers can require licensees to undertake a water conservation audit to show efficiency of use and to take measures to meet a specified level of water use efficiency and conservation (*Water Sustainability Act* 2014, s.30).

A powerful change in the new legislative regime is the sweeping ability to enact legally enforceable water sustainability plans. These provisions are the best example of a new partnership approach to water management that veers away from a strictly top-down regulatory system. Plans have the potential to prevent or address conflicts between water users or users and the environment, and have significant scope to go well beyond water allocations to include water quality, drought planning, water sharing, and changes to exiting licences. Indeed, water sustainability plans may ultimately lay the watershed-specific foundation for moving past the problematic foundational principles associated with the western water law regime.

The provincial cabinet has far reaching powers to initiate such plans and make them binding across sectors and on a variety of decision-makers exercising jurisdiction over Crown and private lands, such as other land managers or local governments. Ultimately, the plan's ability to take an integrated watershed approach is significant, especially when coupled with explicit powers in the Act to delegate decision-making to more local watershed authorities. At this point the utility of water sustainability plans is more potential than real as the plans must be developed and tested with the support of industry and local and Aboriginal communities.

4.5.5 Water for Nature

The *Water Sustainability Act* provides a variety of methods to address ecological considerations, and specifically to protect environmental flows, or water for nature. This addition represents one of the most fascinating, and potentially significant, shifts in the approach to water management.

Groundwater is now integrated into the regulatory apparatus (starting with non-domestic groundwater users), which means that surface and groundwater are managed as one interconnected resource. Environmental flows are better protected. Key features now in force include protections for critical flows so ecosystems and fish can *survive* during periods of drought (*Water Sustainability Act* 2014, s.87), as well

as formal requirements for decision-makers to consider environmental flow needs in future licensing decisions to ensure aquatic ecosystems can *thrive* over the long term (*Water Sustainability Act* 2014, s.15).

Other protections include sensitive stream designations that limit development and require explicit attention to protecting fish habitat (*Water Sustainability Act* 2014, s.17), the ability to set aside water in ecological reserves (*Water Sustainability Act* 2014, s.39) and water objectives, which are legal tools that can influence land use decisions affecting water quality and quantity (*Water Sustainability Act* 2014, s.43).

Taken together, this suite of tools represents a significant departure from the historical approach. It signals a powerful rebalancing of ecological and economic priorities associated with water and provides government decision-makers and even local governments and communities with considerable flexibility to better ensure that water protection and allocation match current ecological needs and conditions.

4.6 Changing Currents—Toward a Twenty-first Century Approach

The top-down approach to water management emphasizes the diversion of water for human uses and generally ignores ecosystem needs and ecological priorities. It does not align with the complexity of today's water issues. Water simply does not adhere to political boundaries as it flows across the landscape, with ecosystems that are dynamic, governed by uncertainty and continual change.

In the context of modern water challenges, some governments in Canada are realizing that they do not have the capacity to be the exclusive decision-makers or water managers. Neither can these senior governments alone possibly keep on top of the real-time information needed to make water management decisions as seasonal and annual hydrological variability increases, and local social demands and priorities change.

Consensus has emerged in the academic literature that "good" governance for water includes the principles of participation, legitimacy, transparency, and accountability (van der Valk and Keenan 2011; Matthews and Schmidt 2014; Rogers and Hall 2003; Cook and Bakker 2011). Walker and Salt (2006) indicate that an outcome of "good" or improved water governance would be that it provides the capacity to build social-ecological resilience—capacity of the watershed and the communities and businesses within them to withstand disturbances while maintaining their structure, function, identity, and ability to learn and/or transform as needed.

Twenty-first century water governance requires a more collaborative approach where all governments, rights holders, and stakeholders have roles and responsibilities, with creative integration of top-down and bottom-up planning and decision-making (Brandes and O'Riordan 2014; Shurbsole 2004; Nowlan and Bakker 2010).

A fundamentally important development in water law is the recasting of water allocation as a mechanism for planning and collaboration and not simply as an administrative task as it often is during "normal" times. The example of British Columbia demonstrates how this water law regime is "changing the current"—evolving gradually toward such a system with a promise (as yet unfulfilled) to successfully implement a strong *Water Sustainability Act*.

The potential of a modern water law regime is certainly significant. At the heart of the reforms in British Columbia is a move away from a rigidly controlled, state-run, and top-down approach toward a model that emphasizes new priorities around nature and a creative mix of local and government actors with partnership and shared decision-making at its core. This modified legal regime makes possible the transformation of how communities interact with water and how nature is fundamentally included.

Ultimately, the success of this new water law regime will depend on a vibrant partnership between the Province, Aboriginal peoples and First Nations, federal and local governments, water licence holders, and community and watershed organizations all coming together to take leadership in and responsibility for water stewardship.[10]

All partners will be required to contribute to the day-to-day management of freshwater resources, engage in long-term watershed planning, and provide appropriate local solutions to water-related problems as they emerge. More fundamentally, partners will need to work together in each watershed under a shared risk and responsibility approach to water management and governance.

The partnership model (see Fig. 4.1) illustrates the kind of relationships needed to fulfill the potential of this approach. In this conceptualization, the series of smaller tributaries represent key actors and their designated roles and responsibilities. These various tributaries flow into a larger metaphorical river, representing a modern management and governance approach. This approach ultimately changes the patterns, or currents, of water use to better balance the needs of nature and the multitude of uses that exist in the watershed. A complementary modern water law regime is needed to reinforce this vision and ensure that the appropriate incentives and institutional architecture exist to facilitate the paradigm shift.

Getting from the existing system to a truly modern and more sustainable system will require a herculean effort. In many ways the process is already underway as demonstrated in the British Columbia case study, and as western water law continues to evolve in the face of economic, social, and ecological challenges.

[10] British Columbia's *Northeast Water Strategy* articulates one approach to this partnership concept. Unified water stewardship is one of the Strategy's core principles. This includes co-stewardship of water resources with First Nations and other partners, and also sharing of knowledge, research, and data between partners and between other overlapping water management activities in the region. (British Columbia 2015).

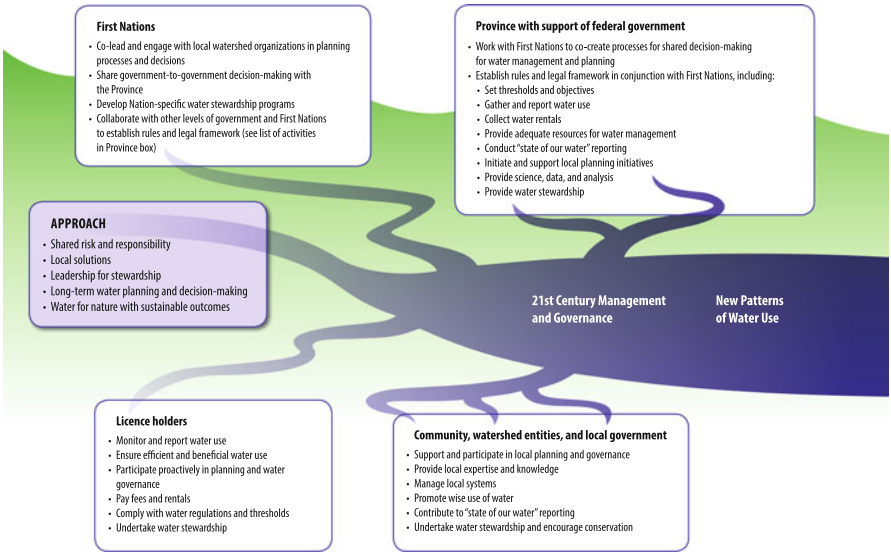

Fig. 4.1 Partnership model for British Columbia—roles and responsibilities (Brande s et al. 2015)

References

Acton v. Blundell. (1843). 12 M. W. 324.

Alberta Environment. (2003). *Water for life strategy*. http://www.waterforlife.gov.ab.ca. Accessed 20 Mar 2016.

Alberta Environment and Parks (AEP). (2016). *Water for life*. http://aep.alberta.ca/water/programs-and-services/water-for-life/default.aspx. Accessed 25 Mar 2016.

Bailey, A. (2008). *Federalism: Water law: The interjurisdictional context*. Centre for Constitutional Studies, University of Alberta. http://ualawccsprod.srv.ualberta.ca/ccs/index.php/constitutional-issues/federalism/50-water-law-the-interjurisdictional-context#_ftnref3. Accessed 24 Mar 2016.

BC Government. (2015). *Northeast water strategy*. http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-planning-strategies/northeast-water-strategy. Accessed 20 Mar 2016.

BC Ministry of Environment (BC MoE). (2008). *Living water smart: British Columbia's water plan*. http://www.livingwatersmart.ca. Accessed 20 Mar 2016.

BC Ministry of Environment (BC MoE). (2016). *Modernization process. Development of living water smart and the water act modernization process*. https://engage.gov.bc.ca/watersustainabilityact/modernizationprocess/. Accessed 24 Mar 2016.

BC Ministry of Forests, Lands and Natural Resource Operations (BC FLNRO). (2015). Fishing closures announced for south coast. *BC Government News*, 20 July. https://news.gov.bc.ca/stories/fishing-closures-announced-for-south-coast. Accessed 20 Mar 2016.

Borrows, J. (2002). *Recovering Canada: The resurgence of indigenous law*. Toronto: University of Toronto Press.

Brandes, O. M. (2005). At a Watershed: Ecological governance and sustainable water management in Canada. *Journal of Environmental Law and Practice, 16*(1), 79–97.

Brandes, O. M. (2014, May 5). New BC water act generally gets things right. *The Province.*

Brandes, O. M., & Nowlan, L. (2009). Wading into uncertain waters: Using markets to transfer water rights in Canada—Possibilities and pitfalls. *Journal of Environmental Law and Practice, 19*(3), 267–287.

Brandes, O. M., & O'Riordan, J. (2014). *Decision-makers brief: A blueprint for watershed governance in British Columbia*. Victoria: POLIS Project on Ecological Governance, University of Victoria. http://poliswaterproject.org/publication/760. Accessed 18 Mar 2016.

Brandes, O. M., O'Riordan, J., O'Riordan, T., & Brandes, L. (2014). *A blueprint for watershed governance in British Columbia*. Canada: POLIS Project on Ecological Governance, University of Victoria. http://www.poliswaterproject.org/blueprint. Accessed 23 Mar 2016.

Brandes, O. M., Carr-Wilson, S., Curran, D., & Simms, R. (2015). *Awash with opportunity: Ensuring the sustainability of British Columbia's new water law*. POLIS Project on Ecological Governance, University of Victoria, Canada. http://poliswaterproject.org/awashwithopportunity. Accessed 20 Mar 2016.

Brandes, O. M., Morris, T., Archer, J. L., Brandes, L., Moore, M. L., O'Riordan, J., et al. (2016). *Illumination: Insights and perspectives for building effective watershed governance in B.C*. Victoria: POLIS Project on Ecological Governance, University of Victoria. http://poliswaterproject.org/illumination. Accessed 20 Mar 2016.

Brooks, N. (2005). *Indian reserved water rights: An overview*. CRS Report for Congress. Washington, DC: Congressional Research Service

Campbell River Mirror. (2015, June 23). *Record low flow forces down dam discharge*. Campbell River Mirror. http://www.campbellrivermirror.com/news/309362371.html. Accessed 22 Mar 2016.

CBC News. (2015, July 3). Vancouver Island fishing banned as drought hits level 4. *CBC News British Columbia*. http://www.cbc.ca/news/canada/british-columbia/vancouver-island-fishing-banned-as-drought-hits-level-4-1.3137599. Accessed 25 Mar 2016.

Chasemore v. Richards (1859) 7 HLC 349.

Chief Gale and the Fort Nelson First Nation v. Assistant Regional Water Manager. (2015, September 3). BC EAB Decision, 2012-WAT-013(c).

Christensen, R., & Brandes, O. M. (2015) *California's Oranges and B.C.'s Apples? Lessons for B.C. from California groundwater reform.* POLIS Project on Ecological Governance, University of Victoria, Canada. http://poliswaterproject.org/orangesapples. Accessed 20 Mar 2016.

Constitution Act (1867) (U.K.) 30 & 31 Vict., c. 3, s. 91 and 92, reprinted in RSC 1985, App. II, No. 5

Cook, C., & Bakker, K. (2011). Water governance in Canada: Innovation and fragmentation. *International Journal of Water Resources Development, 27*(2), 275–289.

Council of Canadian Academies. (2009). *The sustainable management of groundwater in Canada—Expert Panel on Groundwater*. Ottawa: Council of Canadian Academies.

Curran, D. (2014a). Can BC's New *Water Sustainability Act* Plug the Leaks? Seminar for University of Calgary Faculty of Law, Calgary, Canada.

Curran, D. (2014b). *British Columbia's Water Sustainability Act—A new approach to adaptive management and no compensation regulation*. The University of Calgary Faculty of Law Blog on Developments in Alberta Law. http://ablawg.ca. Accessed 28 May 2014.

Curran, D. (2014c). *British Columbia's New Water Sustainability Act—Waiting for the details*. Environmental Law Centre, University of Victoria. http://www.elc.uvic.ca/publications/british-columbias-new-water-sustainability-act-waiting-for-the-details/. Accessed 21 Mar 2016.

Curran, D. (2015). Water law as watershed endeavour: Federal inactivity as an opportunity for local initiative. *Journal of Environmental Law and Practice, 28*(1), 53–88.

Curran, D., & Brandes, O. M. (2012). When the water dries up: Lessons from the failure of water entitlements in Canada, the U.S. and Australia—Workshop Discussion Paper. University of Victoria, Canada. http://poliswaterproject.org/publication/478. Accessed 25 Mar 2016.

Curran, D., & Mascher, S. (2016). Adaptation in water law: Evaluating Australian (New South Wales) and Canadian (British Columbia) law reform initiatives. *McGill International Journal of Sustainable Development Law and Policy, 12*(1), Forthcoming.

de Loë, R., Varghese, J., Ferreyra, C., & Kreutzwiser, R. (2007). *Water allocation and water security in Canada: Initiating a policy dialogue for the 21st Century*. Guelph: Guelph Water Management Group, University of Guelph.

Fumano, D. (2015, June 10). Water experts urge B.C. to take a lesson from California drought. *The Province*. http://poliswaterproject.org/sites/default/files/2015-06-09_TheProvince_GroundwaterReport.pdf. Accessed 22 Mar 2016.

Furubotn, E., & Pejovich, S. (1972). Property rights and economic theory: A survey of recent literature. *Journal of Economic Literature, 10*(4), 1137–1162.

Gage, A. (2014). *The strengths and weaknesses of the new Water Sustainability Act*. http://wcel.org/resources/environmental-law-alert/strengths-and-weaknesses-new-water-sustainability-act. Accessed 23 Mar 2016.

Government of Northwest Territories (GNWT). (2016). *Strategy development timeline for northern voices northern peoples initiative*. NWT Water Stewardship. http://www.nwtwatersteward-ship.ca/strategy_development_timeline. Accessed 21 Mar 2016.

Government of the Northwest Territories and Aboriginal Affairs and Northern Development Canada. (2010). *Northern voices, northern waters: NWT Water Stewardship Strategy*. http://www.nwtwaterstewardship.ca/introduction. Accessed 23 Mar 2016.

Harris, E. (2013). The evolution of water rights in the nineteenth century: The role of climate and asset type. *Natural Resources Journal, 53*, 217–263.

Hogg, P. (2007). *Constitutional Law of Canada*, student edition. Thomson Carswell, Scarborough Interprovincial Co-operatives Ltd. v. Manitoba (1975) [1976] 1 SCR 477.

Hutchins, W. A., Ellis, H. H., & DeBraal, J. P. (1971). *Water rights laws in the nineteen western states*. Washington, DC: United States Department of Agriculture.

Johnson, N. K., & DuMars, C. T. (1989). A survey of the evolution of western water law in response to changing economic and public interest demands. *Natural Resources Journal, 29*, 348–387.

Leighton, B. (2015, July 4). Heat wave forces burning ban, fishing closures as BC copes with drought. *The Province.*http://www.vancouverobserver.com/news/heat-wave-forces-burning-ban-fishing-closures-bc-copes-drought. Accessed 20 Mar 2016.

Lucas, A. R. (1990). *Security of title in Canadian water rights*. Calgary: Canadian Institute of Resources Law.

Matsui, K. (2009). *Native peoples and water rights: Irrigation, dams and the law in western Canada*. Montreal: McGill-Queens University Press.

Matthews, N., & Schmidt, J. J. (2014). False promises: The contours, contexts and contestation of good water governance in Lao PDR and Alberta, Canada. *International Journal of Water Governance, 2*(2–3), 21–40.

Mattison, J. (2016, February 1–2). Understanding the context: Environmental flow needs in British Columbia. Paper presented at the forum on environmental flow needs in British Columbia, WWF-Canada and POLIS Project on Ecological Governance, Vancouver, Canada.

Metro Vancouver. (2015). *Reservoir levels and daily consumption*. http://www.metrovancouver.org/services/water/conservation-reservoir-levels/reservoir-levels/Pages/default.aspx. Accessed 22 Mar 2016.

Muldoon, P. R., Lucas, A. R., Gibson, R. B., Pickfield, P., & Williams, J. (2015). *An introduction to environmental law and policy in Canada* (2nd ed.). Toronto: Emond Montgomery Publications.

Napoleon, V. (2007). *Thinking about indigenous legal orders.* National Centre for First Nations Governance. http://fngovernance.org/ncfng_research/val_napoleon.pdf. Accessed 20 Mar 2016.

National Round Table on the Environment and the Economy. (2010). *Changing currents: Water sustainability and the future of Canada's natural resource sectors*. Ottawa, Canada. http://nrt-trn.ca/water/water-sustainability-and-the-future-of-canadas-natural-resource-sectors-2/changing-currents. Accessed 21 Mar 2016.

Nowlan, L. (2005). *Buried treasure: Groundwater permitting and pricing in Canada.* Walter and Duncan Gordon Foundation. http://powi.ca/wp-content/uploads/2012/12/Buried_Treasure-Groundwater-Permitting-and-Pricing-in-Canada-2005.pdf. Accessed 22 Mar 2016.

Nowlan, L. (2012). CPR for Canadian rivers—Law to conserve, protect, and restore environmental flows in Canada. *Journal of Environmental Law and Practice, 23*, 203–252.

Nowlan, L, & Bakker, K. (2010). *Practising shared water governance in Canada: A primer.* UBC Program on Water Governance, Vancouver, Canada. http://watergovernance.ca/wpcontent/uploads/2010/08/PractisingSharedWaterGovernancePrimer_final1.pdf. Accessed 20 Mar 2016.

Ontario Ministry of the Environment and Climate Change (OMECC). (2016). *Source protection. Development of Ontario's comprehensive source protection program*. https://www.ontario.ca/page/source-protection. Accessed 21 Mar 2016.

Outdoor Recreation Council of British Columbia and Ducks Unlimited Canada. (2014, March 12). New water act will make BC leader in environmental stewardship: Environment Minister. *CTV News Vancouver.*http://bc.ctvnews.ca/new-water-act-will-make-b-c-leader-in-environmental-stewardship-environment-minister-1.1725666. Accessed 25 Mar 2016.

Pearse, P. H., & Quinn, F. (1996). Recent developments in federal water policy: One step forward, two steps back. *Canadian Water Resources Journal, 21*(4), 329–340.

Percy, D. R. (1988). *The framework of water rights legislation in Canada*. Calgary: Canadian Institute of Resources Law.

Percy, D. R. (2004). The limits of western Canadian water allocation law. *Journal of Environmental Law and Practice, 14*, 313–327.

Phare, M. S. (2009). *Denying the source: The crisis of first nations water rights*. Victoria: Rocky Mountain Books.

Pynn, L. (2015, September 17). Competition for precious water in drought-stricken Nicola Valley. *The Vancouver Sun*. http://www.vancouversun.com/Competition+precious+water+drought+stricken+Nicola+Valley/11372427/story.html. Accessed 20 Mar 2016.

Quebec Government. (2009). *An act to affirm the collective nature of water resources and provide for increased water resource protection, CQLR c C-6.2*. http://canlii.ca/t/52b2f

R. v. Crown Zellerbach Canada Ltd. (1988). 1 SCR 401

R. v. Hydro-Québec. (1997). 3 SCR 213

Rivera, A. (2005). How well do we understand groundwater in Canada? A science case study. In: Nowlan, L. (Ed.), *Buried treasure: Groundwater permitting and pricing in Canada*. Walter and Duncan Gordon Foundation (pp. 4–12). http://powi.ca/wp-content/uploads/2012/12/Buried_Treasure-Groundwater-Permitting-and-Pricing-in-Canada-2005.pdf. Accessed 20 Mar 2016.

Rogers, P., & Hall, A. W. (2003). *Effective water governance.* TEC Background Papers, No. 7. Global Water Partnership Secretariat, Stockholm, Sweden. http://water.worldbank.org/publications/effective-water-governance. Accessed 21 Mar 2016.

Saskatchewan Water Security Agency (SWSA). (2012). Area 1.3: Water allocation system. In: *25 year Saskatchewan water security plan action* (pp. 8–9). https://www.wsask.ca/About-WSA/Publications/25-Year-Water-Security-Plan/. Accessed 22 Mar 2016.

Schlager, E., & Ostrom, E. (1992). Property-rights regimes and natural resources: A conceptual analysis. *Land Economics, 68*(3), 249–262.

Shrubsole, D. (Ed.). (2004). *Canadian perspectives on integrated water resources management*. Cambridge: Canadian Water Resource Association.

Sieniuc, K. (2015, July 29). First Nations Tribal Council suspends Okanagan sockeye salmon fishery. *The Globe and Mail.* 29 July. http://www.theglobeandmail.com/news/british-columbia/first-nations-tribal-council-suspends-okanagan-sockeye-salmon-fishery/article25769695/. Accessed 22 Mar 2016.

Thayer v. California Dev. Co. (1912). 164 Cal. 117, 128 Pac. 21

Tsilhqot'in Nation v. British Columbia. (2014). SCC 44

van der Valk, M. R., & Keenan, P. (2011). Principles of good governance at different water governance levels. Papers presented at a workshop held on 22 March 2011 in Delft, The Netherlands. UNESCO, Netherlands.

Water Act, RSBC. (1996). c 483, s. 2. http://canlii.ca/t/52cdd

Water Act, RSA. (2000). c W-3, s. 30. http://canlii.ca/t/8220
Water Rights Act, CCSM. (2015). c W-80, ss. 8-9. http://canlii.ca/t/8gvc
Water Sustainability Act, SBC. (2014). c 15. http://canlii.ca/t/528ss
Weir v. British Columbia. (Deputy Comptroller of Water Rights). (2014). BC EAB Decision, 2013-WAT-013(b), 015(c), 016(b), 017(c), 018(c), & 019(c). 14–17 April 2014 and 3–5 June 2014.
Walker, B. H., & Salt, D. A. (2006). *Resilience thinking: Sustaining ecosystems and people in a changing world*. Washington, DC: Island Press.
Wilkinson, C. F. (1992). *Crossing the next meridian: Land, water, and the future of the west*. Washington, DC: Island Press.
Wilson-Raybould, J. (2013). *Re: Water sustainability act legislative proposal*. Submission to Minister Mary Polak on the Water Sustainability Act, BC Assembly of First Nations, 2 December 2013. http://engage.gov.bc.ca
Wood, C., & Pentland, R. (2013). *Down the drain: How we are failing to protect our water resources*. Vancouver: Greystone Publishing.
WWF Canada. (2014). *This year you rewrote history: A bold new BC water act protects water for nature and people.* WWF-Canada Annual Report 2014. http://awsassets.wwf.ca/downloads/2014_wwf_freshwatergcob_c__water_act.pdf. Accessed 22 Mar 2016.