

Authorities Affecting Source Water Protection in British Columbia: Research Paper

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Preface

The federal and provincial governments strive to protect source water through Acts and regulations, whereas, local governments use bylaws to ensure that community water remains safe. This report identifies the key authorities and jurisdictions designed to protect British Columbia's water. This document aims to provide an overview of the water-related acts, regulations and jurisdictions in British Columbia. The overview summarizes the following key documents:

- Canadian Environmental Assessment Act
- Canada Labour Code
- Canada Water Act
- Department of Health Act
- Drinking Water Protection Act
- Environmental Management Act
- Environmental Protection Act
- Federal Water Policy
- First Nations Land Management Act
- Food and Drug Act
- Forest and Range Practices Act
- Forest Land Reserve Act
- Guidelines for Canadian Drinking Water
- Health Act
- Indian Act
- Land Title Act
- Local Government Act
- Private Managed Forest Land Act
- Waste Management Act
- Water Act
- Water Protection Act

Stakeholder feedback regarding the strengths and limitations of source water related Acts and regulations is also included in this report. The feedback is based on interviews with First Nations, provincial, federal and local government representatives. The interviews focused on identifying the potential strengths and limitations of the authorities involved in source water protection plans, as well as their relevance to drinking water pathogens. The interviews strive to identify potential areas of concern related to First Nation's drinking water supply where applicable.

Further, a brief reference table incorporating a summary of the Acts described in this research project is included as well. This quick reference table includes information on each Act relevant to the water resource.

Finally, a listing of useful reference material and websites is available for more detailed or specific information on water use and protection in British Columbia. This reference material is designed to help the reader explore the topic in greater detail.

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1. INTRODUCTION

1.1. PROJECT OBJECTIVES

The objective of this report is to provide an overview of source water protection authorities in British Columbia. This report is designed as a status/fact-finding research paper that provides a concise and comprehensive review of all key authorities and information related to source water protection in British Columbia. The research paper summarizes the available and applicable jurisdictions and authorities for the management of human activities in watersheds that can affect the quality of raw drinking water sources in British Columbia. The report also includes an analysis of the relevance of those authorities to drinking water pathogens that cause human health effects in British Columbia. Further, an analysis of the strengths and limitations of each authority from the perspective of its applicability and potential effectiveness in contributing to the implementation of raw source water protection plans is also included. Finally, the project highlights First Nations' perspectives where they differ from that of other water purveyors or consumers.

1.2. PROJECT LIMITATIONS

The information contained in this document is based on the resources available at the time of writing. Changes in legislation and regulations occur on a regular basis. The information contained in this document represents a snapshot of the current legislation, regulations and authorities, and is based on an interpretation of these entities. The reader is referred to the actual Acts and regulations for detailed information. A large portion of the information contained in this report has been compiled from interviews with key stakeholders. This information is based on their input and does not necessarily represent the opinion of the authors or the Fraser Basin Council.

2. ANALYSIS

2.1. FEDERAL WATER RELATED ACTS AND REGULATIONS

The federal government has developed a number of water protection Acts, guidelines and policies that apply to federal lands (including Indian Reserves), buildings and employees.

2.1.1. Canadian Environmental Assessment Act

Canadian Environmental Assessment Act – Summary

The purpose of the Canadian Environmental Assessment Act is to ensure projects are considered in a careful and precautionary manner before federal authorities take action in connection with them, in order to ensure that such projects do not cause significant adverse environmental effects. Projects considered under the Act are screened for their impacts on source water. This Act encourages responsible authorities to take actions that promote sustainable development in an efficient manner, promote cooperative action between the federal and provincial government with respect to the environmental assessment processes for projects, and promote communications and cooperation between responsible authorities and aboriginal peoples. The Act also requires that projects carried out in Canada, or on federal lands, do not cause significant adverse environmental effects outside the jurisdictions in which they are carried out, and that opportunities for timely and meaningful public participation must be provided. The assessment process is administered by the Canadian Environmental Assessment Agency.

The Canadian Environmental Assessments Act requires an environmental assessment when a federal authority:

- Is the proponent of the project and does any act or thing that commits the federal authority to carrying out the project in whole or in part;
- Makes or authorizes payments or provides a guarantee for a loan or any other form of financial assistance;
- Has administration of federal lands and sells, leases or otherwise disposes of these lands or any interests in those lands or transfers administration and control of those lands or interests to a province for the purpose of enabling a project in whole or in part; or
- Issues a permit or licence, grants an approval or takes any other action for the purpose of enabling the project in whole or in part.

2.1.2. Canada Labour Code

Canada Labour Code – Summary

This Act only applies to federal government employees. This Act states that all federal employers must provide potable water to federal employees for both washing, drinking and food preparation. The standards are based on the Guidelines for Canadian Drinking Water Quality. This provision also requires employers to follow proper notification procedures for hazards in the workplace including those related to water. The standards for this Act are clearly laid out in the Canada occupational, safety and health regulations.

2.1.3. Canada Water Act

Canada Water Act – Summary

The Canada Water Act is designed to provide a framework for the management of water resources in Canada. The Act outlines the requirements for research, planning, and implementing programs relating to the conservation, development and utilization of water resources. Under this Act, the Minister of Environment may establish intergovernmental committees for consultation, advice and program facilitation. The Canada Water Act also outlines the power to develop federal-provincial water resource management programs where there is a significant national interest. Finally, the Act enables management programs to be developed for federal waters, inter-jurisdictional waters and international boundary waters. With respect to inter-jurisdictional water issues, the Act obliges the federal Minister to let disputing bodies work together and only step in when others have failed.

The Canada Water Act also includes key sections that enable:

- The Minister of Environment to enter into agreements with one or more provincial governments that have an interest in the management of water quality;
- The management of federal waters under the exclusive jurisdiction of Parliament;
- Water quality management of any waters, which have become a matter of urgent national concern; and
- The establishment of Water Quality Management Agencies to plan, initiate and carry out programs to restore, preserve and enhance water quality levels in a water quality management area.

2.1.4. Department of Health Act

Department of Health Act – Summary

This Act defines the powers, duties, and functions of the Minister of Health. These duties relate to health issues, including access to potable water, related to drinking

water for Canadian citizens. Only the health issues under the jurisdiction of the federal government are covered in this Act.

2.1.5. Environmental Protection Act

Environmental Protection Act – Summary

The Environmental Protection Act is designed to protect human health and contribute to sustainable development through pollution prevention and the protection of the environment (including water). Under this Act, Advisory Committees are established that may enter into agreements with provinces and Aboriginal people. These agreements are designed to avoid jurisdictional duplication.

The Environmental Protection Act covers:

- Pollution prevention;
- Control of toxic substances;
- Animate products of biotechnology; and
- The control of pollution and management of wastes, environmental emergencies, government operations and federal and aboriginal lands (regulatory body), and enforcement.

2.1.6. Federal Water Policy

Federal Water Policy – Summary

The Federal Water Policy is the result of several years of consultation within and outside the government. The policy is designed to address the management of water resources. It attempts to balance water uses with the requirements of the environment. The objectives of this policy are designed to take into account the needs of all Canadians and to encourage the use of freshwater in an efficient and equitable manner consistent with the social, economic and environmental needs of present and future generations. The policy stresses that government action is not enough. Canadians at large must become aware of the true value of water in their daily lives and use it wisely.

The primary goals of this policy are to:

- Protect and enhance the quality of the water resource; and
- Promote the wise and efficient management and use of water.

2.1.7. First Nations Land Management Act

First Nations Land Management Act – Summary

The First Nations Land Management Act and the affiliated Framework Agreement enables the participating First Nations to manage their reserve lands and resources

outside of the Indian Act. Fourteen Bands across Canada have signed individual agreements, including seven in British Columbia to date.

The First Nation Land Management Act speaks of land and resources. While the Act does not specify water, it is assumed that the term “resources” includes water for the purposes of this paper.

2.1.8. Fisheries Act

Fisheries Act – Summary

The Fisheries Act is designed to protect Canada’s fisheries. The Fisheries Act does, however, also protect drinking water through its fish protection and pollution prevention sections. The Act outlines the requirements for preventing the discharge of deleterious substances into the water supply and the protection of fish habitat.

2.1.9. Food and Drug Act

Food and Drug Act – Summary

The Food and Drug Act ensures that bottled water containing poisonous or harmful substances is not sold in Canada. The primary agencies responsible for the implementation of this Act are Health Canada and the Canadian Food Inspection Agency.

The Guidelines for Canadian Drinking Water Quality are used to establish the safety of substances contained in bottled water when threshold amounts are unavailable under the Food and Drug Act regulations.

2.1.10. Guidelines for Canadian Drinking Water Quality

Guidelines for Canadian Drinking Water Quality – Summary

The federal government in collaboration with the provinces and territories developed these guidelines under the Federal-Provincial-Territorial Committee on Drinking Water. This committee includes representatives from all provinces and territories as well as Health Canada and Environment Canada. Health Canada provides secretariat support for the committee. The guidelines outline the minimum requirements of every water system in Canada in order to ensure clean and safe drinking water. The guidelines reinforce drinking water requirements in all Canadian jurisdictions. The key guidelines include:

- Microbial quality for minimum exposure to disease-causing organisms;
- Turbidity as a measure of contamination or as an impediment to disinfections;
- Chemical and radiological content and local monitoring;
- Treatment and monitoring requirements;

- Aesthetic guidelines;
- Operational procedures; and
- Public perception of water quality including taste, odour, and colour of water.

2.1.11. Indian Act

Indian Act – Summary

The Indian Act in sec 81 enables an Indian Band to enact bylaws regarding a range of subjects, and specifically:

(a) to provide for the health of residents on the reserve and to prevent the spreading of contagious and infectious diseases; ...

(f) the construction and maintenance of watercourses, roads, bridges, ditches, fences and other local works; ...

(l) the construction and regulation of the use of public wells, cisterns, reservoirs and other water supplies ...

2.1.12. Framework Agreement on First Nations Land Management

Framework Agreement on First Nations Land Management – Summary

A First Nations Band has the option to manage its reserve lands under the Framework Agreement on First Nations Land Management, by developing and adopting its own Land Code. The Land Code sets out the basic land laws of that First Nation, thereby replacing the land management provisions of the Indian Act. The participating First Nations bands receive the powers to make laws "... respecting the development, conservation, protection, management, use and possession of First Nation land and interests and licenses in relation to land" (sec 18.1, Framework Agreement). Federal administration of the reserve land ceases under the Indian Act. This type of government to government agreement enables First Nations to establish their own regimes to manage their lands and resources, providing for more decision making at the local level.

2.2. PROVINCIAL WATER RELATED ACTS AND REGULATIONS

The provincial government is the primary legal authority responsible for drinking water in British Columbia. The provincial government receives input from national and provincial experts in order to determine the water protection programs it will implement and fund. Legislation and regulation are the primary methods used by the provincial government to protect water in British Columbia. Through Acts and regulations, this order of government strives to ensure a safe drinking water supply for BC citizens.

The Ministry of Health Services is the primary body responsible for ensuring that BC's water is safe for human consumption. Medical health officers and drinking water protection officers play a direct role in developing and implementing drinking water regulations and policies. However, a number of other authorities and jurisdictions reference source water protection as well. The following section provides an overview of the key source water sections incorporated into current Acts and regulations (as outlined on the government of British Columbia's complete list of Statutes with associated regulations web search tool).

2.2.1. Drinking Water Protection Act

Drinking Water Protection Act – Summary

The Drinking Water Protection Act is the primary Act designed to protect BC's drinking water. This Act and its associated regulations came into effect on May 16 2003. This Act replaced the Safe Drinking Water Regulations under the Health Act. The Drinking Water Protection Act is intended to safeguard the province's water supply and places public health as the first priority. The objective of the Drinking Water Protection Act is to protect the province's drinking water from "source-to-tap" via a comprehensive and coordinated framework. This act falls primarily under the jurisdiction of the Ministry of Health Services and focuses on defining the roles and responsibilities of the provincial government, water suppliers, and water testers.

The Drinking Water Protection Act identifies the provincial health officer as the primary authority responsible for drinking water protection in British Columbia. The provincial health officer (appointed under the Health Act) is the senior medical health officer for BC and must provide an annual drinking water protection report to the legislature. The provincial health officer also has the power to take a drinking water problem directly to Cabinet. Another key player defined in the Act is the drinking water officer. The drinking water officer is responsible for drinking water issues in each health region. The Act allows the drinking water officer to take direct action on health hazards.

The Drinking Water Protection Act outlines the general requirements for:

- Source and systems assessment;
- Source protecting and planning;

- Water system operator certification;
- Water monitoring requirements;
- Drinking water standards;
- Drinking water protection; and
- Reporting and notification requirements

The primary regulations related to source water under this act are the Drinking Water Protection Regulations. The Drinking Water Protection Regulations outline the standards for potable water, treatment systems, operator qualifications, monitoring processes, public notification, and emergency response to threats.

2.2.2. Environmental Management Act

Environmental Management Act – Summary

Under the Environmental Management Act the Ministry of Environment (formerly the Minister of Water, Land and Air Protection) is responsible for the management, protection and enhancement of the environment, including water. The Act establishes a framework for regulating industrial and municipal waste discharge, pollution and contaminated sites. The key players identified in the Act are:

- Conservation Officer – a person described in section 106 (2) (a) or (b) [*conservation officer service*] and includes, in relation to a specific power or duty, an auxiliary conservation officer and a special conservation officer who has been authorized under section 106 (3) (d) to exercise the power or perform the duty;
- Manager – a person appointed under the *Public Service Act* as a manager in the ministry and designated in writing by the minister as a regional manager or as an acting, assistant or deputy regional manager; and
- Officer – a person or class of persons employed by the government or a municipality and designated in writing by a director as an officer, or a conservation officer.

The Act outlines the requirements and restrictions for:

- Waste disposal and management;
- Conflicts with other Acts, bylaws, permits issued by a municipality;
- Contaminated site identification and liability;
- Spill and pollution prevention and reporting;
- Area based management plans; and
- Appeals and compliance;

The Contaminated Site Regulations provide details regarding the acceptable use of applicable land, sediment and water, as well as site-specific factors. For example, the regulations identify livestock watering, irrigation and drinking water as acceptable water uses. The Contaminated Site Regulations also outline the definition of a contaminated site and define remediation standards (i.e., uses numeric thresholds to identify when a water use site is considered to be rehabilitated from contamination). These regulations also define the scope of liability, public consultation requirements, and generic water standards.

2.2.3. Forest and Range Practices Act

Forest and Range Practices Act – Summary

The Forest and Range Practices Act identifies the roles and responsibilities of provincial ministries in establishing and regulating community watersheds. The Act indicates that the Minister of Environment (formerly the Minister of Sustainable Resource Management) can designate an area of land as a community watershed. The Act further states that the responsibility for designating water quality objectives within community watersheds belongs to the Minister of Water, Land and Air Protection. The Forest and Range Practices Act outlines the requirements for:

- The development and approval of Forest Stewardship Plans and Range Stewardship Plans that incorporate water quality objectives;
- Developing regulations for sensitive watersheds and riparian areas; and
- Compliance and enforcement.

The Forest Planning and Practices Regulations outline the relationship between water quality and timber values. The primary tool identified for implementing regulations on the landscape is the Forest Stewardship Plan. Water quality objectives must be considered within the Forest Stewardship Plan. The regulations state that the government objective for water quality (within riparian areas) is to conserve at the landscape level without unduly reducing timber supply. Public notice for reviewing Forest Stewardship Plans is required. Specific references are made to the inclusion of First Nations groups in review processes (all comments received during a review session must be considered). The regulations define the type and extent of riparian protection and restrictions for water sources. They also describe the objectives for protecting water quality, for example during fertilizer use, road development or tree retention. All authorized persons (except those granted exemptions by the Minister) completing primary forest activities are required to ensure that the activity does not cause material that is harmful to human health to be deposited in, or transported to, water that is intended for human consumption (by a licensed waterworks).

2.2.4. Health Act

Health Act – Summary

The Health Act is designed to protect and enhance the health of British Columbia's citizens. The Act is administered primarily by the Ministry of Health (formerly the Ministry of Health Services) and contains a number of water-related requirements. The key players outlined in the Act are the:

- Health Officer – a medical health officer appointed for the enforcement of this Act or of any other Act of British Columbia relating to public health;
- Issuing Official – a person authorized by or under the regulations to issue a permit or other authorization required by or under this Act;

- Medical Health Officer – means the medical health officer appointed under this Act to act within the limits of the jurisdiction of any local board, or within any health district; and
- Public Health Inspector – an officer appointed under this Act who is the holder of a Certificate in Public Health Inspection (Canada) or an equivalent certificate issued by a competent authority that is acceptable to the Board of Certification of Public Health Inspectors of the Canadian Institute of Public Health Inspectors.

The Health Act outlines the:

- Roles and responsibilities of provincial health officers and the medical health officers related to source water protection;
- Responsibility of the local health authority to identify drinking water source health hazards;
- Power to expropriate land for health reasons including threats to water supplies;
- Inspection procedures for waterworks;
- Documentation and reporting processes for health hazard spills; and
- Power to make water regulations related to health.

The Sanitary Regulations outline the setback and abandonment requirements for wells related to probable sources of contamination. The regulations also prohibit the accumulation or escape of manure, refuse, vegetable and animal matter into water bodies and prohibit any release of animal or vegetable matter resulting in non-potable drinking water.

The Sewage System Regulations describe the requirements for system development and maintenance. The regulations require that sewage systems do not have negative effects on human health.

The Sewage Disposal Regulations outline the requirements for sewage discharge from buildings related to water protection. They also outline the permit process for constructing, maintaining and altering sewage systems. These regulations include a description of the notification procedures and requirements for sewage system modifications.

2.2.5. Land Title Act

Land Title Act – Summary

The Land Title Act also incorporates references to water protection. For example, the Act indicates that approving officers may refuse subdivision plans if they do not adequately address water drainage requirements. The Act also outlines the set back requirements for construction and specifies that fill may not be deposited or vegetation disturbed in areas adjacent to streams on floodable land.

There are no relevant water related regulations under this act.

2.2.6. Local Government Act

The Local Government Act provides the legal framework for the establishment and continuation of local governments to represent the interests of communities and to respond to their needs. It provides local government with the powers, duties and functions to fulfill this main purpose. The term “local government” means municipal councils and regional district boards. The Act also further describes the purposes of regional districts, including providing good government, services and stewardship of public assets, as well as fostering current and future economic, social and environmental well-being of the community. Different sections of the Act relate both directly and indirectly to the protection of drinking water.

Part 15 of the Local Government Act describes Specific Regional District Service Powers. In sec 523(1), a regional district may regulate and prohibit for the purposes of maintaining, promoting or preserving public health or maintaining sanitary conditions. In sec 540, a regional district may regulate and prohibit the design and installation of drainage and sewage works, and require property owners to connect to such services. And sec 555 states that the above powers are subject to the applicable provisions of the Water Act.

Part 23 deals with Improvement Districts. Section 745 states that improvement districts may construct, maintain, and manage works and regulate the distribution of water. In sec 747, an improvement district may require water distribution and sewage disposal systems for subdivision. Section 748 gives improvement districts the power to exercise rights under certain water licenses, while sec 749 gives the power to expropriate water diversion licenses and related works.

Part 24 provides the general authority to regional districts for services. In sec 796, a regional district may operate any service that the board considers necessary or desirable for all or part of a regional district, subject to specific limitations and conditions under the same Act or another Act.

Other parts of the Local Government Act are indirectly related to the protection of drinking water. Part 25 deals with Regional Growth Strategies and states in sec 849 that a regional growth strategy should work toward a number of objectives, among them:

- (d) protecting environmentally sensitive areas;
- (g) decreasing and preventing air, land and water pollution; and
- (j) protecting the quality and quantity of groundwater and surface water.

Part 26 of the Local Government Act deals with Official Community Plans. Section 877 describes the required content and states that a plan must include statements and map designations for specific aspects, among them (1)(e) the approximate location and phasing of any major road, sewer and water systems. In other parts dealing with Subdivision and Development Requirements, sec 938 states that local government may regulate and require a water distribution system, and a sewage collection and disposal system in a subdivision. Further, if there is no community water system, local

government may require that each parcel created by subdivision have a source of potable water with a flow capacity at an established rate.

2.2.7. Private Managed Forest Land Act

Private Managed Forest Land Act – Summary

The Private Managed Forest Land Act governs the approval of, and forest practices on, privately owned forest lands. The Private Managed Forest Land Council is the primary body responsible for the administration of the Act. This Act came into effect in August of 2004.

The Private Managed Forest Land Act outlines the requirements for:

- The incorporation of water quality objectives into private forest land management; and
- The ability of the council to make regulations (including water protection).

There are two sets of regulations under this act related directly to water. The Private Managed Forest Land Council Matters Regulations outline the requirements for the establishment of water quality objectives, whereas the Private Managed Forest Land Council Regulations outline the specific requirements for Water Supply Areas. Specific requirements may include for example activity constraint, tree retention near water, road and structure locations near water, fertilizer management, and water quality problem identification and notification.

2.2.8. Waste Management Act

Waste Management Act – Summary

The Waste Management Act is one of the primary tools that the provincial government uses to protect drinking water sources from pollution. The Act is used to manage point-source pollutants from industry and municipal sources. The Act also outlines the powers of regional pollution prevention managers and allows them to approve discharge and disposal permits and to issue pollution abatement and prevention orders. The key players identified in this Act are:

- Director – a person employed by the government and designated in writing by the minister as a director of waste management, or as an acting, deputy or assistant director of waste management;
- Manager – a person employed by the government and designated in writing by the minister as a regional waste manager or as an acting, assistant or deputy regional waste manager;
- Officer – a person or class of persons employed by the government or a municipality and designated in writing by the director as an officer, or a conservation officer defined in section 1 (1) of the *Environment Management Act*.

The Waste Management Act outlines:

- The allowable and prohibited waste input into water sources;
- The development and approval of Municipal Waste Management Plans;
- The identification, associated liability and implementation of remediation for contaminated sites;
- The requirements for waste control; and
- The measures to protect aquatic resources and drinking water.

The Organic Matter Recycling Regulations prohibit the application of class B biosolids to lands within a watershed with a permitted water supply.

2.2.9. Water Act

Water Act – Summary

The Water Act regulates changes within or around streams and defines water rights. The Act allows the government to expropriate land to prevent water pollution and outlines the offences related to the addition of materials into streams. The key players identified in this Act are:

- Comptrollers – a person employed by the government or a government corporation and designated in writing by the minister as the Comptroller of Water Rights. This includes any persons designated by the minister as acting, deputy or assistant comptrollers;
- Officers – a person or class of persons employed by the government or a government corporation and designated in writing by the comptroller as an officer, or a conservation officer defined in section 1 (1) of the *Environment Management Act*; and
- Regional Water Managers – a person employed by the government or a government corporation and designated in writing by the minister as a regional water manager. This includes a person designated by the minister as an acting or assistant regional water manager.

The primary regulations related to source water under this act are the Water Regulations and the Sensitive Stream Designation and Licensing Regulations (refer to the Fisheries Act). The Water Regulations outline the requirements for the acquisition of water rights as well as the associated fees, rentals and charges. The Water Regulations also describe the application procedures and requirements when water is used for power generation and during land expropriation. The Water Regulations define the 26 water districts in the province. These regulations also outline the requirements for protecting other water users and the authorization process for changes in and around a stream. The key player identified under the Sensitive Stream Designation and Licensing Regulations is the regional water manager. These regulations describe the requirements related to the application of a water license or altering of a license in relation to an identified sensitive stream. The regulations include a description of the identified sensitive streams in British Columbia.

2.2.10. Water Protection Act

Water Protection Act – Summary

The purpose of the Water Protection Act is to foster the sustainable use of British Columbia's water supply through the control of water rights. Under this Act, the Crown is identified as the primary holder of property rights (unless private rights have been established under the Water Act). The key players identified in this Act are the:

- Officer - has the same meaning as in the *Water Act*, except that it includes police officers or police constables;
- Licensed Registrants – a person recorded in the register in the "licensed" category;
- Unlicensed Registrant – a person recorded in the register in the "unlicensed" category.
- Regional Water Manager – a person employed by the government or a government corporation and designated in writing by the minister as a regional water manager. This includes a person designated by the minister as an acting or assistant regional water manager.

The Water Protection Act outlines the requirements for:

- Water removal, transfer, and licensing; and
- Offences, fining, and compliance processes.

The Water Protection Act has no identified regulations.

2.3. ADDITIONAL WATER RELATED AUTHORITIES AND JURISDICTIONS

2.3.1. First Nations Treaties

Treaties provide an option for direct First Nation jurisdiction regarding water resources. Under the BC Treaty Commission, it is up to each negotiating table to decide if water and drinking water will be included in the treaty, and through the negotiations, which party will have jurisdiction and responsibility for drinking water. In British Columbia to date, the Nisga'a Final Agreement is the only such treaty. The Nisga'a Agreement deals with water volumes, with sec 122 establishing a Nisga'a water reservation for domestic, industrial and agricultural purposes.

2.3.2. First Nations and Local Government Agreements

An indirect form of First Nation authority over drinking water is through servicing agreements with local governments. There are several such agreements in BC between municipalities and First Nations for the provision of water and sewer services.

2.3.3. British Columbia Water and Waste Association

The British Columbia Water and Waste Association is a body that speaks officially on behalf of the water and waste water industry in BC. The organization strives to promote an increased level of understanding related to water and waste water issues and to encourage its members to continually upgrade their water related skills and knowledge. The organization puts on training seminars, courses and conferences that are designed to lead to certification for water system operators.

3. AUTHORITY AND JURISDICTION ASSESSMENT

The summaries of federal, provincial, First Nation and local government related legislation and regulations (refer to section 2) provide a glimpse of the overall framework for protecting British Columbia's drinking water. The purpose of the following section is to incorporate the input received from stakeholder interviews into an assessment of the strengths and limitations of these authorities to implement raw source water protection plans. Further, this discussion will also examine the relevance of these authorities to drinking water pathogens. The points raised in this section are based on input collected through interviews and are designed to initiate dialogue around potential areas of concern.

Federal – Assessment

The responsibility for providing clean, safe drinking water in Canada lies primarily with the provincial government. However, the federal government is responsible for water on federal lands as well as for providing safe water to federal employees and First Nations peoples living on reserves. Interviewees indicated a few potential limitations the federal government faces when it comes to water management.

First, most drinking water facilities managed by the federal government are small and located in remote areas. For example, a number of the First Nations reserves in British Columbia have relatively small populations (less than 500 people). Many of the homes in small communities rely on ground wells to provide their water. The difficulty is ensuring that a coordinated monitoring and treatment process is in place under a fragmented well water system. Further, the move to a centrally treated and monitored water system in these small communities results in a number of additional considerations. For example, they can be expensive and require continual maintenance and repair. This is specifically true when you consider the cost per capita of the system. Thus, a political challenge that relates to justified expenses may emerge. Further, the remote nature of many of these communities makes coordination with an existing water delivery, treatment and monitoring facility difficult. Thus, training and financial support systems may need to be examined to evaluate if adequate resources are being allocated to water management in these communities.

Interviewees also identified the management of contaminated federal sites as a second challenge faced by the federal authority related to water management. It was indicated that currently very few pieces of legislation or regulation address this problem.

The third potential limitation identified by interviewees related to monitoring and enforcing water quality measures. It was noted that the Guidelines for Canadian Drinking Water Standards were the benchmark for pathogen management. One potential limitation associated with these guidelines was that the geographic diversity of communities (specifically First Nations) and the diversity of water supply and treatment

infrastructure make it difficult to develop a standard template for monitoring pathogen levels.

Thus, a number of potential limitations related to the federal government's ability to contribute to source water protection planning and implementation may be the result of these areas of potential inconsistency. The federal government in many cases is not the authoritative body managing the supply of the water to its lands and employees, and the complexity of the communities makes monitoring and treatment difficult.

Provincial – Assessment

Interviewees identified the development of the provincial Drinking Water Protection Act as one of the key strengths associated with the provincial authority. The Drinking Water Protection Act outlines the requirements for planning and assessment procedures and is the primary instrument for protecting BC's drinking water. The majority of the individuals interviewed felt that the current provincial legislative and regulatory framework was adequate for protecting BC's water. However, one potential limitation (identified associated with the provincial legislation and regulations) is that the current framework does not explicitly outline planning procedures related to long-term environmental and social change. Issues such as climate change and population growth have the potential to have far reaching impacts on the water supply (quality and quantity). The Drinking Water Protection Act lays the initial framework for accountability and assessment by clearly defining the responsibility for the development of drinking water protection, emergency response and contingency plans. However, the planning horizon and scoping process may need to be more clearly outlined to ensure that considerations for long-term environmental and social changes are incorporated into the process.

Interviewees also expressed a potential need for the expansion and development of a comprehensive source water planning process that integrates federal, provincial, First Nation and local government considerations. The current planning tool kits were identified as positive steps towards the development of this comprehensive planning process. However, it was expressed that a source water planning process that incorporates relevant legislative and regulatory requirements, as well as existing tool kits, in a cohesive systematic approach may be more beneficial for protecting and managing the resource. Further, interest was shown for a planning process that incorporates considerations for other existing plans (Water Use Plans, Forest Stewardship Plans, Land and Resource Management Plans). By integrating considerations for planning processes at a variety of authoritative levels, the result may be a more accurate assessment of the constraints and limitations on the water resource. The result is a comprehensive source water planning process based on understanding the relationships between the variety of authorities and existing planning processes.

Coupled with this expression of interest for a comprehensive source water planning process was the concern for adequate support. For example, it was expressed that a

comprehensive planning process based on accurate knowledge of the resource would be beneficial. Thus, areas of responsibility may need to be examined to assess where an insufficient understanding of the water resource is present. Once this initial assessment is completed, the resources should be allocated to address any gaps in knowledge. For example, water-monitoring networks were indicated as an area that may need further examination. It was suggested that in order for source water plans to be developed, implemented and assessed, regardless of the authoritative jurisdiction, a network of water monitoring facilities that can provide data on a regular basis might be necessary.

Not only was monitoring identified as a potential general issue related to source water protection planning, it was also identified as one of the limitations of the current legislative and authoritative framework related to pathogens. The provincial government defines the water quality standards for potable water under the Drinking Water Protection Regulations. These standards clearly define the acceptable levels of pathogens that can be present in drinking water. One potential area that may need further examination is related to the ability of small water suppliers to monitor these levels. For example, do small water suppliers have the training and resources to meet the prescribed standards? Further, the Organic Matter Recycling Regulations (Waste Management Act) clearly define the acceptable levels of soil contaminants within areas where ground water is used for drinking purposes. A potential issue may be related to monitoring these levels and communicating the results to water users.

Coupled with this concern for monitoring pathogens and toxins in water was the issue of ground water licensing. Currently, the provincial and federal legislation and regulations do not explicitly address this area of concern in British Columbia. Some of the individuals interviewed were concerned that the process of licensing ground water use would represent a significant administrative barrier and may not be politically or socially acceptable at this point in time. However, as demand for water increases due to population growth, this issue may have the potential to initiate future conflict.

First Nations – Assessment

The most relevant water related instruments identified for First Nations governments was the Indian Act, the associated agency, Indian and Northern Affairs Canada (INAC), and the federal guidelines for drinking water. The other legislation identified as being important was the provincial forest management legislation in First Nation traditional territories. (NOTE: The First Nations organizations contacted for this paper do not have service agreements with other orders of government. One interviewee noted that training and maintenance services contracted through INAC are available.)

Interviewees identified financial constraints as the most significant limitation for First Nations communities related to source water planning and pathogens. The cost of installing, operating and maintaining a good system was viewed as more limiting than any legislative or authoritative bodies. One interviewee observed that there is no legislation or policy through INAC that prohibits a community from taking on

responsibility for its drinking water system. The main concern is that the funding formula for capital projects under INAC is not sufficient to cover the costs of maintenance. The funding provided through the formula must cover all operations and maintenance costs, for example community halls and houses, as well as the drinking water system. A second important limitation identified was capacity; the ability to manage water systems is often lacking in the community and is thus conducted through a private engineering firm on contract.

Threats to drinking water were identified at the community level and at the larger scale. At the local level, the biggest threats are the lack of maintenance and the lack of monitoring. At the larger scale, climate change is seen as a threat to drinking water because it will affect surface water initially, and later ground water, because of potentially lower and higher precipitation rates.

Similarly, solutions to these threats are needed at both the local and broader scale. At the local level, more funding is needed. Health and safety are the number one priorities. As well, communities need appropriate tools to enable them to manage their own water systems.

At the larger scale, long term planning is needed to deal with threats posed by climate change. Communities need to be aware of the future scenarios and plan for them. For example, the Mountain Pine Beetle epidemic is currently affecting watersheds and thus surface and ground water. One Interviewee believes that the current Acts and regulations are sufficient for water and environmental protection; rather, the concern is planning for future water supplies within a continental and global context.

Two recommendations were offered. The first concerns the federal First Nations Land Management Framework Agreement and Land Code bands. A Land Code band has the ability to create and adopt laws as it chooses regarding land, resources and development. For example, it could establish set-back requirements for homes to be a minimum distance away from drinking water sources, such as wells and lakes. Thus a topic recommended for future research is the implications of the Land Code for drinking water. A second recommendation is to establish a task force of both Land Code and non-Land Code communities to review the INAC regulations and level of service standards for community drinking water systems.

Local Government – Assessment

The Drinking Water Protection Act and the regulations protecting ground water were identified as the most relevant legislation affecting local governments. Other legislation mentioned, however, were the Environmental Management Act and the Canadian Environmental Protection Act. The local governments interviewed only use ground water, and thus had no concerns regarding surface water and watersheds related legislation. Local governments that use surface water would likely identify other legislation and regulations.

Interviewees indicated that the current provincial legislative and regulative framework were sufficient for protecting BC's drinking water, and they did not identify any limitations. One individual interviewed observed that their organization only has two small water systems and thus legislative limitations are not a concern. One municipality acknowledged a different kind of limitation: under the Fisheries Act, municipalities cannot just freely discharge effluent such as waste water into surface water bodies.

Interviewees suggested that the greatest threats to drinking water at the local level are social, posed by people in general. There is a lack of understanding by citizens as to the value of water as a resource, and there is very little appreciation of potential risks to water sources. For example, interviewees indicated that individuals still dump used motor oil or pour harmful liquids down street storm drains. Another societal threat is over-consumption and the lack of conservation. To deal with the societal threats, three types of tools were identified to address individual awareness and behaviour: regulatory, educational and financial incentives. The lack of understanding and appreciation is considered to be a huge issue.

It was also indicated that drinking water sources are threatened by the transportation of dangerous goods; spills can occur near wellheads. Both industrial truck traffic and rail traffic pose threats because roads and railways are built along the rivers. To deal with the industrial threats, a slightly different approach was noted. A need for better cooperation among the stakeholders, especially with the railways, was identified. One local government official experienced difficulty in contacting the railway company and communicating concerns, specifically: potential spills, spraying herbicides on the rail right-of-way, and using chemically treated rail ties. Since railroads are a federal jurisdiction, it was suggested that the federal government ensure that rail companies deal with municipalities and acknowledge their potential effect on drinking water sources.

4. CONCLUSION

There are a number of legislative and regulatory bodies working to ensure that British Columbia has a safe and clean drinking water system. The federal government is working to ensure that Canadian interests are maintained at the international level and that minimum water standards (pathogen levels) are applied across the country. The federal government faces the challenge of ensuring that federal employees and people living on federal lands, including First Nation's people living on reserves, are provided with safe water. The primary issue is that in British Columbia these lands are often comprised of small populations in remote locations. As a result, they face a number of logistical challenges. The development of drinking water sources, delivery, maintenance and monitoring systems requires a relatively high level of per capita funding. Communities need training and continued support (funding) to maintain the integrity of the system. Another key difficulty associated with the federal authority is that it must often rely on the decisions of other jurisdictions (primarily provincial) related to its water source.

Since the responsibility for drinking water resources falls primarily within the jurisdiction of the provincial government, a number of provincial concerns and issues should be examined. By continually examining an already good system the provincial government can strive for continued improvement of BC's drinking water. The development of the Drinking Water Protection Act was identified by stakeholders as a key step in achieving a framework for ensuring that BC's water is safe and clean. However, a comprehensive long-term planning process that incorporates other land use plans and jurisdictions may help to further protect the water resource. Coupled with this planning process is the need for infrastructure and decision-making support networks. A better understanding of the water resource may help the provincial government to develop and implement source water protections plans. Further, additional consideration may need to be applied to the capacity of the various water providers in the province. For example, training and resources may be needed for small water providers to ensure that they are capable of meeting the pathogen requirements.

Local governments are faced with the challenge of being the frontline providers of drinking water systems, maintenance and monitoring in the majority of British Columbia's communities. Their primary method for meeting these requirements is currently the provincial legislative and regulatory framework. Local governments can also protect drinking water sources and products by developing and implementing bylaws that control land use and development. Local governments may require the development of a community action and awareness program designed to address social impacts on drinking water. Legislation and regulation can and have moved the protection of drinking water in a positive direction, but social action may be the key to protecting BC's drinking water in the future.

Appendix A. Additional Resource Material

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Appendix B. Useful Links

Canada Labour Code Occupational Health and Safety
<http://laws.justice.gc.ca/en/l-2/17632.html>

Canada Water Act
<http://laws.justice.gc.ca/en/C-11/25741.html>

Canadian Water and Wastewater Association
<http://www.cwwa.ca/>

Canadian Water Quality Association
<http://www.cwqa.com/>

Complete Alphabetical Listing of Provincial Statutes with Associated Regulations
http://www.qp.gov.bc.ca/statreg/list_statreg.htm

Environment Canada Federal Water Policy
http://www.ec.gc.ca/water/en/policy/pol/e_pol.htm

Environment Canada Water Quality Legislation
http://www.ec.gc.ca/water/en/policy/legreg/e_legis.htm

Environment Canada Water Quality Regulations
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Environmental Protection Act
<http://laws.justice.gc.ca/en/c-15.31/29610.html>

Health Canada – Water Quality and Health
<http://www.hc-sc.gc.ca/hecs-sesc/water/>

INAC Water Management Strategy - Operator Certification
http://www.ainc-inac.gc.ca/H2O/index_e.html

Land and Water British Columbia
<http://www.lwbc.bc.ca/>

National Water Research Institute
<http://www.nwri.ca/>

Province of British Columbia – Water, Air and Climate Change Branch
<http://wlapwww.gov.bc.ca/wat/>

The World Health Organization
http://www.who.int/water_sanitation_health/dwq/en/

United Nations Educational Scientific and Cultural Organization (UNESCO) - World Water Assessment Program
<http://www.unesco.org/water/wwap/>

Appendix C. Authority and Jurisdiction Summary Table

Document	Authority	Comments
Canadian Environmental Assessment Act	Federal	<ul style="list-style-type: none"> ○ Designed to ensure that projects are considered in a careful and precautionary manner before Federal authorities take action. ○ Strength – Identifies the requirements for communication and cooperation with aboriginal people.
Canada Labour Code	Federal	<ul style="list-style-type: none"> ○ Designed to ensure that all Federal employees are provided with potable water. ○ Limitation – Only applies to Federal government employees.
Canada Water Act	Federal	<ul style="list-style-type: none"> ○ Outlines the process for the establishment of Federal and Provincial agreements, the requirements for the management of Federal waters and management of areas of national concern. ○ Strength – Covers inter-jurisdictional and International waters, as well as areas of national concern.
Department of Health Act	Federal	<ul style="list-style-type: none"> ○ Defines the powers, duties and function of the Minister of Health related to health issues under the jurisdiction of the Federal government. ○ Strength – Outlines water requirements for common carriers.
Drinking Water Protection Act	Provincial	<ul style="list-style-type: none"> ○ Incorporates the requirements for safeguarding the provinces water supply including: <ol style="list-style-type: none"> 1. Source and system assessment; 2. Source protecting and planning; 3. Water system operator certification; 4. Water monitoring; 5. Drinking water standards; 6. Drinking water protection; and 7. Reporting and notification. ○ Strength – Clearly outlines the drinking water standards and areas of responsibility.

Document	Authority	Comments
Environmental Management Act	Provincial	<ul style="list-style-type: none"> ○ Regulates municipal and industrial waste discharge, pollution and contaminated sites. ○ Focus – Water source ○ Limitation – Requires a demonstration of pollution (reactive).
Environmental Protection Act	Federal	<ul style="list-style-type: none"> ○ Describes the requirements for pollution prevention and toxic substance control. ○ Strength – Provides for the establishment of agreements with provinces and aboriginal people.
Federal Water Policy	Federal	<ul style="list-style-type: none"> ○ Designed to protect and enhance water quality, as well as to promote efficient use of water. ○ Strength – Incorporates mechanisms for conflict resolution.
First Nations Land Management Act	Federal	<ul style="list-style-type: none"> ○ Enables bands to manage their reserve lands. ○ Limitation – Does not incorporate specific references to water.
Fisheries Act	Federal	<ul style="list-style-type: none"> ○ Prevents the discharge of deleterious substances into the water supply. ○ Strength – Contains provisions for protecting fish habitat.
Food and Drug Act	Federal	<ul style="list-style-type: none"> ○ Ensures that bottled water containing poisonous substances is not sold in Canada.
Forest and Range Practices Act	Provincial	<ul style="list-style-type: none"> ○ Outlines the requirements for the development of plans (Forest Stewardship Plans and Range Stewardship Plans) that incorporate water quality objectives. ○ Enables the development of regulations for sensitive watersheds and riparian areas. ○ Limitation – The results based nature of the process may result in decreased control of operations.
Forest Land Reserve Act	Provincial	<ul style="list-style-type: none"> ○ Outlines the requirements for forest management on forest reserve or agricultural reserve lands (including water quality management requirements). ○ Strength – outlines the reporting procedure for threats to water licenses.

Document	Authority	Comments
Guidelines for Canadian Drinking Water	Federal	<ul style="list-style-type: none"> ○ Outlines the minimum requirements of Canadian water systems. ○ Strength – applies to reserve lands.
Health Act	Provincial	<ul style="list-style-type: none"> ○ Designed to protect the health of BC citizens. ○ Outlines the roles and responsibilities of the provincial health officer and the medical health officer related to source water protection. ○ Strength – Describes (through regulations) the requirements for sewage system development, maintenance and disposal.
Indian Act	Federal	<ul style="list-style-type: none"> ○ Enables Indian bands to enact bylaws related to health, watercourse development, and water supply development. ○ Limitation – Resources availability may hinder the development and implementation of these bylaws.
Land Title Act	Provincial	<ul style="list-style-type: none"> ○ Outlines the requirements for subdivision development related to water drainage. ○ Strength – Applies to private land.
Local Government Act	Provincial	<ul style="list-style-type: none"> ○ Enables regional districts to regulate drainage and sewage systems. ○ Strength – Applies to private land.
Private Managed Forest Land Act (Repealed)	Provincial	<ul style="list-style-type: none"> ○ Governs the approval of, and forest practices on, private managed forest land (including water quality management requirements). ○ Strength – Applies to private land.
Waste Management Act	Provincial	<ul style="list-style-type: none"> ○ Outlines the allowable and prohibited waste input into water. ○ Contains the measures to protect aquatic resources and drinking water. ○ Strength – Applies to industrial and municipal sources.

Document	Authority	Comments
Water Act	Provincial	<ul style="list-style-type: none"> ○ Defines water rights. ○ Outlines the requirements for changes within or around streams. ○ Strength – Provides for the consideration of protecting the rights of other water users.
Water Protection Act	Provincial	<ul style="list-style-type: none"> ○ Designed to foster the sustainable use of BC's water supply through the control of water rights. ○ Strength – Outlines the requirements for water transfer, removal and licensing.