A Review of Traditional Knowledge Frameworks for Bilateral Water Agreement Decision Making

Peace River, AB Photo Credit: Natasha Thorpe, TCS

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The Bilateral Management Committee for the Alberta-Northwest Territories Bilateral Water Management Agreement accepts this report as advice to inform the development of a framework toward meaningful inclusion of traditional knowledge in decision making related to bilateral water management.

Just as biodiversity provides the raw material for ecological evolution, cultural diversity provides the raw material for the evolution of sustainable relations between humans and their biophysical environment. - Dadgil 1987 in Dudgeon and Berkes 2003: 90

*Dedicated to the ancestors who have passed down their knowledge to the next generation.
To the current generation of Traditional Knowledge holders – we need you.
We need you to bring forward the essence of this valuable knowledge that has enabled our people to maintain a loving and respectful relationship for all beings throughout time.
This generation, more than any other in the past, need this wisdom to address the many threats we face. Many of these threats are beyond our boundaries and control, we need your guidance now more than ever. How do we use what you give us to help find a path that will return our beloved Dehcho to a healthy state? We call on your wisdom, strength, knowledge and commitment to feed our collective efforts. Mahci cho.*

This report gives the views of the authors, and not necessarily represent the positions of the Government of the Northwest Territories of Government of Alberta. Any misinterpretation, error, or omission is that of the authors. Note that a comprehensive review was not possible given the vast numbers of references available world-wide. Budget and time constraints meant that some sources have been missed, but the authors have endeavoured to capture the most relevant and useful. The authors envision this report - along with the accompanying bibliographic database and tracking spreadsheet - as living documents to be updated and refined as key sources are produced or accessed.

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1.0   Background

The Governments of Canada, British Columbia, Alberta, Saskatchewan, Northwest Territories and Yukon signed the Mackenzie River Basin Transboundary Waters Master Agreement in 1997. The Master Agreement commits all six governments to work together to cooperatively manage the water resources of the whole Mackenzie River Basin. The Master Agreement makes provisions for neighbouring jurisdictions to negotiate bilateral water management agreements to address water issues for shared transboundary waters and to establish a common and agreed-to set of conditions regarding surface water quality and quantity, groundwater, and aquatic ecosystem health.

Within this framework, the Government of Alberta (GOA) and the Government of the Northwest Territories (GNWT) signed the Alberta-NWT Bilateral Water Management Agreement (BWMA) in March 2015. [1] The BWMA helps to ensure an adaptive approach to managing transboundary waters by identifying what actions should be taken, and when, based on scientific monitoring and/or traditional knowledge. The bilateral agreement also respects the jurisdiction of governments and ensures water is collaboratively managed for the benefit of the environment, people, and the economy.

The implementation of the BWMA is intended to have *meaningful and respectful inclusion[2]* of traditional and local knowledge for the understanding of bilateral decision making for transboundary watersheds (see Appendix C of the BWMA). As an early step in this process, the GNWT and GOA issued a request for proposals to research and review existing traditional knowledge frameworks, best practices, protocols, policies and guidelines (herein, the *Project* or the *Review*). Joanne Barnaby Consulting, in collaboration with Thorpe Consulting Services, was selected to conduct the Review.

1.1   Traditional Knowledge Explained

Many terms are used (and misused) to describe knowledge systems that include or focus on the traditional and local knowledge of a population who has lived for multiple generations in a given region. These include traditional knowledge, traditional ecological knowledge, Indigenous knowledge, Indigenous ecological knowledge, Aboriginal knowledge, or knowledge specific to a

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[1] https://www.enr.gov.nt.ca/sites/enr/files/ab-nwt_water_management_agreement_final_signed_2.pdf and http://www.enr.gov.nt.ca/sites/enr/files/bwma_ab-nt_appendices_24_february_2015.pdf

[2] The meaningful and respectful inclusion of traditional and local knowledge in resource management processes is a key element of reconciliation across Canada which includes the recognition of rights, respect, cooperation and partnership. In the same way that reconciliation calls for Indigenous and non-Indigenous peoples to come together, so too does it require interweaving traditional and scientific knowledge. The Truth and Reconciliation Commission calls on all levels of government - including the GNWT and GOA - to fully adopt and implement the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP 2007). For governments, the meaningful and respectful inclusion of traditional and local knowledge in the implementation of the BWMA is one step along this path.

particular people (e.g. *Inuit Qaujimajatuqangit*). There remains debate and confusion about the most appropriate term to use, even within communities. Within the resource management context, much of the focus has been on the aspects of this way of knowing that relate directly to the physical environment (e.g. changes in observed water levels). However, the less tangible elements of the knowledge system (e.g. belief systems around the spirit of the water) must also be integrated into resource management (Stevenson 1996; Tester and Irniq 2008; Styres 2011, 2017). Only when this is achieved should the broader term 'traditional knowledge' be used (Usher 2000). Throughout the world and increasingly in southern Canada, the term 'Indigenous knowledge' is more common, in part since the ratification of the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) in 2007.

While a nomenclature debate (Johnson 1992; Berkes 1999; Wenzel 1999; Usher 2000) is beyond the scope of this Review, it is generally understood that traditional knowledge is:

> cumulative over generations, empirical in that it must continuously face the test of experience, and dynamic in that it changes in response to socioeconomic, technological, physical or other changes (Neis and Felt 2000: 3).

Berkes puts forth a comparable working definition for traditional knowledge as:

> a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission about the relationship of living beings (including humans) with one another and with their environment (Berkes 1999: 8).

The Secretariat of the Convention on Biological Diversity notes that:

> traditional knowledge refers to the knowledge, innovations and practices of Indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Sometimes it is referred to as an oral traditional for it is practiced, sung, danced, painted, carved, chanted and performed down through millennia. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, forestry and environmental management in general (Secretariat of the Convention on Biological Diversity 2019: i).

Traditional knowledge is both a knowledge-base and a code of conduct, or a way of living: these ways of knowing cannot be separated from the people who hold their knowledge. Traditional knowledge embodies adaptive and self-management practices through a relationship of respectful reciprocity with the environment (Nakashima 1986, 1993; Feit 1988; Gunn et al. 1988; Pinkerton 1994, 2007; Ferguson et al. 1998; Huntington 2000, 2005; Turner et al. 2000; Thorpe 2000; Thorpe et al. 2001, 2002; Fox 2002; Tester and Irniq 2008; Tobias 2010; McGregor 2014a, 2014b; Parlee 2016; Styres 2017; Parlee and Caine 2018; Gagos 2019). In all definitions, there is a clear identification that living on "the Land"[3] and depending on ecological resources for survival, and an iterative approach to "managing" within a group or community local environment is a component of traditional knowledge.

When documented and taken out of a living oral tradition, that traditional knowledge is specific to both a time and community. Thus, it should not be assumed to apply to a different timeframe or another community. This way of knowing is alive, ever-changing, and expanding and deepening among knowledge holders (Deleon and Ventriss 2010).

Indigenous people should be defining the appropriate term to use, ideally in their language, so that colonizer's labels are not used when seeking to understand or employ traditional knowledge (Dannenmann 2008; Native Women's Association of Canada 2010; McGregor 2014a, 2014b; Styres 2017). In developing a framework for the implementation of the BWMA, more discussion around terminology may be required.

Despite the prevalence of the use of "Indigenous knowledge" globally, the term "traditional knowledge" is used widely throughout the North and is thus the term selected for use throughout this Review. Further, using the term "traditional knowledge" versus "traditional ecological knowledge" illuminates the importance of considering all aspects of knowledge (i.e. bio-cultural and spiritual elements plus ecological elements). Indeed, it is this more holistic approach that gives strength to and distinguishes traditional knowledge from scientific and other ways of understanding the world (Agrawal 1995; Neis and Felt 2000; Berkes 2009).

1.2   Traditional Knowledge Inclusion in the Implementation of the BWMA

The GNWT and GOA are supporting the development of a traditional knowledge framework for the implementation of the BWMA. The successful implementation of the BWMA not only depends on the inclusion of traditional knowledge, but also on the ways in which "meaningful" and "respectful" are defined, measured, and understood. The terms "meaningful" and "respectful" are often used to describe the inclusion of traditional knowledge in a northern process, review, method or assessment; however, people don't always have shared perspectives of the meaning of these terms nor are they able to put forth many successful examples of their implementation. Thus, learnings must come from other examples and then be adapted to the BWMA context in terms of what is "meaningful" and "respectful."

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[3] In this context, "the Land" is meant to refer to the Indigenous ways of being in the world, interacting with nature, being in relationship with the land, water, air, etc. In this way, the Land is and said to be the first teacher (Haig-Brown and Dannenmann 2008).

Traditional is important for the implementation of the BWMA and may provide deeper understandings, for example, around:

- the setting and assessment of transboundary objectives;
- the development of learning plans about our shared watersheds;
- selection of biological indicators (or *ways of knowing*);
- decision making under the Risk Informed Management (RIM) approach (i.e. classification of transboundary water bodies, learning plans and monitoring); and
- decision making related to bilateral water management (or *taking care of water*).
- long term monitoring (or *watching*), community-based environmental monitoring / guardians programs, community engagement processes, and communications materials;
- selection of bio-cultural keystones or ways of knowing/doing and other indicators; and
- place-names, species names and other terms in Indigenous languages that offer inherent understandings linked to the environment (e.g. place-names that mean "place of fast running water" or "channel that never freezes.")

A traditional knowledge framework for the implementation of the BWMA will provide key opportunities for traditional, local, and scientific knowledge to be interwoven to honour different ways of knowing and doing. For example, while a scientist may focus on western science[4] monitoring programs, a Dene guardian may focus on observing and analyzing occurrences within a traditional territory. A hydrologist may view her task to be focused solely on water management, while a community member may see his role as taking care of water with a holistic view to the inter-relationship of media in the environment. Increasing collective awareness of these subtle yet important nuances in language and approach provide opportunities for shared understanding, mutual respect, and a framework from which to begin the meaningful and respectful inclusion of traditional knowledge.

Recognizing the strength of each knowledge system will lead to mutual respect and the capacity for all parties to consider where each worldview can contribute best to which setting. At the same time, collaborations that bring scientific knowledge and traditional knowledge together need to be sensitive to data sharing agreements, intellectual property challenges, and confidentiality issues, especially when the work is led by academia and institutions.

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[4] Science (or Western Science) is the knowledge about, or study of, the natural world based on facts learned through hypothesis, observation, measurement and experiments – it is a state of knowing achieved from people undertaking intellectual and practical activities to systematically study the world around us, by employing testable hypotheses and the scientific method (Tsuji and Ho 2002).

1.3   Meaningful Inclusion of Traditional Knowledge

Opportunities for "meaningful" inclusion of traditional knowledge in the implementation of the BWMA will be advanced through a traditional knowledge framework. At the same time, terminology and understanding in the current BWMA could be expanded to be more inclusive of an Indigenous perspective. For example, while the BWMA states that it "protects the ecological integrity of the aquatic ecosystem" an understanding of what is meant by "ecological integrity" and "aquatic ecosystem" may differ between worldviews and thus benefit from ore discussion. Thus, while a scientific water technician may imagine that to "protect" means to use water sampling to measure contaminants, an Indigenous guardian may understand "protect" through the practice of traditional laws such as showing respect for water through making an offering to the water (i.e. paying the water).

Gagos (2019) provides deeper context to this concept:

> [Traditional knowledge] is much more than understanding the ecosystem and their relationship to it. Their knowledge systems are a complex telling of the universe, reading the stars to understand when particular animals migrate, and the character of humans and other than human beings, and understanding relationship to all of it: how to respect all beings (Gagos 2019: 8).

Sometimes it can be challenging for scientists to treat Indigenous observations and beliefs as inherently valid, particularly those in the spiritual realm (Eisner et al. 2009), and yet it is important that this is the starting place for co-creation. As the BWMA is currently drafted, the language leans towards technical and scientific perspectives rather than an interweaving of Indigenous perspectives. Developing and implementing a traditional knowledge framework will help resolve this imbalance and provide opportunities to enhance definitions, terminology, and work plans seeking understanding of watershed and river basin health.

Indigenous values such as transparency, inter-relationship of all things, honesty, respect, kindness, and sharing should inform a traditional knowledge framework that seeks meaningful inclusion of knowledge systems, adherence to local protocols, and adequate capacity building funding for Indigenous communities to ensure knowledge renewal. There is a justifiable expectation from Indigenous communities that their knowledge will not only be considered as data, but also that their cultural values and beliefs will inform decisions within traditional territories (e.g. Bartlett et al. 2012; Assembly of Nova Scotia Mi'kmaq Chiefs 2014; Nuclear Waste Management Organization 2016; Dene Nation 2019). These values and expectations are similarly relevant to developing a "meaningful" and "respectful" traditional knowledge framework for the implementation of the BWMA.

In the North, Indigenous values remain very much alive and continue to guide traditional knowledge efforts. For example, Gagos (2019) elaborates on the concepts essential to gathering, and understanding traditional knowledge to inform implementation within the Mackenzie River Basin:

> [t]raditional knowledge embodies the entire knowledge system of an Indigenous group of people: spirituality, values and beliefs, environmental knowledge, transmission of knowledge, and the code of practices. All parts of the knowledge system are interconnected. Traditional knowledge encompasses watching and experiencing all aspects of the universe, including how human beings and other-than-human beings interact and care for all aspects of their place on earth (Gagos 2019: 7).

The Dene Nation (2019) likewise includes multiple best practice recommendations relevant to developing a traditional knowledge framework for the implementation of the BWMA, many of which echo others' assertions about the importance of creating a customized framework, ensuring community control over traditional knowledge, and identifying the differences between traditional knowledge and western science (e.g., Weins 2012; McGregor 2014a, 2014b; Bannister et al. 2019). Diversity is a call for celebration:

> [r]ecalling the diversity between First Nations, Inuit and Métis, as well as their communities, government should present opportunities to engage and reconcile these differences including face to face meetings, talking circles, flexibility within programs to acknowledge local nuances: there is no one size fits all (Native Women's Association of Canada 2010: 23).

1.4   Meaningful Inclusion of Local Knowledge

Local knowledge is often confused with traditional knowledge, but is very distinct in that it is not informed by worldviews distinct from western science nor is it based on the accumulation of first-hand and multi-generational knowledge accumulated and integrated over millennia. Local knowledge is often held by fishers, farmers or local non-Indigenous hunters and trappers and can contribute directly into western scientific ways of knowing to address environmental issues (Neis and Felt 2000; Food and Agricultural Organization of the United Nations 2004; Tamuno et al. 2009; Kumpula et al. 2012). Local knowledge has been defined as:

> a collection of facts and relates to the entire system of concepts, beliefs and perceptions that people hold about the world around them. This includes the way people observe and measure their surroundings, how they solve problems and validate new information. It includes the processes whereby knowledge is generated, stored, applied and transmitted to others (Food and Agricultural Organization of the United Nations 2004: 1).

The meaningful inclusion of local knowledge requires an understanding of how this way of knowing is acquired, shared, and understood and how it differs from traditional knowledge. Note that this Review does not focus on local knowledge, but rather, on traditional knowledge.

1.5   Understanding How Local Knowledge Differs from Traditional Knowledge

Often researchers will interview traditional knowledge holders using social-science methods in which they have been trained. However, sometimes these researchers inadvertently mistake the information they are documenting as traditional knowledge when it is really local knowledge. Gagos (2019) provides an in-depth analysis of local knowledge, how it differs from and can often be confused with traditional knowledge:

> Elders and harvesters do not use the term 'local knowledge.' From the perspective of traditional knowledge, local knowledge is place specific— personal or family knowledge of a specific locale—brought back in the form of stories. Stories are told and woven into the long fabric on information found in older narratives. Community based research may include some of this personal/family-based knowledge. If local knowledge is in fact family or personal knowledge and it is shared with others, it becomes part of the story. But it should not be confused with the knowledge that elders consider to be knowledge held collectively by a cultural community or region.

> Local knowledge is a confusing concept here as it is in most NWT reports and literature associated with Indigenous communities' knowledge. Without understanding the distinction, there is a risk that local knowledge can be presented incorrectly as traditional knowledge. Both are important but should not be confused (Gagos 2019: 16).

Often non-Indigenous farmers, hunters and trappers have local knowledge that can be important to the understanding of local impacts and recent environmental change. This knowledge is important to land use planning, water governance, cumulative effects assessment and other environmental processes, but it must not be confused with traditional knowledge. Given the constitutional rights of Indigenous peoples in Canada, local knowledge does not warrant the same status provided for traditional knowledge in the regulatory process.

2.0   Project Methods Overview

The objective of this Project was to review existing frameworks, best practices, protocols, policies or guidelines for traditional knowledge in decision making and assess their characteristics' applicability to implementing the BWMA.[5] Appendix A details the methods employed for this review while the following sections provide an overview of objectives and tasks.[6]

This Review centred around three objectives realized through four tasks.

Objective 1: What frameworks, best practices, protocols, policies or guidelines exist that address traditional knowledge?

- Task 1: Compilation of traditional knowledge methodologies: frameworks, best practices, protocols, policies, and guidelines.

As the first step, references speaking to traditional knowledge frameworks, best practices, protocols, policies and guidelines were compiled, and websites canvassed for links to key references, and tallied along with an annotated description of the website. Each source was entered into the online bibliographic database (i.e. Zotero)[7] (Appendix B), and annotated in an Excel worksheet (Appendix C)..

Objective 2: What are the key characteristics of these frameworks, best practices, protocols, policies, or guidelines, including common characteristics and regional or scalar differences?

- Task 2: Review of relevant methodologies, including their key commonalities and differences.

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[5] Note that a comprehensive review was not possible given the vast numbers of references available world-wide. Budget and time constraints meant that some sources may have been missed. The authors envision this report - along with the accompanying bibliographic database and tracking spreadsheet - as living documents to be updated and refined as key sources are produced or accessed.

[6] While our team developed a proprietary qualitative and quantitative approach to analyzing and assessing spatial, temporal, and scalar dimensions for each reference envisioned as a novel way to identify the most relevant sources, in practice, this framework didn't bring value. For example, as references were assessed for their temporal dimension, by definition anything central to traditional knowledge spanned the full temporal dimension (i.e. past, present, future; days, months, years; one-time and ongoing). When considering spatial dimensions, some references might have been local in scope, but had the potential to span greater jurisdictions. Scalar dimensions in terms of fit and interplay were slightly easier to consider, but there was still an element of subjectivity in the analysis. In short, it is not surprising that the proposed approach of assigning a reductionist and scientific framework to an exercise in preparing for a traditional knowledge framework was not appropriate. Instead, while it was ultimately more time-consuming, we reviewed each reference, and considered them under the general headings of spatial, temporal, and scale dimensions and then assigned their relevancy.

[7] Zotero is an open source tool used to help collect, organize, cite, sort and share research. The library containing all resources was shared with the GNWT and GOA and is available upon request. See: www.zotero.org

The second step was to assess the spatial, temporal, and scalar dimensions to evaluate whether each reference was relevant, applicable, and helpful for the future implementation of a framework and meaningful inclusion of traditional knowledge in bilateral water management decision making. Thus, each reference was considered according to relevancy indices in:

- feasibility;
- barriers;
- acceptability;
- utility;
- cultural competency;
- form;
- performance;
- purposefulness;
- ecological health;
- water management;
- risk management;
- monitoring / watching programs;
- transboundary settings;
- stewardship / guardianship; and
- cultural value.

This review, assessment and consideration outlined above was paired with the professional judgement of the reviewers who have multiple decades of collective experience working in the field of traditional knowledge research. In this way, the most relevant references were identified. As shown in Appendix C, sources were valued as follows:

- High relevancy - orange highlight;
- Moderate relevancy - green highlight; or
- Low relevancy - grey highlight.

The Review focused on those sources deemed "high" and "moderate" in relevancy, there is also value in considering those sources deemed "low" in relevancy. The remaining sources were not assigned a value, but are still included as they relate to water management or traditional knowledge in general.

Finally, commonalities were identified, and recommendations prepared to be more instructive, useful, meaningful and appropriate, in terms of the relevancy and applicability to the BWMA.

Objective 3: What is the applicability of these characteristics to decision making and implementation of the Alberta-NWT BWMA?

- Task 3: Assessment of these methodologies' use in informing the development of a new framework for the inclusion of traditional knowledge in bilateral water management decision making.
- Task 4: Recommendations for the inclusion of traditional knowledge in the Alberta-NWT BWMA including policy, methodology, decision making guidelines, and evaluation.

The third step was to review each source for applicability in informing the development of a framework for the inclusion of traditional knowledge in the implementation of the BWMA.

The fourth step was to develop suggestions for developing a traditional knowledge framework for the implementation actions supporting the BWMA based on the results of the review of sources and assessment according to commonalities as well as spatial, temporal, and scalar dimensions.

3.0   Review Results

A total of 118 references speaking to traditional knowledge frameworks, best practices, protocols, policies and guidelines were compiled (Appendix C) in addition to the 38 references that speak generally to traditional knowledge theory, the review included:

- 22 from Indigenous sources;
- 67 from academic sources or Indigenous-academic collaborations;
- 14 from government (non-Indigenous) sources; and
- 13 from other sources.

An additional 19 websites were canvassed for links to key references and tallied along with an annotated description of the website source. Although attempts to contact 17 traditional knowledge scholars with a request for grey literature were made by phone and email, only 2 people responded (Appendix D).

The following sections provide an overview of these key sources identified under several broader themes of relevance to the BWMA in terms of spatial, temporal, and scalar dimensions as well as fit and interplay:

- Indigenous governance and traditional knowledge policies and protocols;
- traditional knowledge and watershed and water management / policy;
- women as water keepers, elders as experts;
- interweaving traditional knowledge and western science; and
- traditional knowledge, Indigenous guardians, and community-based monitoring.

3.1   Indigenous Governance and Traditional Knowledge Policies and Protocols

Within the larger framework of Indigenous governance, multiple traditional knowledge policies and protocols have been either developed or reviewed by Indigenous groups, governments, and academics. It was not possible to identify all of these across the regional, national or international spheres, but several key examples are included here.

Developing a traditional knowledge framework for the implementation of the BWMA will require, at some level, **healing of the damage done by settler approaches** to the relationship between Indigenous peoples and their relationship with water. LaBoucane-Benson et al. (2012) speak the worldview and sacred relationship of the Cree people in Alberta, as well as how colonial policy has created despair (*pomewin*) in Aboriginal communities. They argue that this has created a state of disconnectedness from the water within Indigenous peoples.

Another concept to further explore is that Indigenous participation in water governance processes requires Indigenous communities to consider their participation in collaborative **environmental governance in relation to self-governance goals** (von der Porten and de Loë

2013). The development of a traditional framework for the implementation of the BWMA will need to consider these implications.

Some **Canadian northern Indigenous groups** have developed and implemented traditional knowledge policies that are relevant to the BWMA, particularly where they include groups whose traditional territories are within the regions covered in the BWMA. The following are particularly relevant in terms of spatial, temporal, and scalar dimensions and important to guide traditional knowledge framework development for the implementation of the BWMA:

- First Nation of Na-Cho Nyak Dun Traditional Knowledge Policy (First Nation of Na-Cho Nyak Dun 2008);
- Gwich'in Tribal Council Traditional Knowledge Policy (Gwich'in Social and Cultural Institute 2004);
- Northwest Territories Métis Nation Traditional Knowledge Policy (Northwest Territories Métis Nation 2012);
- Research Guidelines for the Sahtú Region, Northwest Territories (Gagos 2017);
- Sambaa K'e Dene Band Policy Regarding the Gathering, Use, and Distribution of Yúndíıt'ǫh (Traditional Knowledge) (Sambaa K'e Dene Band 2003);
- Traditional Knowledge Guide for the Inuvialuit Settlement Region, Northwest Territories (KAVIK-AXYS Inc. and FMA Heritage Resources Consultants Inc. 2008a, 2008b);
- Traditional Knowledge Policy (Deh Cho Land Use Planning Committee 2003); and
- Traditional Knowledge Research Protocol (Deh Cho First Nation 2004).

Examples of **traditional knowledge policies from other (e.g. southern) regions** are also relevant:

- Anishinabek Traditional Knowledge & Water Policy Report (Anishinabek Ontario Resource Management Council Water Working Group 2009);
- Canadian Environmental Monitoring Agency (CEMA) Traditional Ecological Knowledge Data Standard (Weins 2012);
- Indigenous Knowledge Policy (Nuclear Waste Management Organization 2016);
- Maliseet Nation (Wolastoqwik) Traditional Knowledge Protocol (Maliseet Nation Conservation Council, Traditional Knowledge Working Group 2009);
- Mi'kmaq Ecological Knowledge Study Protocol (Assembly of Nova Scotia Mi'kmaq Chiefs 2014); and
- Traditional Environmental Knowledge Research Guidelines (Smith 2006).

Government publications similarly provide important insights to consider in developing a traditional knowledge framework for the implementation of the BWMA:

- Indigenous Policy Framework for the City of Calgary (Calgary Aboriginal Urban Affairs Committee 2017); and
- Policy 53.03 on Traditional Knowledge (Government of Northwest Territories 2005b).

Particularly relevant is the publication by the NWT Water Strategy and Action Plan:

- Watching, Caring for, and Protecting Water: Using Indigenous traditional knowledge systems and methodologies (Gagos 2019).

Two **best practices reviews** relevant to government programs, environmental assessment, and other processes may be particularly helpful in that their results speak to multiple references reviewed and highlight key commonalities. These include:

- Best Practices Handbook for Traditional Use Studies (Government of Alberta 2003); and
- Summary of Best Practices for Applying Traditional Knowledge in Government of the Northwest Territories Programming and Services (Government of Northwest Territories 2005a).

In addition, some references include useful **best practices and recommendations related to transboundary waters**. For example:

- Appendix 6: Best Practices for Project Planning with Indigenous Traditional Knowledge (Emery 2002); and
- Traditional Environmental Knowledge Research Guidelines for the Cumulative Environmental Management Association (Smith 2006).

Finally, there are multiple **northern examples** of how traditional knowledge has been considered in resource management contexts and processes such as those relevant to land use planning, wildlife management, environmental assessment, and water management (e.g. Ellis 2005; Eisner et al. 2009; Thorpe et al. 2001; Fedirchuk 2008; Berkes 2009; Knopp 2010; Parlee and Caine 2018). White (2009) reviews the Mackenzie Valley Environmental Impact Review Board (MVEIRB) and Nunavut Wildlife Management Board (NWMB) to assess their inclusion of traditional knowledge which are relevant to a transboundary context.

1. *Recommendation and relevance to the BWMA:* **Review, respect, implement, and adhere to traditional knowledge policies and protocols from the North and northern Indigenous groups, particularly where they include groups whose traditional territories are within the regions covered in the BWMA.**

Within traditional knowledge policies and protocols, there are important considerations around **ownership, use, access, storage, and copyright of traditional knowledge**. The First Nations OCAP™, created in 1998, have become an ethical standard for the collection and management of First Nations information (First Nations Information Governance Centre 2014). OCAP™ stands for ownership, control, access, and possession and spells out principles for how First Nations data should be considered.

Discussions about barriers around the implementation of OCAP™ are relevant to inform the development of a traditional knowledge framework for the implementation of the BWMA, particularly with respect to discussions regarding the federal *Access to Information Act (1985)*. This Act allows for public release of information which could include traditional knowledge that should not be used or disclosed and which may be held by the federal government through reporting requirements or contribution agreements. Even where some of the traditional knowledge has been "stripped" of personal identifiers, the Indigenous group may not want this traditional knowledge shared.

Another relevant **ethical standard** includes the Panel of Research Ethics guidance on research involving First Nations, Inuit and Métis within Canada (Government of Canada 2018). This Tri-Council Policy Statement serves as a framework for the ethical conduct of research particularly for academic researchers. It seeks to illuminate the legacy of research involving Indigenous peoples which has been largely defined and carried out primarily by non-Indigenous researchers and offer guidance in the current landscape where Indigenous peoples are increasingly contributing as academics and community researchers.

2. ***Recommendation and relevance to the BWMA: Implement both the Tri-Council Policy Statement around research involving First Nations, Inuit and Métis within and OCAP™ principles for respectful and appropriate ownership, control, access and possession of traditional knowledge in developing a traditional knowledge framework for the implementation of the BWMA. This is particularly relevant to the practices laid out in Appendix C of the BWMA.***

3.2   Traditional Knowledge and Watershed and Water Management / Policy

Much **academic work around northern watersheds and river basins** has been carried out in the last few decades. Northern environmental, social, and cultural landscapes connected through relationships with water and explored through Mackenzie and Athabasca River basin research are relevant to developing a traditional knowledge framework for the implementation of the BWMA. Some of these include:

- Cooperative and adaptive transboundary water governance in Canada's Mackenzie River Basin: status and prospects (Morris and de Loë 2016);
- Literature Review Local and Traditional Knowledge in the Lower Mackenzie Watershed (Parlee 2016);
- Literature Review Local and Traditional Knowledge in the Athabasca River Watershed (Parlee and D'Souza 2019); and
- Transcending Boundaries: A guidebook to the Alberta-Northwest Territories Mackenzie River Basin Bilateral Water Management Agreement (Phare et al. 2016).

Several other **water management / policy or project websites** are relevant to the transboundary water context and should be reviewed, including:

- CIRNAC - Canada-Ontario Agreement on Great Lakes: annex 13: engaging First Nations (Annex13);
- Global Water Forum (globalwaterforum.org);
- POLIS Water Sustainability Project (poliswaterproject.org);
- Water First (waterfirst.ngo); and
- Water is Everything - nipî tapîtam: An indigenous understanding of the outstanding universal value of Wood Buffalo National Park (Mikisew Cree First Nation, 2016) (WaterIsEverything).

3. *Recommendation and relevance to the BWMA: Develop a traditional knowledge framework that includes findings from works and websites specific to northern transboundary rivers.*

Sources that speak to **transboundary and watershed management within an Indigenous context**, but are not specific to the North, contain some insights that may be relevant to the implementation of the BWMA. These works include:

- A Handbook for Water Champions: Strengthening Collaboration and Decision Making for Healthy Watershed (Overduin et al. 2019);
- Assessing Management Regimes in Transboundary River Basins: Do They Support Adaptive Management? (Raadgever et al. 2008);
- Cultural Politics and Transboundary Resource Governance in the Salish Sea (Norman 2012);
- Navigating the tensions in collaborative watershed governance: Water governance and Indigenous communities in British Columbia, Canada (Simms et al. 2016); and
- Observing subtleties: Traditional Knowledge and optimal water management of Lake St. Martin (Traverse and Baydack 2005).

Several additional **academic references that consider traditional knowledge and water** are useful. In particular, these include:

- Democracy, Participation, and Native American Tribes in Collaborative Watershed Management (Cronin and Ostergren 2007);
- Living with Water: Integrative Indigenous and Western Knowledge Approaches to Transform Water Research and Management (Castleden 2016); and
- Northern Voices, Northern Waters: Traditional Knowledge and Water Policy Development in the Northwest Territories (Miltenberger 2010).

McKinney et al. (2016) reviews **Indigenous governance of water** in the Columbia River Basin, which crosses multiple traditional territories and international boundaries. Their research evolved out of a symposium where participants explored the interests, rights, roles, and responsibilities of Indigenous people in the international Columbia River Basin when then resulted in further symposia and research bringing together both academics and Indigenous peoples within the context of flood risk management and hydropower generation. Although not a northern example, this paper addresses similar challenges faced by the BWMA such as how to modernize to involve Indigenous peoples as sovereigns in the ongoing negotiation, decision making, and administration of the Columbia River Treaty; provide more opportunities for engagement for Indigenous peoples as well as multiple decision-makers and stakeholders at many different spatial scales; and implement adaptive management.

4. *Recommendation and relevance to the BWMA: Develop a traditional knowledge framework that includes insights around the Indigenous relationship with water, governance, water management, transboundary settings, etc. specific to non-northern transboundary rivers.*

3.3   Women as Water Keepers, Elders as Experts

McGregor (2008), Szach (2013), Cave and McKay (2016) speak to the centrality of women in nurturing and caring for water as well as water being the lifeblood of the Land (i.e. Mother Earth). Further, Haig-Brown and Dannenmann (2008) highlight the importance of the Land (i.e. Mother) as the first teacher. In addition to the importance of women in water governance, much of the traditional knowledge literature highlights the importance of creating systems that ensure that Elders and key knowledge holders are in decision making roles (e.g. Abele 1997; Davis and Wagner 2003; Atlantic Policy Congress of First Nations Chiefs Secretariat 2011).

5. *Recommendation and relevance to the BWMA: Implement key principles for inclusion of traditional knowledge from women and Elders as holders of unique understandings around water, and honour their importance in knowledge transfer and renewal between generations.*

3.4   Interweaving Traditional Knowledge and Western Science

Debate continues both within academic circles and communities as to whether it is relevant, possible, or even appropriate to try to interweave, braid, or integrate western science and traditional knowledge - a critical discussion that extends beyond the confines of this paper. Several references highlight the **challenges and opportunities in considering western science and traditional knowledge** in resource management (e.g. McGregor 2002; Tsuji and Ho 2002; Raymond et al. 2010; Bohensky and Maru 2011; Huntington et al. 2011; Liedloff et al. 2013; Tengö et al. 2014; Mantyka-Pringle et al. 2017; Buck 2019).

Piikani First Nation Elder Reg Crowshoe and Sturgeon Lake First Nation Elder Willie Ermine speak to ethical spaces whereby **knowledge can be both co-produced as well as empowered separately** through understanding differences in culture (Crowshoe and Ermine 2016). They suggest that the confluence of worldviews breathes life into ethical engagement and ethical order. Tengö et al. (2014) speak to a multiple evidence base (MEB) approach that proposes:

> parallels whereby [I]ndigenous, local and scientific knowledge systems are viewed to generate different manifestations of knowledge, which can generate new insights and innovations through complementarities (Tengö et al. 2014: 579).

Liedloff et al. (2013) present a Bayesian network to synthesizing seasonal aquatic knowledge of water and fish management from Gooniyandi speaking Aboriginal peoples in Northwestern Australia. Although prescriptive, the approach highlights traditional knowledge in informing a scientific framework rather than knowledge co-production.

Buck (2019) conducted a literature review and presented a summary of recommendations around traditional knowledge. While not focused on water particularly, there are still insightful recommendations around bringing together Indigenous and non-Indigenous knowledge communities and their knowledge systems.

Placing aside the many challenges of considering two knowledge systems at once, the following illustration provides one possible example of a respectful interweaving[8] or parallel process model that sets out a planning, research, and decision making framework.

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[8] The Indigenous Wisdom Advisory Panel (IWAP) is "dedicated to ensuring that Indigenous science knowledge systems, languages, oral traditions, understandings, natural laws and cultures are represented and respected equitably with the Alberta environmental science program under the Environmental Protection and Enhancement Act," (IWAP 2017:1). The IWAP explains that:
> braiding and weaving knowledge systems together results in more than the sum of their parts. The process of braiding results in a stronger 'us,' together rather than apart. The process of weaving results in the creation of something that is more useful and beautiful as a whole than separated. Braiding and weaving together our knowledge systems can result in instruments of peace to strengthen our spirits (IWAP 2017: 2).

Parallel Process Model
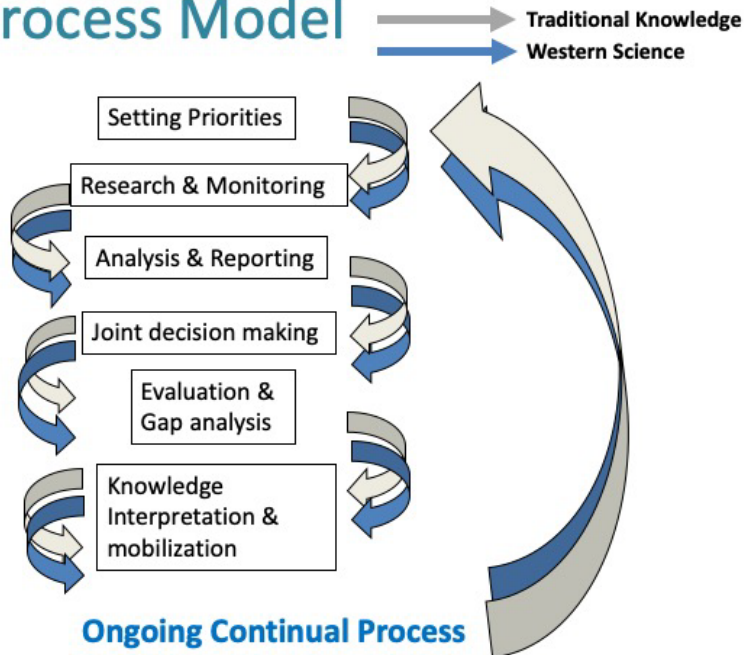
von der Porten and McGregor (2016) and Hopkins et al. (2019) present unique perspectives on ways to **interweave Indigenous knowledge and scientific knowledge in a water management context**. Challenges and opportunities associated with interweaving Indigenous knowledge systems into collaborative governance for water that are particularly relevant to the BWMA in von der Porten and McGregor (2016).

Some references report on conference, meeting or workshop proceedings that brought together **traditional knowledge holders and western scientists to consider water issues**. These include:
- Following in the Footsteps of our Ancestors: Elders and Youth Water Gathering (Chiefs of Ontario 2015);
- Incorporating Indigenous knowledge systems into collaborative governance for water: Challenges and opportunities (von der Porten et al. 2016); and
- Science meets traditional knowledge: Water and Climate in the Sahtu (Great Bear Lake) Region, Northwest Territories, Canada (Woo 2007).

6. ***Recommendation and relevance to the BWMA: Work primarily with traditional knowledge holders, but co-create with western scientists, to ensure that the traditional knowledge framework allows for meaningful interweaving of both ways of knowing at all levels. Employ a parallel process model, as appropriate, within a transboundary water context.***

Finally, works by Parlee (2016), Gagos (2019) Parlee and D'Souza (2019) differentiate between traditional knowledge and local knowledge and may provide guidance in reconciling these two ways of knowing along with scientific knowledge when developing a traditional knowledge framework for the implementation of the BWMA.

7. ***Recommendation and relevance to the BWMA: Understand the differences between traditional knowledge and local knowledge and where each is best suited in developing a traditional knowledge framework for implementation of the BWMA.***

3.5 Traditional Knowledge, Indigenous Guardians and Community-Based Monitoring

Indigenous guardians are increasingly reclaiming their rightful roles as those who care for and nurture their lands: practicing guardianship is a fundamental cornerstone of Indigenous identities, rights and responsibilities. In the last decade - particularly since the release of the *Truth and Reconciliation Commission of Canada Calls to Action* in 2015 - there have been multiple initiatives to establish guardians / community-based monitoring programs. **Lessons learned from guardians programs** will be important to consider in developing a traditional knowledge framework for the implementation of the BWMA. For example, learnings from the following should be applied:

- CIRNAC - Indigenous Guardians Pilot Program (IndigenousGuardiansPilotProgram);
- Indigenous Guardians Toolkit (https://www.indigenousguardianstoolkit.ca)
- Keepers of the Athabasca (http://www.keepersoftheathabasca.ca);
- Keepers of the Water (http://www.keepersofthewater.ca); and
- Tracking Change Project (www.Trackingchange.ca).[9]

The Indigenous Circle of Experts, through the ICCA Consortium, recently published a report which speaks to the creation of **Indigenous Protected and Conserved Areas** as important to the spirit and practice of reconciliation (Indigenous Circle of Experts 2018). Several **northern guardians programs** are ongoing, many of which focus around certain cultural keystone species [e.g. Caribou Guardians Coalition, Tłı̨chǫ Ekwǫ̀ Nàxoède K'è (Boots on the Ground); Łutsel K'e Ni Hat'ni Dene (Watchers of the Land); Yellowknives Dene Guardians Project; Nunavut Wildlife Management Board Community-Based Monitoring Network; Kitikmeot Regional Wildlife Board Caribou Mapping and Monitoring Project; Kátł'odeeche First Nation Nahendeh Kehotsendi; and Dene Tha' First Nation Dene Tha' Guardian Project]. Ways in which these programs have been established may be instructive to developing a traditional knowledge framework for the implementation of the BWMA. Further, collaboration opportunities between ongoing guardians programs should be explored for the BWMA.

8. ***Recommendation and relevance to the BWMA: Develop a traditional knowledge framework that establishes new guardians programs in the transboundary setting and both learns from and supports existing guardians programs.***

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[9] The Tracking Change Project is led by the University of Alberta as well as the Traditional Knowledge Steering Committee of the Mackenzie River Basin Board, GNWT and other key partners.

4.0 Assessment Results

Traditional knowledge policies, protocols, frameworks, guidelines, and protocols reviewed share many commonalities largely grounded in:

- communication;
- legacy, accountability, transparency, and co-ordination;
- customization;
- verification; and
- evaluation (learning).

4.1 Communication

Frequent, respectful and ongoing communication between parties and traditional knowledge holders is key to the engagement and mobilization of both people and their knowledge in developing a traditional knowledge framework for the implementation of the BWMA.

Co-create with communities early and often as the basis for relationship building. Work together to discuss and develop your objectives from the outset and collaborate to identify meaningful ways to achieve those goals.

Be respectful, clear, and appropriate in language and translation*.* Providing materials in appropriate languages and employing highly skilled translators is critical to communication. Further, identifying clear and plain language communication tools are also important.

Commit to relevant, respectful, and appropriate communication and knowledge mobilization. Communication across traditional territories, disciplines, and worldviews can be challenging to say the least. Speaking in ways that encourage discussion, support listening, and foster relationships is critical. Communication tools should be relevant, respectful, and appropriate. For example, some Elders suggest that larger print should be used in hand-outs and that traditional place names be used on all maps. Visual aids such as drawings or photos/videos can help people gain an accurate understanding of what's involved. Some people prefer the use of social media or online video links. When these requests are accommodated, the path towards a relationship of respect is followed: sometimes it is these 'little things' that count. Finally, mobilizing knowledge in a culturally appropriate or meaningful way requires co-creation and collaboration. This may mean communicating through a talking circle or community feast or drawing from two-eyed seeing (Marshall 2005; Bartlett et al. 2012) and *wampum* teachings (Styres 2017).

Support plain language and terminology translation initiatives. Consider funding terminology development opportunities for interpreters from each language region(s). This will allow interpreters the opportunity to discuss and agree on appropriate translations for plain language English descriptions. Especially in the context of watershed management, there can be challenges when scientific or technical words don't have an Indigenous analogue.

4.2   Legacy, Accountability, Transparency, and Co-ordination

Traditional knowledge policies, protocols, frameworks, guidelines, and protocols reviewed all speak to the importance of accountability and transparency[10] in terms of how traditional knowledge is documented, acknowledged, stored, owned, etc. as well as how it will be considered in relation to western science. A transparent, organized, and co-ordinated approach to working with traditional knowledge holders can minimize frustrations and set the stage for a well-respected process of co-creation, collaboration, and engagement.

While most references cite the importance of including traditional knowledge in an environmental setting such as the implementation of the BWMA, there is rarely any discussion of methods or protocols on how to actually achieve this goal. An overview of traditional knowledge policies, protocols and frameworks provided some insight in *how* traditional knowledge can be interwoven into a process, but most of the focus remained on issues such as ownership, control, access, and possession. In general, guidance on moving forward in how interweaving can be accomplished is a gap in the review.

Co-create agreements that clearly articulate traditional knowledge ownership, control, access, and possession and evaluate them often. Many Indigenous communities have their own traditional knowledge policies, protocols, frameworks, guidelines or protocols that clearly spell out issues around ownership, control, access, and possession. Where these are not in place, their development should be supported. Such keystone documents should be the first step in developing a traditional knowledge framework for the implementation of the BWMA. Issues around ownership, rights, control, and possession become increasingly important as the Indigenous rights and title discussions advance, the digital age evolves, and the internet simplifies both accessing. Traditional knowledge policies, protocols, frameworks, guidelines, and protocols - including data sharing agreements - should be reviewed, evaluated, and adapted to technological, socio-cultural, environmental, governance, and economic changes.

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[10] Research conducted with traditional knowledge holders for the federal government around better ways to "improve its guiding principles and approach to respectfully engaging with Indigenous communities to access and employ traditional knowledge," showed that more transparency is required when government discusses programs in relation to both opportunities and limitation for Indigenous involvement and the role of traditional knowledge (Native Women's Association of Canada 2010: 5). A legacy of mistrust, in part around Indigenous and Treaty rights, continues to influence relationships, particularly around water governance (LaBoucane-Benson et al. 2012). The research likewise advocated for taking the time for fair, equitable and transparent processes as the better, more cost-efficient option in the long term. Communication, mutual benefit and real inclusivity were identified as cornerstones of collaboration between Indigenous peoples and governments.

Clarify how, where, why, when, and by whom each knowledge system is applied. While co-creation and interweaving of knowledge systems may be ideal in one setting, this confluence will not work in other scenarios. Traditional knowledge - developed either through a parallel process or in isolation - may be better suited than scientific knowledge depending on the situation (and vice-versa). In all cases, it must be clear how, where, why, when and by whom traditional knowledge was acquired and informed, altered, and / or influenced a process, decision, policy, action, or program.

Work with traditional knowledge holders to co-create, document and report back to communities how traditional knowledge informed, altered or influenced a process, decision, or program and how sensitive information was protected. Traditional knowledge holders and scientists should co-create in ways that acknowledge causative linkages when either traditional knowledge or scientific knowledge led to a particular outcome. Examples where traditional knowledge and western science have informed one another or contributed on their own are opportunities for communication, celebration, and further collaboration.

Recognize, accept and celebrate convergences and divergences between traditional knowledge and western science and that both knowledge systems have their own strengths and systems of validation. Figure out when one knowledge system would contribute more in what setting. For example, maybe science can contribute a measure of pH in water while traditional knowledge can contribute a qualitative measure of smell and taste. Further, look for ways that traditional knowledge can generate objectives for future scientific programs - and vice-versa.

Identify limitations and strengths in knowledge systems and be forthright with intentions around how traditional knowledge will be interwoven. In many cases it is not appropriate to place traditional knowledge alongside a scientific framework: each knowledge system is "enough" in its own right and with its own system of checks, balances, approaches, and conclusions. With a traditional knowledge framework in place, communicate how traditional knowledge will be collected and where it will (and will not) be utilized so that community members can have clear expectations. Disclose processes where full and equitable consideration of traditional knowledge is not possible, nor appropriate. Sometimes, it is simply important to acknowledge that certain scenarios call for traditional knowledge while others are better served through scientific knowledge.

4.3   Customization

A traditional knowledge framework for the implementation of the BWMA must seek respectful, appropriate, and meaningful ways of interweaving traditional knowledge in water governance specific to the socio-cultural and physical landscapes of the BWMA. There is no one approach for all communities, regions, groups, and timeframes.

Honour that all Indigenous groups are heterogeneous and call for customized approaches. Each Indigenous community has different capacities, cultural rules, and protocols when it comes to traditional knowledge. Thus, communication with key leaders and elders as to how traditional knowledge initiatives can be carried out and how traditional knowledge can be included in transboundary frameworks must not be assumed to be the same everywhere.

Recognize that for every 'type' of traditional knowledge documented, different management and media systems are required. The ways in which traditional knowledge must be owned, controlled, accessed, and possessed differ from western scientific knowledge. As multi-media and software tools advance, so too do the ways in which traditional knowledge can be documented, shared, taught, and interwoven. For example, matching traditional knowledge as an oral tradition with audio or video tools can be a much more creative, meaningful, and effective format. There are excellent interactive and online tools available (often at no cost) that speak to the 'iGeneration' today and can meaningfully and respectfully facilitate both knowledge transfer and mobilization.

4.4   Verification

Verification is a critical component of everything from evaluating knowledge contributed by an individual through to whether the information was documented and then communicated respectfully. Any traditional knowledge framework will need verification checks around the ways in which traditional knowledge is interwoven, reviewed, and verified by traditional knowledge holders.

Spend time getting to know your traditional knowledge holders and on what topics they are considered by their peers to be knowledgeable enough to represent the community*.* In the same way there are scientific experts, there are also traditional knowledge experts. A transparent and defensible process in how traditional knowledge holders are selected to participate should be defined by Indigenous partners.

Check and then double-check when it comes to how traditional knowledge is represented and presented*.* Verify everything to confirm that the ways in which traditional knowledge is represented and presented are respectful, accurate, and appropriate. It is important that you give knowledge holders the opportunity to review their words (e.g., shared in meetings, workshops, reports) prior to releasing their information as per a negotiated data sharing agreement. This important measure of respect can be key in terms of relationship building and fostering trust. Details around verification should be discussed early as traditional knowledge holders and scientists start to work together.

4.5   Learning and Respect

A key lesson embedded in Indigenous cosmology is the importance of teaching and adapting. This lesson is central to the development of a traditional knowledge framework for the implementation of the BWMA as it calls for ongoing evaluation, review, and renewal. Ongoing learning is a path of respect, not only for water, but also for people and their knowledge systems.

Be open-minded when considering a belief system*.* Where possible, provide opportunities for decision makers and scientists to participate in spiritual ceremonies and celebrations as this first-hand experience will typically lead to greater understandings and respect. From there, observations and beliefs can be placed within a broader context of their origin and whether they form part of independent or collective knowledge of first-hand or second-hand observations.

Take time to learn Indigenous governance systems and decision making processes. When developing a traditional knowledge framework, it is important to learn about how decisions are reached within a community, the roles various people play, and who should be engaged. You may find that some women, for example, are not outspoken in public meetings but they carry a lot of weight in the decision making process. You may also hear a lot of concern about future generations, even if there are not many youth participating in the process. You may find that elders talk when you feel they are off-topic and not speaking to the agenda, but often they have their reasons for doing so. They may be using the opportunity to get their own people to remember their values or lessons learned. Respect this scenario and let the leaders deal with that situation: do not cut them off or challenge them. Such actions will almost always be interpreted as disrespectful. These learnings must be incorporated into developing a traditional knowledge framework for the implementation of the BWMA.

While sharing with local communities what approaches are taken by other communities for their information, the local policy or protocol must be respected and followed. Sharing may inspire a community to reconsider their approach, but that is their decision alone.

Identify measures of success - as defined by Indigenous communities - and commit to an ongoing evaluation and adaptation. The importance of ongoing learning and adapting is embedded within Indigenous traditional laws and worldviews. Parties must identify measures of a success in developing a traditional knowledge framework for implementation of the BWMA and then commit to learning from and responding to an ongoing evaluative process.

5.0   Recommendations and Take-Away Lessons

This Review considers and analyses selected traditional knowledge frameworks, best practices, protocols, policies or guidelines for relevancy and usefulness in developing a traditional knowledge framework for the implementation of the BWMA. Annotations and details provided for each reference in Appendix C can guide which resource will be most relevant and useful. This section reiterates key recommendations from the review and closes with a review of key take-away lessons from the analysis.

The following key recommendations are relevant to developing a traditional knowledge framework for the implementation of the BWMA:

1. Review, respect, implement, and adhere to traditional knowledge policies and protocols from the North and northern Indigenous groups, particularly where they include groups whose traditional territories are within the regions covered in the BWMA.
2. Implement both the Tri-Council Policy Statement around research involving First Nations, Inuit and Métis within and OCAP™ principles for respectful and appropriate ownership, control, access and possession of traditional knowledge in developing a traditional knowledge framework for the implementation of the BWMA. This is particularly relevant to the practices laid out in Appendix C of the BWMA.
3. Develop a traditional knowledge framework that includes findings from works and websites specific to northern transboundary rivers.
4. Develop a traditional knowledge framework that includes insights around the Indigenous relationship with water, governance, water management, transboundary settings, etc. specific to non-northern transboundary rivers.
5. Implement key principles for inclusion of traditional knowledge from women and Elders as holders of unique understandings around water, and honour their importance in knowledge transfer and renewal between generations.
6. Work primarily with traditional knowledge holders, but co-create with western scientists, to ensure that the traditional knowledge framework allows for meaningful interweaving of both ways of knowing at all levels. Employ a parallel process model, as appropriate, within a transboundary water context.
7. Understand the differences between traditional knowledge and local knowledge and where each is best suited in developing a traditional knowledge framework for implementation of the BWMA.
8. Develop a traditional knowledge framework that establishes new guardians programs in the transboundary setting and both learns from and supports existing guardians programs.

Common elements of the traditional knowledge frameworks, best practices, protocols, policies or guidelines reviewed, particularly around fit and interplay, are important to consider in developing a traditional knowledge framework for the implementation of the BWMA. The following key strengths featured largely and are presented as the following take-away lessons:

Common Element / Strength	Take-Away Lesson
Communication	- Co-create with communities early and often as the basis for relationship building - Be respectful, clear, and appropriate in language and translation. - Commit to relevant, respectful, and appropriate communication and knowledge mobilization. - Support plain language and terminology translation initiatives.
Legacy, Accountability, Transparency, and Co-ordination	- Co-create agreements that clearly articulate traditional knowledge ownership, control, access, and possession and evaluate them often. - Clarify how, where, why, when, and by whom each knowledge system is applied. - Work with traditional knowledge holders to co-create, document and report back to communities how traditional knowledge informed, altered or influenced a process, decision, or program and how sensitive information was protected. - Recognize, accept and celebrate convergences and divergences between traditional knowledge and western science and that both knowledge systems have their own strengths and systems of validation. - Identify limitations and strengths in knowledge systems and be forthright with intentions around how traditional knowledge will be interwoven.
Customization	- Honour that all Indigenous groups are heterogeneous and call for customized approaches. - Recognize that for every 'type' of traditional knowledge documented, different management and media systems are required.
Verification	- Spend time getting to know your traditional knowledge holders and on what topics they are considered by their peers to be knowledgeable enough to represent the community. - Check and then double-check when it comes to how traditional knowledge is represented and presented.
Learning and Respect	- Be open-minded when considering a belief system - Take time to learn Indigenous governance systems and decision making processes. - Identify measures of success - as defined by Indigenous communities - and commit to an ongoing evaluation and adaptation.

Table 1: Assessment Results Take-Away Lessons

Traditional knowledge shares many elements across Indigenous groups, but it is ultimately for those within each river basin and watershed to define how they would like their knowledge defined, owned, controlled, accessed, and managed within a traditional knowledge framework developed for the implementation of the BWMA. At the outset, both Indigenous and non-Indigenous peoples must have an understanding, to the best of their abilities, around what traditional knowledge is - and is not. Further, there must be clarity around how Indigenous values and traditional laws such as transparency, inter-relationship of all things, honesty, respect, kindness and sharing will factor into the meaningful and respectful inclusion of knowledge systems, adherence to local protocols, capacity building, and knowledge mobilization and renewal.

Finally, lessons learned from this review and analysis of select traditional knowledge frameworks, best practices, protocols, policies or guidelines will support meaningful, appropriate, respectful, and customized pathways to overcome the unique challenges specific to relevant communities, timeframe, and watersheds in developing a traditional knowledge framework for the implementation of the BWMA.

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Appendix A   Project Methods Detailed

As summarized in Section 2.0, methods used for the review and assessment varied from what was proposed in order to ultimately be more relevant and useful. This Appendix describes how the general themes of temporal, spatial and scalar dimensions combined with a review of commonalities and differences was carried out.

Task 1: Compilation (Objective 1)

In Task 1, the team focused on Objective 1 to access and compile a list of available TK frameworks, best practices, protocols, policies, and guidelines relevant to environmental decision making. This initial phase consisted of a systematic literature review of information from Indigenous governments with TK protocols and policies, the Cumulative Environmental Management Association (CEMA), the Mackenzie River Basin Board Traditional Knowledge and Strengthening Partnership Committee, grey literature, academic publications and others. As experienced TK practitioners, both Joanne and Natasha maintain and have shared an extensive library of TK resources from across Canada, many of which they have contributed to developing or peer reviewed.

Examples of TK publications with applicability to TK and the transboundary water context included, but was not limited to, those published by:

- Alaska Native Science Commission
- Assembly of First Nations
- Arctic Borderlands Ecological Knowledge Co-op
- Arctic Institute of North America
- Aurora Research Institute
- Canadian Arctic Resources Committee
- Centre for Indigenous Environmental Resources
- Chiefs of Ontario
- Committee on the Endangered Wildlife in Canada
- Dehcho First Nations
- Dene Cultural Institute
- EcoTrust
- First Nations Environmental Network
- Government of Alberta
- Government of Canada
- Government of British Columbia
- Government of the Northwest Territories
- Government of Nunavut
- Gwich'in Social and Cultural Institute
- NWT CIMP
- Nature United (Nature Conservancy of Canada)
- Nuclear Waste Management Organization
- Tłı̨chǫ Research and Training Institute
- Union of BC Indian Chiefs

Key academic publications included works, for example, by: Andrea Beck, Fikret Berkes, Alan Emery, Steve Ellis, Elisa Hart, Henry Huntington, Allice Legat, Deborah McGregor, Brenda Parlee, Natasha Thorpe, Terry Tobias, and Suzanne von der Porten.

Our team had access to the University of British Columbia library and a variety of online journals to facilitate the inclusion of academic theories and critiques on TK use frameworks that are relevant and applicable to transboundary issues in the NWT and AB. Review of Canadian examples followed by review of international examples (particularly from African countries as well as Australia) provided deeper insight into their relative merits and drawbacks, as budget allowed. Finally, our team drew upon our personal relationships and contacts with other TK practitioners around the world by sending out an email request for grey literature TK references.

Task 1 Deliverable

D1: Annotated list of frameworks, best practices, protocols, policies or guidelines. A MS Excel Workbook was used to develop an annotated spreadsheet that describes each document and its purpose. Column headings for this task include reference number, author, date, title, source, publisher, reference type (e.g. journal, book), annotated description, and hotlink. Excel allowed for macros and comparative analysis through sorting by key characteristics (e.g. spatial, temporal and scalar dimensions). Where possible, an electronic copy of documents were provided to the GNWT and GOA.

Task 2: Review (Objective 2)

In Task 2, the team focused on Objective 2 to review the compiled annotated references (i.e. frameworks, best practices, protocols, policies and guidelines) relevant to environmental decision-making; identify their characteristics, including key commonalities, spatial, temporal and scalar dimensions, and key differences; populate the Excel spreadsheet developed in Task 1; and draft Report 1 in MS Word.

Spatial, Temporal and Scalar Dimensions

Our team developed a combined qualitative and quantitative approach to analyzing and assessing spatial, temporal and scalar dimensions. This approach was designed specific to assess each reference in terms of the relevancy and applicability to the BWMA. As outlined in the table below, the team intended to qualitatively characterize spatial and temporal dimensions by answering the following:

- For each spatial element (i.e. column 2), which characteristic(s) are the best descriptors (i.e. column 3); and
- For each temporal element (i.e. column 2), which characteristic(s) are the best descriptors (i.e. column 3).

Thereafter, the references were to be assessed and clustered according to these similar and different characteristics.

Dimension	Element	Characteristic
Spatial	Settler jurisdiction	Municipal (local)
		Regional
		Provincial / territorial
		National
		Global
	Indigenous jurisdiction	Single traditional territory
		Multiple traditional territories
	Biome	Tundra
		Taiga
		Deciduous forest
		Grasslands
		Desert
		High plateaus
		Tropical forest
		Minor terrestrial biomes
Temporal	Historical time	Past
		Present
		Future
	Units	Days
		Months
		Years
	Frequency	One-time
		Ongoing

Following this qualitative analysis, a quantitative analysis was to be carried out to characterize scalar dimensions by answering the following for each reference:
- In terms of fit, interplay and scale (i.e. column 2), which ranking best describe(s) the institutional, economic, political and cultural factors (i.e. column 3) of each scalar dimension where 1=low, 2=moderate 3=high

Next, an analysis of quantitative rankings was to assist in identifying which references were most relevant and applicable to the BWMA context.

Dimension	Element	Characteristic
Scalar	Fit	Organizational
		Cultural
		Economic
		Political
	Interplay	Organizational
		Cultural
		Economic
		Political

While this combined qualitative and quantitative approach to analyzing and assessing spatial, temporal and scalar dimensions for each reference was envisioned as a novel way to identify the most relevant sources, in practice, this framework didn't bring value. For example, as references were assessed for their temporal dimension, by definition anything central to traditional knowledge spanned the full temporal dimension (i.e. past, present, future; days, months, years; one-time and ongoing). When considering spatial dimensions, some references might have been local in scope but had the potential to span greater jurisdictions. Scalar dimensions in terms of fit and interplay were slightly easier to consider, but there was still an element of subjectivity in the analysis. In short, it is not surprising that the proposed approach of assigning a reductionist and scientific framework to an exercise in preparing for a traditional knowledge framework was not appropriate. Instead, while it was ultimately more time-consuming, we reviewed each reference, and considered them under the general headings of spatial, temporal and scalar dimensions and then assigned their relevancy.

Commonalities and Differences

Building on the identification and cluster analysis of characteristics for spatial, temporal and scalar dimensions, the compilation of references was reviewed for commonalities and differences. We prepared an overview discussion of key commonalities and differences based on results from resulting perspectives from reviewing all references, and our broad experiences.

Task 3: Assessment (Objective 3)

Building on the quantitative and qualitative analysis in Task 2, our team focused on Objective 3 to assess which of the reviewed frameworks, best practices, protocols, policies, or guidelines and characteristics thereof would be relevant or helpful for future establishment of a framework for meaningful inclusion of TK in bilateral water management decision making.. At a broad level, our assessment approach was grounded in: (1) social and policy theory (e.g. institutional dynamics framework analysis, transparency assessment); (2) key learnings from our work "on the ground" in northern communities; and (3) findings from the review of existing frameworks, best practices, protocols, policies and guidelines for traditional knowledge in decision making.

The assessment approach assessed each reference according to whether it was relevant, applicable and helpful for future establishment of a framework for meaningful inclusion of TK in bilateral water management decision making. The approach considered each reference and valued it according to the following example "relevancy indices" where 1 is low, 2 is medium and 3 is high:

- feasibility
- barriers
- acceptability
- utility
- cultural competency
- form
- performance
- purposefulness

- ecological health
- water management
- risk management
- monitoring / watching programs
- transboundary settings
- stewardship / guardianship
- cultural value

For example, a TK protocol considered "relevant, applicable and helpful" if it scored a 3 on "feasibility, acceptability and performance" versus a TK guideline that scored 1 for each of the same indices. Each of these indices was used to consider each reference within the context of bilateral water management decision making.

For the references deemed most relevant and applicable, our team highlighted key commonalities and differences. Overlap as well as anomalies were noted with a view towards innovation. References that have been reviewed or developed by Indigenous parties and are relevant to transboundary water management are of particular interest.

While the final step in Task 2 was preparing a report in MS Word based on the review of key commonalities, spatial, temporal and scalar dimensions and key differences and drafted in a plain-language to be accessible to multiple audiences, instead the report was expanded to include results from Task 3 and 4. Specifically, the expanded report detailed the assessment of each compiled reference and their characteristics for relevancy and usefulness in creating a future framework for the BWMA.

Thereafter, comments from GWNT and GOA related to this assessment were addressed and a Final Report was submitted.

Task 3 Deliverables

D2: Report 1 - Identify the characteristics of each document. An MS Word document was created based on the Excel spreadsheet to describe the characteristics of each central framework, best practice, protocol, policy and guideline including key commonalities, spatial, temporal and scalar dimensions, and differences. Summary tables included to provide a visual tool for quick comparisons.

D3: Report 2 - Assess relevancy of each document and its characteristics to the BWMA. Once the GWNT and GOA provide comments, each compiled framework, best practice protocol, policy, or guidelines and their characteristics for relevancy and usefulness will be assessed in terms of creating a future framework for the BWMA. An MS Word draft of high quality and as complete, accurate and readable as possible will be submitted to the GNWT and GOA for review with the expectation that collated comments will be returned from each government using track changes mode within one month.

D4: Final Report. Once all comments from the GNWT and GOA are addressed from Report 2, a Final Report will be submitted in both PDF and MS Word formats.

Appendix B   Traditional Knowledge Frameworks, Best Practices, Protocols, Policies or Guidelines Reviewed and Entered into Bibliographic Database

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Appendix C   Traditional Knowledge Frameworks, Best Practices, Protocols, Policies or Guidelines Assessment Tables

NWT-AB Bilateral Water Management Agreement TK Review - Indigenous Sources

			Orange: Highly Relevant	Green: Moderately Relevant	Blue: Low Relevance		Not Highlighted: Of interest	
Author	**Date**	**Title**	**Publisher**	**Reference type**	**Annotated Description**	**Number of Pages**	**Link/Reference**	**Note / Reason for Importance**
Alaska Native Science Commission, Environmental Protection Agency	2003	National Subsistence Technical Planning Meeting for the Protection of Traditional & Tribal Life-ways	Alaska Native Science Commission	Indigenous	This is a report from a summit on Subsistence Food with the objectives of developing a working definition of subsistence foods from an Indigenous Perspective; Identifying a comprehensive set of assessment tools and communication mechanisms that Tribes can utilize in their own assessments, and Identify research and data gaps.	35	http://www.nativescience.org/pubs/NatSubTechPlanWRKSHP.pdf	Focused on pollution impacts on traditional subsistance harvest
Anishinabek Ontario Resource Management Council Water Working Group	2009	Anishinabek Traditional Knowledge & Water Policy Report	Anishinabek Ontario Resource Management Council	Indigenous	This is a report that came out of a 2008 Anishinabek Traditional Knowledge and Water Policy Conference. Findings include the need for recognizing women as water stewards, the acknowledgement that TK has value on its own and does not need to be integrated with science, the fact that both science and TK need to inform water management, and that TK can be used to establish meaningful dialogue between First Nations and the provincial government.	47	http://www.onwa.ca/upload/documents/water-report.pdf	Conference proceedings. Important points described in Annotated Description. Recommendations relevant to the NWMBA
Assembly of Nova Scotia Mi'kmaq Chiefs	2014	Mi'kmaq Ecological Knowledge Study Protocol	Kwilmu'kw Maw-klusuaqn Negiotiation Office	Indigenous	This is a guide for structuring the relationships and processes of conducting a TK study with Mi'kmaq communities. These structures and processes are designed to address the ethics and IP concerns associated with TK studies.	27	https://novascotia.ca/abor/aborlearn/docs/MEK%20Protocol%20Second%20Edition.pdf	Useful for recommendations regarding ethics and IP of TK.
Atlantic Policy Congress of First Nations Chiefs Secretariat	2011	APCFNC Elders Project: Honouring Traditional Knowledge 2009-2011	Atlantic Policy Congress of First Nations Chiefs Secretariat	Indigenous	This report reviews an elders Mawio'mi (gathering) in August 2010 from which a list of recommendations were made to further the transmission of TK in Atlantic Aboriginal communities and the role of elders in decision-making regarding community planning.	128	https://www.apcfnc.ca/images/uploads/FinalReport-HonouringTraditionalKnowledge_1.pdf	The list of recommendations provides tangible ways to further the inclusion of TK in decision-making through the meaningful inclusion of elders in those decision-making processes.
Candler, Craig, Rachel Olson, Steven DeRoy, Athabasca Chipewyan First Nation, Mikisew Cree First Nation	2010	As Long as the Rivers Flow: Athabasca River Knowledge, Use and Change	The Firelight Group	Indigenous	This report outlines the impacts of changed water flows on the Athabasca Chipewyan First Nation and Mikisew Cree First Nation who depend on waters in the Athabasca-Peace Delta.	84	https://s3-us-west-2.amazonaws.com/parkland-research-pdfs/aslongastheriversflow.pdf	Highly relevant to this review as it discusses Aboriginal Base Flow and Aboriginal Extreme Flow as measures and management tools. Very detailed information on water quantity management using Traditional Knowledge. Highly detailed. Focus on navigation concerns as well as TK of water quality and quantity. Focus on Athabasca River, part of the NBWMA. Includes key recommendations relevant to the NBWMA. Northern.

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Chiefs of Ontario	2015	Following in the Footsteps of our Ancestors:Elders and Youth Water Gathering	Chiefs of Ontario	Indigenous	Over 70 First Nations youth and elders gathered in Sault Ste. Marie in March 2015 to attend the Chiefs of Ontario's Following in the footsteps of our Ancestors Elders and Youth Water Gathering. Participants discussed the role of First Nations traditional ecological knowledge in protecting the Great Lakes. The workshop offered First Nation youth the opportunity to connect with Elders and share knowledge and build capacity as leaders. Participants were provided with an overview of the Great Lakes initiatives, including recently announced priorities of Ontario and Canada to restore the Great Lakes ecosystem. The workshop offered First Nation youth the opportunity to connect with Elders and share knowledge and build capacity as leaders. Participants were provided with an overview of the Great Lakes initiatives, including recently announced priorities of Ontario and Canada to restore the Great Lakes ecosystem.	video	http://www.chiefs-of-ontario.org/elders-and-youth-water-gathering-2015/	Video as an example of a tool for sharing information. Discusses importance of using TK for water management and water quality issues, but not very specific. Focus on Ontario.
Crowshoe, Reg and Willie Ermine	2016	Keynote Presentation: Ethical Spaces	PolicyWise for Children and Families	Indigenous	This is a presentation about how ethical space is ceremony and a way of discussing traditional knowledge in relation to scientific knowledge. Focus on spirituality.	N/A	https://policywise.com/video_library/keynote-presentation-ethical-spaces-with-elder-reg-crowshoe-and-elder-willie-ermine/	Provides insight into bringing two ways of knowing together and where each system should take the lead.
Deh Cho First Nation	2004	Traditional Knowledge Research Protocol	Deh Cho First Nation	Indigenous	A protocol document developed to provide guidelines to assist Deh Cho communities in negotiating terms and conditions for the use, ownership, copyright, etc. associated with traditioan knoweldge used in external research studiesn and industries development.	9	http://reviewboard.ca/file/591/download?token=fD8TG1hm	Focused on researcher-communit and industry-community relationship. Contains definitions of terms and details on ownership, use, storage, etc. of TK of relevance to the BWMA. Policy example.lantains definitions of terms and details on ownership, use, storage, etc. of TK of relevance to the BWMA. Policy example. Northern.
Deh Cho Land Use Planning Committee		Traditional Knowledge Policy	Deh Cho Land Use Planning Committee	Indigenous	A protocol document developed to provide guidelines around ownership and use of traditional knowedge collected as part of traditional land use and occupancy mapping projects and the land use planning process.	3	http://reviewboard.ca/file/593/download?token=_meSlys4	Focused on researcher-communit and industry-community relationship. Contains definitions of terms and details on ownership, use, storage, etc. of TK of relevance to the BWMA. Policy example.lantains definitions of terms and details on ownership, use, storage, etc. of TK of relevance to the BWMA. Policy example. Northern.
Dene Nation	2019	We Have Always Been Here: The Significance of Dene Knowledge	Dene Nation	Indigenous	This paper was developed to inform the federal government's Indigenous Knowelge Policy Framework and to summarize the Dene viewpoints from a conference convened to ascertain key views, recommendations and best practices on sharing and considering Indigenous knowledge in environmental decision-making. This document describes how TK is connected to land, language, spirituality, values and notions of sovereignty. It is also dynamic and grown in oral cultures. It describes how TK integration relates to bill C-69. Relevant to the NWMBA in that is spells out key themes and recommendations with applicability to a bilateral water context.	36	https://letstalkindigenousknowledge.ca/8606/documents/17374	List of problems / concerns with the inclusion of Dene peoples and Dene Knowledge in environmental assessment. Not water focused but well articulates issues of TK protocol, describes TK thoroughly, and argues for its validity. Includes best practices relevant to the NBWMA. Northern.

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
First Nation of Na-Cho Nyak Dun	2008	First Nation of Na-Cho Nyak Dun Traditional Knowldedge Policy	First Nation of Na-Cho Nyak Dun Heritage & Education Department	Indigenous	This policy document outlines the nation's policies regarding the authority of the FN government in TK matters, Intellectual Property, and the use of TK. Much of the guidelines' content regarding the use of TK outlines the role/involvement of the FNNCND government in a research project.	40	http://nndfn.com/images/uploads/pdfs/NNDFN_Traditional_Knowledge_Framework.pdf	Relevant as FNNCND is part of Mackenzie Basin (Peel River) and because policy guidelines are specific and direct. Northern.
First Nations Information Governance Centre	2014	Ownership, Control, Access and Possession (OCAP™): The Path to First Nations Information Governance	First Nations Information Governance Centre	Indigenous	OCAP has bedome the standard for consuting research on First nations and has grown to cinlude the goernance of all First Nations information.	49	https://fnigc.ca/ocap	Principles of (OCAP™ must inform the development of the TK framework: they are the gold standard in Canada at present.
Great Bear Lake Working Group	2005	"The Water Heart" A management Plan for Great Bear Lake and its Watershed	Great Bear Lake Working Group	Indigenous	This document presents an example of how to incorporate TK into specific aspects of a watershed-level management plan. This includes stories, spiritually important places and worldviews. It focuses on the Sahtu area of the Great Bear Lake Watershed and contributed to the Sahtu Land Use Planning Process.	106	https://sahtulanduseplan.org/sites/default/files/31.05.05_gblmgmtplanca.pdf	Management plan for the Great Bear Lake Watershed grounded in both TK and western science. Includes Trans-boundary issues, water issues, TK issues. Highly detailed and technical. A northern policy document from an adjacent watershed. Does not tackle transboundary issues in this first edition. Includes multiple recommendations reelvant to the management plan implementation, but no a direct reference to a TK policy / framework.
Gwich'in Social and Cultural Institute	2004	Gwich'in Tribal Council Traditional Knowledge Policy	Gwich'in Tribal Council	Indigenous	This document provides research guidelines for researchers working in Gwich'in territory and with Gwich'in traditional knowledge. It defines Gwich'in traditional knowledge and outlines a respectful, ethical researcher-community relationship. It includes an outline of the essential elements of an informed consent form for use with researching involving Gwich'in community members.	15	https://gwichin.ca/sites/default/files/gtc_final_tk_policy_2004.pdf	Focused on researcher-community relationships and IP issues. Contains definitions of terms and key guiding principles related to TK that may be relevant to the BWMA. Policy example.
Indigenous Circle of Experts	2018	We rise together: Achieving pathway to Canada target 1 through the creation of Indigenous protected and conserved areas in the spirit and practice of reconciliation	Government of Canada	Indigenous	This report provides recommendations on the use of Indigenous Protected and Conserved areas to meet Canada's target for protected area designation.	112	https://www.iccaconsortium.org/index.php/2018/03/28/launch-of-indigenous-circle-of-experts-report-we-rise-together/	Indigenous protected and conserved areas relevant to BWMA implementation.
KAVIK-AXYS Inc. and FMA Heritage Resources Consultants Inc.	2008	Traditional Knowledge Guide for the Inuvialuit Settlement Region, Northwest Territories	Environmental Studies Research Funds	Indigenous	This publication has two volumes. The first provides overviews and working definitions of the involved terms and then provides a detailed literature review of Traditional Knowledge Legislation and Policy at three scales: the Canadian North, Canada, and International. They provide a literature review of Impact Assessments and Guidelines involving Traditional Knowledge as well. The second volume synthesizes information from the literature review and presents a comprehensive guide on how to do traditional knowledge research respectfully.	V1: 80, V2: 104	https://achh.ca/wp-content/uploads/2018/07/TK_Inuvialuit-TK-Protocol.pdf	V1 provides working definitions and contains an annotated literature review. Useful for finding further sources on a desired topic. V2 provides a highly detailed review of the definition, collection, use / application, documentation, and reference of Traditional Knowledge. Useful for project management, assessment, and policy development. (V2 is more useful)

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Legat, Allice	2017	Research Guidelines for the Sahtú Region, NWT	Gagos Social Analysts, Inc	Indigenous	This document provides research guidelines related to TK for the Sahtú region. Herein, the authors maintain five key traits of TK. (1) It is rooted yet responds to change at the same time. (2) It is learned through watching and experiencing and thus is language-specific. (3) it is relational and holistic. (4) It is held by many and thus is diverse. (5) It is not all public. The report also provides guidelines for researching in communities and provides research guidelines associated with each above trait.	20	N/A	Focused on researcher-community relationships and IP issues. Contains definitions of terms. Also contains a section about using both TK and Scientific Knowledge in Decision-Making but it is not detailed. Applicable to defining TK and possible guidelines for TK work related to the BWMA.
Maliseet Nation (Wolastoqwik)	2009	Maliseet Nation (Wolastoqwik) Traditional Knowledge Protocol	Maliseet Nation Conservation Council, Traditional KnowledgeWorking Group		Development of the Maliseet Nation Traditional Knowledge (MTK) Protocol highlights the recognition of the importance of Aboriginal traditional knowledge in relation to the environmental issues facing Maliseet traditional territory, the Saint John River (Wolustok) watershed1 . The protection of such knowledge has been identified by the Maliseet Chiefs as a crucial component for future relations with non-Aboriginals, as increasing development activity continues to cause concern for all parties on the best way to proceed, in the spirit of cooperation and with due respect for Maliseet Aboriginal and Treaty rights2 . The protocol also addresses past problems with research projects such as lack of consultation of Maliseet people, lack of meaningful community involvement, lack of benefit from research, lack of informed consent, lack of community ownership of data (including analysis, interpretation, recording or access), and lack of respect of our culture and beliefs by outside researchers.	27	https://achh.ca/wp-content/uploads/2018/07/Protocol_TK_Maliseet.pdf	Relevant to BWMA in terms of a watershed example (Saint John watershed) and a traditional knowledge protocol example. Contains key recommendations.
Mikisew Cree First Nation	2016	Water is Everything - nipî tapîtam: An indigenous understanding of the outstanding universal value of Wood Buffalo National Park	The Firelight Group	Indigenous	This document is prepared for UNESCO related to Wood Buffalo National Park. It describes Cree knowledge of changing environmental conditions relating to climate change, Peace River Dams, and the Oil Sands in the Athabasca-Peace delta. Provides TK input into "Outstanding Universal Value" or OUV related to world heritage sites.	26	https://static1.squarespace.com/static/551ae203e4b037522df64b1c/t/592ee6ead2b857da9368881c/1496246025759/Firelight+MCFN+UNESCO+2016+dft+18.pdf	Contains detailed TK information about the Peace - Athabasca Delta dynamics. Northern. Provides recommendations relevant to the BWMA and examples of how TK inform environmental understanding.
Native Women's Association of Canada	2014	Aboriginal Women and Aboriginal Traditional Knowledge (ATK): Input and Insight on Aboriginal Traditional Knowledge	Native Women's Association of Canada	Indigenous	This document, funded by Environment Canada to facilitate relationship building, engagement and interweaving of traditional knowledge, highlights the importance of women in nurturing and caring for the environment. EC is hoping to improve its guiding principles and approach to respectfully engaging with Aboriginal communities to access and employ ATK. Several sections speak to the importance of women's knowledge in relation to water given the unique relationship between water and women. Key sections sepak to differences bewteen TK and western science, reasons why women have been left out of past processes related to the environment and recommendations on how governments can improve inclusion of TK.	28	https://www.nwac.ca/wp-content/uploads/2015/05/2014-NWAC-Aborignal-Women-and-Aborignal-Traditional-Knowledge-Report1.pdf	Highlights key ways in which women contribute TK, contains relevant recommendations and product of survey to provide insight on engagement and principles surrounding TK.
Northwest Territories Métis Nation	2012	NWTMN Traditional Knowledge Policy	Northwest Territories Métis Nation	Indigenous	This document provides research guidlenes for researchers working in or with the NWT Métis community on work relating to TK. It outlines the formal parts of a research relationship	7	http://nwtmetisnation.ca/wp-content/uploads/2016/02/TKpolicy.pdf	Focused on researcher-community relationships and IP issues. Contains definitions of terms and details on ownership, use, storage, etc. of TK of relevance to the BWMA. Policy example.

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Sambaa K'e Dene Band	2003	Sambaa K'e Dene Band Policy Regarding the Gathering, Use, and Distribution of Yúndı̨ıtʼǫ́h (Traditional Knowledge)	Sambaa K'e Dene Band	Indigenous	This document outlines defines and advances the recognition of Yúndı̨ıtʼǫ́h, and advocates for documentation and sharing in the Sambaa K'e Dene Yatie dialect whenever possible. It also discusses the bounds and components of a successful research relationship between a researcher and the Sambaa K'e Dene Band	4	https://nwtresearch.com/sites/default/files/sambaa-k-e-dene-band.pdf	Focused on researcher-community relationships and IP issues. Contains definitions of terms and research procedure of relevance to the BWMA. Policy example.

NWT-AB Bilateral Water Management Agreement TK Review - Academic Sources								
			Orange: Highly Relevant	Green: Moderately Relevant	Blue: Low Relevance	Not Highlighted: Of interest		
Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Absolon, Kathy	2010	Indigenous Wholistic Theory: A Knowledge Set for Practice	First Peoples Child & Family Review	Academic	Indigenous Critical Theory Paper focusing on living through the lens of the medicine wheel.	14	https://www.researchgate.net/publication/303961857_Indigenous_Wholistic_Theory_A_Knowledge_Set_for_Practice	Included due to relevance to TK literature
Agrawal, Arun	1995	Dismantling the Divide Between Indigenous and Scientific Knowledge	Development and Change	Academic	This article is critical of the use of TK in the environmental context in ways that it is used to promote development. Agrawal argues that, to productively engage indigenous knowledge in development, we must go beyond the dichotomy of Indigenous vs. scientific, and work towards greater autonomy for Indigenous peoples.	28	http://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-7660.1995.tb00560.x	Included due to relevance to TK literature
Archer, Jenifer L.	2012	Transcending Sovereignty: Locating Indigenous Peoples in Transboundary Water Law	SSRN Journal	Academic	This Masters thesis explores the role of Indigenous peoples in water management by applying Critical Race Theory to the intersection of transboundary water law, the doctrine of sovereignty, and the international law of Indigenous Peoples. It advocates for ethics and consensus-building through exploring case studies of the Columbia River and Tsangpo-Brahmaputra River.	213	http://www.ssrn.com/abstract=1997539	Included due to relevance to transboundary water management and Indigenous peoples, but not TK focused
Armitage, Derek et al.	2015	Science-policy processes for transboundary water governance	Ambio	Academic	This article outlines key conditions to support science-policy decision-making processes in transboundary water management. It is focused on governance and institutional analysis.	14	https://www.ncbi.nlm.nih.gov/pubmed/25773532	Provides key conditions to support effective science-policy interaction for the purpose of improving water governance in transboundary basins. Helpful though not TK focused.
Arsenault, Rachel	2018	Shifting the framework of Canadian water governance through Indigenous Research Methods: Acknowledging the past with an eye on the future	Water	Academic	This article discusses the importance of using Indigenous research methodologies to address current water issues affecting First Nations. The authors put together a theoretical framework for understanding Indigenous water relations using three case studies.	18	http://www.mdpi.com/2073-4441/10/1/49	Included due to relevance to TK literature
Bannister, Kelly, Karin Smith Fargey, and Megan Spencer	2019	Ethics in Community Based Monitoring and Knowledge Coproduction	Ravenscall Enterprises Ltd.	Academic	This is the report from a workshop held February 12-13, 2019 at the U of Alberta. The focus of the workshop was on community based monitoring and co-production of knowledge. In it, concepts of reciprocity, respect, and the differential natures of traditional and western knowledge are explored	130	http://rockiesinstitute.ca/wp-content/uploads/2019/09/Ethics-in-CBMKCP-Workshop-Report_26Sept2019.pdf	Included due to relevance to TK literature
Bartlett, Cheryl, Murdena Marshall, Albert Marshall	2012	Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing	Journal of Environmental Studies and Sciences	Academic	Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing.	10	http://link.springer.com/10.1007/s13412-012-0086-8	Included due to relevance to TK literature, provides a helpful intellectual framework
Beck, Andrea	2016	Aboriginal Consultation in Canadian Water Negotiations: The Mackenzie Bilateral Water Management Agreements	Dalhousie Law Journal	Academic	This article describes the process of the development of the AB-NWT Bilateral Water Management Agreement. It evaluates the different approaches that AB and NWT took towards Indigenous engagement and noted that NWT took an approach that was more favourable to Indigenous rights and serves as an example of how to apply the Free Prior and Informed Consent principle - whereas Alberta approached negotiations with a bare-legal-minimum approach.	38	http://search.proquest.com/docview/1872560763/citation/6C4A196951184EA1PQ/1	Relevant to BWMA context and involvement of Indigenous communities. Serves as a comparison of AB and NWT governments
Berkes, Fikret, Mina Kislaliogu Berkes, Helen Fast	2007	Collaborative Integrated Management in Canada's North: The Role of Local and Traditional Knowledge and Community-Based Monitoring	Coastal Management	Academic	This article reviews integrated management in the Canadian North and emphasizes stakeholder participation widens the range of knowledge for understanding and monitoring environmental change.	21	http://www.tandfonline.com/doi/abs/10.1080/08920750600970487	Included due to relevance to TK literature
Bohensky, Erin L. and Yiheyis Maru	2011	Indigenous Knowledge, Science, and Resilience: What Have We Learned from a Decade of International Literature on "Integration"?	Ecology and Society	Academic	"In this paper we investigate: (1) themes, questions, or problems encountered for integration of indigenous knowledge and science; (2) the relationship between knowledge integration and social-ecological system resilience; and (3) critical features of knowledge integration practice needed to foster productive and mutually beneficial relationships between indigenous knowledge and science"	20	https://www.jstor.org/stable/26268978	Useful review of lessons learned from bringing together two knowledge systems. Slightly dated.
Brandes, O.M., Tim Morris, J. Archer, L. Brandes, M. Moore, J. O'Riordan, and N. Overduin	2016	Illumination: insights and perspectives for building effective watershed governance in British Columbia	Polis Water Project	Academic	This is an overview document of the POLIS project on Ecological Governance and why it is focused on changing watershed governance in BC	72	https://poliswaterproject.org/polis-research-publication/illumination-insights-perspectives-building-effective-watershed-governance-b-c/	Included due to relevance to water governance literature

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Casimirri, G.	2003	Problems with integrating traditional ecological knowledge into contemporary resource management	XII World Forestry Congress	Academic	This is a critical paper that discusses problems with current (2003) use of TK in environmental decisiom-making and argues for a greater breadth of its use.	n/a	http://www.fao.org/3/XII/0887-A3.htm	Included due to relevance to TK literature. Helpful discussion on the use of TK
Castleden, Heather	2016	Living With Water: Integrative Indigenous and Western Knowledge Approaches to Transform Water Research and Management	Canadian Water Network	Academic	This report reviews research conducted on TK and water management over 2014-2015. It contains 6 key themes from interviews that outline issues relating to integrative approaches to TK and western knowledge, and provides recommendations for moving forward. Focus on water.	7	http://cwn-rce.ca/project/examining-methods-and-models-for-integrative-indigenous-and-western-knowledge-to-inform-water-management-and-research-in-canada/	Highly relevant as recommendations are clear and insightful and the research context is water management.
Castleden, Heather., Catherine Hart, Ashlee Cunsolo, Sherilee Harper, Debbie Martin	2017	Reconciliation and relationality in water research and management in Canada: Implementing Indigenous ontologies, epistemologies, and methodologies. IN: Water Policy and Governance in Canada	Springer International Publishing	Academic Book	This book chapter aims to put the integration or bridging of Traditional Knowledge and Western Science in the context of Reconciliation and political dynamics between researchers and indigenous communities in light of past harms. Important for acknowledging the sensitivities of reconciliation. It has no discussion of technical integration of TK and Western Science.	27	https://www.researchgate.net/publication/310504195_Reconciliation_and_Relationality_in_Water_Research_and_Management_in_Canada_Implementing_Indigenous_Ontologies_Epistemologies_and_Methodologies	Included due to relevance to TK literature at a theoretical level
Cave, Kate, and Shianne McKay	2016	Water Song: Indigenous Women and Water	The Solutions Journal	Academic	This article discusses how Indigenous communities have been disconnected from traditional knowledge systems related to water management. In particular it explores the rediscovery of women's roles and connections to water through traditional knowledge.	N/A	https://www.thesolutionsjournal.com/article/water-song-indigenous-women-water/	Included due to relevance to TK and water management
Collings, Peter, Tristan Pearce, and Joseph Kann	2017	"We don't know anything about whales": ecological knowledge and ways of knowing in Ulukhaktok, Northwest Territories, Canada	Arctic Science	Academic	This article describes the development of new Inuit knowledge about beluga whales in Ulukhaktok, NT as climate change has expanded the beluga range into the area.	19	https://www.nrcresearchpress.com/doi/full/10.1139/as-2017-0030	Included due to relevance to TK literature
Cronin, Amanda E., and David M. Ostergren	2007	Democracy, Participation, and Native American Tribes in Collaborative Watershed Management	Society and Natural Resources	Academic	This article reviews the engagement of three Native American tribes in watershed management in the US. It identifies six factors that influence tribal engagement in the process: (1) tribal cultural connection to aquatic resources, (2) the political clout and legal standing of the tribe, (3) relationships between the tribe and outside communities and governments, (4) recognition of the benefits of collaboration, (5) consistency, and (6) vision of tribal leadership and resources of that leadership.	17	http://www.tandfonline.com/doi/abs/10.1080/08941920701338059	Included due to relevance to TK literature
Freeman, Milton M. R.	1992	The nature and utility of traditional ecological knowledge	Northern Perspectives	Academic	This foundational paper argues for the utility of TK in research and environmental management. It voices skepticism of both TK and western science and sees both as problematic sources of information for an approximate process of environmental management.	9	https://www.researchgate.net/profile/Milton_Freeman/publication/269576083_The_nature_and_utility_of_traditional_ecological_knowledge/links/552d546d0cf21acb092172a2.pdf	Included due to relevance to TK literature
Green, Olivia O., Barbara A. Cosens, and Ahjond S. Garmestani	2013	Resilience in Transboundary Water Governance: The Okavango River Basin	Ecology and Society	Academic	This article describes key resilience principles for treaty design and adaptive governance and applies these principles to a case study of management in the Okavango River Basin.	16	www.jstor.org/stable/26269304	Included due to relevance to transboundary water management and Indigenous peoples, but not TK focused
Haig-Brown, C. and K. Dannenmann.	2008	The land is the first teacher: The Indigenous knowledge instructors' program. In: Bekerman, Z. & E. Kopelowitz (eds.) *Cultural education-cultural sustainability: minority, Diaspora, Indigenous, and ethno-religious groups in multicultural societies.*	New York: Routledge	Academic	This chapter discusses the development of the Indigenous Knowledge Instructors Program through York University and the AFN. This program is designed to strengthen community transmission of Indigenous knowledge and center the land as first teacher in Indigenous communities.	245-266	https://books.google.ca/books?id=I5SOAgAAQBAJ	Highlights the importance of the "Land" with important applications to the BWMA in terms of framing the Land (of which water is a part).
Hopkins, Debra, Tara . Joly, Harvey Sykes, Almer Waniandy, John Grant, Lorrie Gallagher, Leonard Hansen, Kaitlyn Wall, Peter Fortna, and Michelle Bailey.	2019	"Learning Together": Braiding Indigenous and Western Knowlege Systems to Understand Freshwater Mussel Health in the Lower Athabasca, Region of Alberta, Canada	Journal of Ethnobiology	Academic	This article presents a methodological discussion that demonstrates the importance of prioritizing Indigenous Knowledge to answer questions that may not have been considered within Western knowledge systems and shows how diverse ways of knowing can be braided to create new learnings together. It argues that "Learning together," in practice, means recognizing that each person has knowledge and skills to contribute, which also involves shared decision making.	17	https://bioone.org/journals/journal-of-ethnobiology/volume-39/issue-2/0278-0771-39.2.315/Learning-Together--Braiding-Indigenous-and-Western-Knowledge-Systems-to/10.2993/0278-0771-39.2.315.full	Relevant for its discussion of the complimentary nature of TK and western science

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Houde, Nicolas	2007	The Six Faces of Traditional Ecological Knowledge: Challenges and Opportunities for Canadian Co-Management Arrangements	Ecology and Society	Academic	This is a literature review of TK information and identifies six 'faces.' (1) factual observations, (2) management systems, (3) past and current land uses, (4) ethics and values, (5) culture and identity, and (6) cosmology.	18	www.jstor.org/stable/2626790 0	Included due to relevance to TK literature
Huntington, Henry P.	2000	Using traditional ecological knowledge in science: Methods and applications	Ecological Applications	Academic	This article presents an operational overview of how to acquire TK in research processes. It outlines various social science methodologies to document TK and argues for the increased use of TK in environmental work. The author draws on his experience from research with Beluga whale management.	5	https://www.fws.gov/nativeam erican/pdf/tek-huntington-2000.pdf	Included due to relevance to TK literature
Huntington, Henry P., Shari Gearheard, Andrew R. Mahoney, and Anne K. Salomon	2011	Integrating Traditional and Scientific Knowledge through Collaborative Natural Science Field Research: Identifying Elements for Success	Arctic	Academic	This paper describes the social and collaborative dynamics of fieldwork involving Scientific and Traditional Knowledge documentation, and discusses how planning, preparation, and relationships facilitate knowledge integration.	10	www.jstor.org/stable/4131923 8	Includes a disscusion of constructive knowledge integration
LaBoucane-Benson, Patti et al.	2012	Are We Seeking Pimatisiwin or Creating Pomewin? Implications for Water Policy	International Indigenous Policy Journal	Academic	This paper provides a framework for the development of policies that seek to repair the relationship between Aboriginal people and mainstream society – with the potential to create the good life, broadly defined (pimatisiwin) for all Albertans (Aboriginal and non- Aboriginal).	25	http://search.proquest.com/do cview/1400430650/abstract/C 6D2D1338FFC46B5PQ/1	Key example of how Indigenous concepts can be appiled in water policy.
Latulippe, Nicole	2015	Situating the Work: A typology of traditional knowledge literature	AlterNative	Academic	This paper proposes a typology of TK based on four orientations: (1) ecological (2) critical, (3) relational, and (4) collaborative. The classification is based on the telos or goals of the knowledge.	14	http://journals.sagepub.com/d oi/10.1177/117718011501100 203	Included due to relevance to TK literature
Liedloff, A.C., Woodward, E.L., Jackson, S.	2013	Integrating indigenous ecological and scientific hydro-geological knowledge using a Bayesian Network in the context of water resource development	Journal of Hydrology	Academic	This paper describes the use of a Bayesian Network to synthesize seasonal aquatic knowledge of Gooniyandi speaking Aboriginal peoples in Northwestern Australia regarding water and fish management.	11	https://linkinghub.elsevier.com /retrieve/pii/S0022169413005 040	Relevant as it reviews a complex but interesting tool for balancing TK and western science
Mantykma-Pringle, Chrystal S., Timothy D. Jardine, Lori Bradford, Lalita Bharadwaj, Andrew P. Kythreotis, Jennifer Fresque-Baxter, Erin Kelly, Gila Somers, Lorne E Doig, Paul D. Jones, Karl-Erich Lindenschmidt, the Slave River and Delta Partnership	2017	Bridging science and traditional knowledge to assess cumulative impacts of stressors on ecosystem health	Environment International	Academic	This article discusses the concept of two-eyed seeing using Baysian Belief Network modelling to assess cumulative environmental impacts on the Slave River Delta. The two-eyed seeing concept implemented through BBN modelling is demonstrated as a way to bridge TK and Scientific knowledge without necessarily integrating the two - as this can be problematic in terms of furthering inequalities and political problems.	13	https://www.ncbi.nlm.nih.gov/p ubmed/28249740	Relevant to Mackenzie Basin and discusses Two-eyed Seeing as a useful framework for understanding how to use TK and western science together
Marshall, Albert	2005	The Science of Humility	World Indigenous Peoples' Conference on Education	Academic	This presentation is about Mi'kmaq teachings on the Seven Sacred Gifts of Love, the Medicine Wheel, and worldview. And, how these relate to Indigenous Knowledge.	N/A	http://www.integrativescience. ca/uploads/articles/2005Nove mber-Marshall-WIPCE-Science-of-Humility-Integrative-Science.pdf	Provides insight into bringing together two worldviews - TK and science.
McGregor, Deborah	2014a	Traditional Knowledge and Water Governance: The ethic of responsibility	AlterNative	Academic	This article describes how the Canadian discourse routinely contains references to TK and the protection of Indigenous rights but these things have yet to be meaningfully incorporated into practice. It discusses relationality as a principal for steering water management and recommends the idea of working with indigenous input as a way to incorporate TK. It is mostly a position paper arguing for the incorporation of TK into management and policy.	15	https://journals.sagepub.com/ doi/pdf/10.1177/11771801140 1000505	Included due to relevance to TK literature
McGregor, Deborah	2014b	Lessons for Collaboration Involving Traditional Knowledge and Environmental Governance in Ontario, Canada	AlterNative	Academic	This is a useful discussion of the inclusion of TK in environmental management decision-making, focused on Ontario. McGregor outlines how Indigenous communities advocate for the use of TK in environmental management but also take steps to protect it from misuse, which can impede its inclusion in environmental decision-making - should that decision-making not be directed by Indigenous authorities. She reviews two Ontario examples of attempts to include TK through Indigenous participation, one failure and one success.	14	http://journals.sagepub.com/d oi/abs/10.1177/117718011401 000403	Reviews a successful and failed attempt to include TK in environmental decision-making
McGregor, Deborah	2008	Anishnaabe-Kwe , Traditional Knowledge, and Water Protection	Canadian Women Studies	Academic	This article describes the traditional role of women in many Indigenous communities as having a special connection to water, outlines the lack of representation in women in water management decision-making, and describes how women's perspectives can be useful in water management.	5	https://cws.journals.yorku.ca/i ndex.php/cws/article/downloa d/22109/20763	Included due to relevance to TK literature

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McGregor, Deborah	2002	Traditional ecological knowledge and the two-row wampum	Biodiversity	Academic	This paper documents a meeting of the State of the Great Lakes Conference which aimed to incorporate TK into water management. Worldview differences caused this to be unworkable, and Indigenous participants in the conference suggested using the concepts of co-existance and the Two-Row Wampum to understand the coexistance and simultaneous contrasting natures of western and Indigenous ways of knowing.	3	https://www.tandfonline.com/doi/abs/10.1080/14888386.2002.9712586	Included due to relevance to TK literature, useful metaphor for understanding TK and western science
McKinney, Matthew J.	2016	A Sacred Responsibility: Governing the use of water and related resources in the International Columbia Basin through the Prism of Tribes and First Nations	Public Land and Resources Law Review	Academic	This article reviews Indigenous governance of water in the Columbia River Basin.	94	http://scholarship.law.umt.edu/cgi/viewcontent.cgi?article=1479&context=plrlr	Included due to relevance for transboundary water management and Indigenous peoples
Miltenberger, Michael	2010	Northern Voices, Northern Waters: Traditional Knowledge and Water Policy Development in the Northwest Territories	Rosenberg International Forum on Water Policy	Academic	This is an excellent summary of (1) what Traditional Knowledge is, (2) how it can be used in environmental management, and (3) perceptual and technical challenges associated with its use, all with a focus on water management under the Transboundary Waters Masters Agreement. It has particular information about the differences between science and traditional knowledge as knowledge systems, and links challenges in the use of TK with the political dynamics of Indigenous engagement with management and control of environmental management. TK is distinguished from local knowledge by virtue of its accumulation over many generations, leading to a broad and deep understanding of baseline conditions and patterns over time. TK is broken down into empirical knowledge about the environment, knowledge about historic and contemporary use of that environment, and culturally based value statements about the environment. Discusses issues of trust and breakdown of trust between Traditional Knowledge and Western Science holders.	38	http://ciwr.ucanr.edu/files/168775.pdf	Relevant due to the focus on the Mackenzie Basin, an excellent summary of what TK is, how it can be used, and challenges faced in doing so. Written by the previous Minister for Environment and Natural Resources in GNWT
Morris, Michelle and Rob C. de Loë	2016	Cooperative and adaptive transboundary water governance in Canada's Mackenzie River Basin: status and prospects	Ecology and Society	Academic	This article evaluates the Mackenzie River Basin Board as a mechanism for transboundary water governance. It posits that the MRB Board was designed to be ineffective and instead governments have pursued conducting water management through bilateral agreements. They conclude also that the reduced authority of the MRB Board relative to the Bilateral Agreements may reduce the extent to which TK will meaningfully inform monitoring and decision-making.	13	https://www.ecologyandsociety.org/vol21/iss1/art26/	Relevant to understanding the BWMA and TBWMA context but limited TK context
Nadasy, Paul	1999	The Politics of Tek: Power and the "Integration" of Knowledge	Arctic Anthropology	Academic	This article is highly critical of the 'integration' of TK and science, arguing that it takes for granted existing power relations between Indigenous peoples and the state and thus serves to concentrate power in administrative centres rather than in the hands of Indigenous communities.	19	www.jstor.org/stable/40316502	Relevant as a critique of the "integration" of TK and western science
Noble, Bram, Jasmine Birk	2011	Comfort monitoring? Environmental assessment follow-up under community–industry negotiated environmental agreements	Environmental Impact Assessment Review	Academic	This paper is critical of Negotiated Environmental Agreements in the mining industry, arguing that follow-up under these agreements can be described as 'comfort monitoring' rather than providing meaningful, useful information.	8	https://linkinghub.elsevier.com/retrieve/pii/S0195925510000752	Relevant due to discussion of monitoring of environmental impacts by indigenous peoples
Norman, Emma S.	2012	Cultural Politics and Transboundary Resource Governance in the Salish Sea	Water Alternatives	Academic	This paper discusses the establishment of the Coast Salish Aboriginal Council to achieve governance over environmental protections in the Salish sea. It frames this council as a reclamation of Indigenous governance systems.	23	http://emmanorman.net/publications_24_1503774296.pdf	Relevant to Indigenous management and transboundary context. No water or TK specific discussion
Overduin, N, Tim Morris, Rosie Simms, Jennifer Archer, Oliver M. Brandes, and Sutton Eaves	2019	A Handbook for Water Champions: Strengthening Collaboration and Decision-Making for Healthy Watershed	POLIS and CIER	Academic	This Handbook breaks down the process of how to do watershed governance. A practical resource, useful for those who are working to establish cross-cultural collaborations and be more effective in protecting watershed resources. Includes several case studies of relevance.	50	https://poliswaterproject.org/files/2019/04/A-Handbook-for-Water-Champions_web_final.pdf	Relevant for cross-cultural water management and governance
Parlee, Brenda	2016	Literature Review Local and Traditional Knowledge in the Lower Mackenzie Watershed	N/A	Academic	This is a literature review of Local and Traditional Knowledge as it relates to the lower Mackenzie Watershed, particularly with Inuvialuit and Gwich'in communities.	39	http://www.trackingchange.ca/literature-review/literature-review-local-and-traditional-knowledge-in-the-lower-mackenzie-watershed/	Relevant to Mackenzie Basin and TK

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Parlee, Brenda and Amabel D'Souza	2019	Literature Review Local and Traditional Knowledge in the Athabasca River Watershed	N/A	Academic	This is a review of Local and Traditional Knowledge relevant to the Athabasca River Watershed. It is concentrated in areas proximal to Oil Sands development due to funding there for oil sands mining.	60	http://www.trackingchange.ca/literature-review/literature-review-local-and-traditional-knowledge-in-the-athabasca-river-watershed/	Relevant to Mackenzie Basin and TK
Pierotti, Raymond, Daniel Wildcat	2000	Traditional Ecological Knowledge: The Third Alternative (commentary)	Ecological Applications	Academic	This article focuses on connectedness and relatedness as principles that define TK and make it imperative in multidisciplinary environmental management.	8	http://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/1051-0761%282000%29010%5B1333%3ATEKTTA%5D2.0.CO%3B2	Included due to relevance to TK literature
Raadgever, G.T., Erik Mostert, Nicole Kranz, Eduard Interweis, Jos G. Timmerman	2008	Assessing Management Regimes in Transboundary River Basins: Do They Support Adaptive Management?	Ecology and Society	Academic	This paper reviews adaptive management literature and develops a framework for understanding it in the context of transboundary river basin management. It then applies this framework to the Orange and Rhine River Basins.	22	http://www.ecologyandsociety.org/vol13/iss1/art14/	Relevant to transboundary water management
Raymond, Christopher M., Ioan Fazey, Mark S. Reed, Lindsay C. Stringer, Guy M. Robinson, and Anna C. Evely	2010	Integrating local and scientific knowledge for environmental management	Journal of Environmental Management	Academic	This article argues that there is no single approach for integrating TK and scientific knowledge and instead encourages a shift in science from the development of knowledge integration products to the development of problem-focused knowledge integration processes. They argue that these process should be systematic and cyclical to incorporate different worldviews in approaching an environmental management problem.	12	https://linkinghub.elsevier.com/retrieve/pii/S0301479710000952	Included due to relevance to literature on TK and environmental management
Simms, Rosie, Leila Harris, Nadia Joe, and Karen Bakker	2016	Navigating the tensions in collaborative watershed governance: Water governance and Indigenous communities in British Columbia, Canada	Geoforum	Academic	This paper examines tensions in collaborative water governance, and explores whether a move towards collaborative watershed governance would serve to address or further entrench those concerns. They have several recommendations for collaborative water governance frameworks that center on transitioning away from colonial governance frameworks.	35	https://linkinghub.elsevier.com/retrieve/pii/S0016718515300701	Relevant discussion on collaborative water governance that transitions away from colonial frameworks
Simpson, Leanne R.	2004	Anticolonial Strategies for the Recovery and Maintenance of Indigenous Knowledge	American Indian Quarterly	Academic	This article argues that the incorporation of TK into environmental management and Western Science contexts is impossible and problematic without an acknowledgement of the colonial legacy that denies the validity of TK and categorizes it to a place wherein it is taken out of the cultural context that it comes from. The author argues for Indigenous authority in decision-making. And, the author describes how degradation of land and water inherently compromises TK which is built on the environment.	13	www.jstor.org/stable/4138923	Included due to relevance to TK literature
Stefanelli, Robert D., Heather Castleden, Sherilee L. Harper, Debbie Martin, Ashlee Cunsolo, and Catherine Hart	2017	Experiences with integrative Indigenous and Western knowledge in water research and management: a systematic realist review of literature from Canada, Australia, New Zealand and the United States	Environmental Reviews	Academic	This is a high-level literature review of peer-reviewed literature related to the integration of Indigenous and Western Knowledge in water management. It focuses on whether papers are authored by Indigenous authors and recommends higher involvement of Indigenous persons on research teams to facilitate effective results.	11	https://www.nrcresearchpress.com/doi/abs/10.1139/er-2016-0114	Included due to relevance to TK literature and water management
Stevens, Amanda	2008	A Different Way of Knowing: Tools and Strategies for Managing Indigenous Knowledge	Libra	Academic	This article describes three indigenous knowledge management projects in the US, Canada, and Australia to discuss methodologies. It argues for openness in thinking on the part of non-indigenous participants in these processes.	9	https://www.degruyter.com/view/j/libr.2008.58.issue-1/libr.2008.003/libr.2008.003.xml	Included due to relevance to TK literature
Styres, Sandra D.	2011	Land as first teacher: A philosophical journeying	Reflective Practice	Academic	This is a personal reflection on the concept of Land as a teacher	14	http://www.tandfonline.com/doi/abs/10.1080/14623943.2011.601083	Highlights the importance of the "Land" with important applications to the BWMA in terms of framing the Land (of which water is a part).
Styres, Sandra D.	2017	Pathways for Pathways for Remembering and Recognizing Indigenous Thought in Education: Philosophies of Iethi'nihsténha Ohwentsia'kékha (Land)	University of Toronto Press	Academic	Pathways for Remembering and Recognizing Indigenous Thought in Education is an exploration into some of the shared cross-cultural themes that inform and shape Indigenous thought and Indigenous educational philosophy. These philosophies generate tensions, challenges, and contradictions that can become very tangled and messy when considered within the context of current educational systems that reinforce colonial power relations. Sandra D. Styres shows how Indigenous thought can inform decolonizing approaches in education as well as the possibilities for truly transformative teaching practices. This book offers new pathways for remembering, conceptualizing and understanding these ancient knowledges and philosophies within a twenty-first century educational context.	248	https://www.google.com/search?q=university+of+toronto+press+styres+2011&oq=university+of+toronto+press+styres+2011&aqs=chrome..69i57.6425j0j7&sourceid=chrome&ie=UTF-8	Innovative, thougtful and relevant to water management in terms of challenges in braiding Indigenous ways of knowing.

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Szach, Natasha J.	2013	Keepers of the Water: Exploring Anishnaabe and Metis Women's Knowledge of Water and Participation in Water Governance in Kenora, Ontario	University of Manitoba, Masters Thesis	Academic	This masters thesis explores Anishinaabe and Métis women's knowledge of water and their participation of water governance in Kenora, ON. Among other things, she recommends that TK be incorporated in school curricula and tourism resources.	175	https://www.umanitoba.ca/institutes/natural_resources/Left-Hand%20Column/theses/Masters%20Thesis%20Penneys-Szach%202013.pdf	Included due to relevance to TK and water management
Tengö et al.	2014	Connecting Diverse Knowledge Systems for Enhanced Ecosystem Governance: The Multiple Evidence Base Approach	AMBio	Academic	From abstratct, "We present the multiple evidence base (MEB) as an approach that proposes parallels whereby indigenous, local and scientific knowledge systems are viewed to generate different manifestations of knowledge, which can generate new insights and innovations through complementarities. MEB emphasizes that evaluation of knowledge occurs primarily within rather than across knowledge systems."	12	http://link.springer.com/10.1007/s13280-014-0501-3	
Traverse, Myrle, and Richard Baydack	2005	Observing subtleties: Traditional Knowledge and optimal water management of Lake St. Martin	Ethnobotany Research and Applications	Academic	This paper documents the observation of members of Lake St. Martin First Nation in Manitoba of how environmental change has followed the construction of the Fairford Dam, noticing increases in water levels that are not statistically detectable with western science yet nonetheless have meant significant changes for the community.	6	http://www.ethnobotanyjournal.org/index.php/era/article/download/51/40	Clear example of the use of TK in environmental monitoring in a water management context in which TK informed study design and eventual findings
Tsuji, Leonard J.S. and Elise Ho	2002	Traditional environmental knowledge and western science: In search of common ground	Canadian Journal of Native Studies	Academic	This paper highlights similarities between scientific and Indigenous knowledge to inform the discussion about its inclusion in environmental assessment	34	http://www3.brandonu.ca/cjns/22.2/cjnsv.22no.2_pg327-360.pdf	
Turner, Nancy J., Marianne Boelscher Ignace, Ronald Ignace	2000	Traditional Ecological Knowledge and Wisdom of Aboriginal Peoples in British Columbia	Ecological Applications	Academic	This paper reviews Traditional Ecological Knowledge and Wisdom (TEKW) from four groups of BC Indigenous nations. The authors argue that TEKW has enabled sustainable management for thousands of years and that, for its integration into modern management, it's contextual and philosophical underpinnings must be recognized and respected. They explore this through the case study of two traditional root vegetables.	13	http://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/1051-0761%282000%29010%5B1275%3ATEKAWO%5D2.0.CO%3B2	Included due to relevance to TK literature
Usher, Peter J.	2000	Traditional ecological knowledge	Arctic	Academic	This paper argues that incorporation of TK into environmental review processes must be done with adequate criticism and rigor directed at the TK. Usher breaks down TK into 4 categories, (1) empirical knowledge, (2) use knowledge, (3) value systems, and (4) cosmology or worldview. He describes the place where each type of knowledge can/should be used in environmental review. He discusses issues of ownership of TK and acknowledges Indigenous communities' needs for assertion of control over TK - but maintains that some TK must be non-proprietary if used in environmental review and must be subject to the same level of criticism as scientific information is. He argues that if TK is treated as something one can't criticize then it diminishes it's usefulness and validity in environmental management.	11	https://journalhosting.ucalgary.ca/index.php/arctic/article/view/63906	Relevant discussion of the nature of TK and IP issues
von der Porten, Suzanne., Rob E. de Loë, and Deb McGregor	2016	Incorporating Indigenous knowledge systems into collaborative governance for water: Challenges and opportunities	Journal of Canadian Studies	Academic	Discussion of challenges associated with integrating TK and Western Science in water management with a focus on the self-determination of Indigenous communities. Focuses on the historical power imbalance between Western Science and Indigenous knowledge systems. Discusses 5 specific findings associated with TK and water management: (1) There is a perceived need for TK in collaborative environmental decision-making but a lack of it, (2) The differing worldviews between western and Indigenous knowledge systems makes collaboration difficult, (3) Power imbalances makes Indigenous communities nervous about misuse of TK, (4) Indigenous peoples and TK holders should make decisions using TK, and (5) TK has the most relevance in the environments in which it was developed.	31	https://www.utpjournals.press/doi/abs/10.3138/jcs.2016.50.1.214	Relevant discussion on the use of TK in water management in light of historical power imbalances
von der Porten, Suzannne and Rob de Loë	2013	Water governance and Indigenous governance: Towards a synthesis	Indigenous Policy Journal	Academic	This paper is a discussion of collaborative water governance between First Nations and the Crown in BC. It mostly argues that there is a lack of recognition of Indigenous peoples as nations rather than stakeholders and argues that settler governments and actors need to take First Nations rights more seriously.	12	http://blog.indigenouspolicy.org/index.php/ipj/article/view/148	Included due to relevance to water governance literature

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Walters, Carl J., and C.S. Holling	1990	Large-Scale Management Experiments and Learning by Doing	Ecology	Academic	This article discusses methods for studying management experiments on managed ecosystems where normal experimental controls are irrelevant. It is a good description of the role of science in sustainable resource management.	10	www.jstor.org/stable/1938620	Included as a useful paper on the role of science in environmental management and planning
Wenzel, George W.	2004	From TEK to IQ: Inuit Qaujimajatuqangit and Inuit Cultural Ecology	Arctic Anthropology	Academic	This paper distinguishes IQ from TEK and emphasizes the inclusion of human-wildlife dimensions in IQ - something that sets it apart as a guiding principle in Nunavut wildlife management.	14	www.jstor.org/stable/4031663 1	Included due to relevance to TK literature
Wenzel, George W.	1999	Traditional Ecological Knowledge and Inuit: Reflections on TEK Research and Ethics	Arctic	Academic	This article argues that, in the context of the politicization of TK, TK (1) should be treated similar to scientific knowledge in substance, (2) demands greater ethical considerations than scientific knowledge, and (3) should not be subject to Intellectual Property rights initiatives.	13	www.jstor.org/stable/4051222 4	Included due to relevance to TK literature, discussion of IP issues
White, Graham	2006	Cultures in Collision: Traditional Knowledge and Euro-Canadian Governance Processes in Northern Land-Claim Boards	Arctic	Academic	This paper reviews the Mackenzie Valley Environmental Impact Review Board (MVEIRB) and Nunavut Wildlife Management Board (NWMB) to assess their inclusion of Traditional Knowledge. They find that both have made sincere and substantial efforts but the NWMB has done a better job due to it's wildlife-focused mandate.	15	www.jstor.org/stable/4051284 4	Relevant due to direct discussion of Mackenzie Valley Review Board work. Brings up challenges of water management.
Whyte, Kyle Powys	2013	On the role of traditional ecological knowledge as a collaborative concept: a philosophical study	Ecological Processes	Academic	In the perceived absence of a consensus of a definition of TK, this article proposes an exploration of the role it plays in facilitating or discouraging cross-cultural collaboration among actors regarding environmental governance.	7	https://ecologicalprocesses.sp ringeropen.com/articles/10.11 86/2192-1709-2-7	Included due to relevance to TK literature
Woo, Ming-Ko et al.	2007	Science meets traditional knowledge: Water and climate in the Sahtu (Great Bear Lake) Region, Northwest Territories, Canada	Arctic	Academic	This paper documents a series of knowledge exchange workshops between scientists and community members at Deline First Nation where both discussed knowledge of environmental change over time in relation to climate change. The paper documents these knowledges of change in relation to the lakes and rivers near Deline.	10	https://jhistsex.org/index.php/a rctic/article/download/63325/4 7262	Relevant documentation of knowledge exchange between TK holders and scientists on water management issues in Mackenzie Basin

NWT-AB Bilateral Water Management Agreement TK Review - Government Sources

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Legat, Allice, and Mary McCreadie	2019	Watching, Caring for, and Protecting Water: Using Indigenous traditional knowledge systems and methodologies	NWT Water Strategy and Action Plan	Government	This document describes how 'watching, caring for, and protecting' is an analogous TK concept to the western science concept of monitoring. The intent is for this document to be a step toward establishing processes and funding to use TK to monitor water in the Mackenzie River Basin. It involves input from the Aboriginal Steering Committee.	33	N/A	Detailed, insightful, and focused on the Mackenzie River Basin Transboundary Waters Master Agreement and Alberta-NWT Bilateral Water Management Agreement
Canadian Environmental Assessment Agency	2015	Reference Guide Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the *Canadian Environmental Assessment Act, 2012*.	Environment and Climate Change Canada	Government	This outlines the diversity in what TK is and how it is used in Environmental Assessment and overviews basic protocols with data ownership and working with Indigenous Communities. It outlines the various parts of an EA in which TK can be used, to promote ideas rather than restrict TK to certain aspects of EA.	9	http://publications.gc.ca/site/eng/455891/publication.html	Discussion of TK inclusion is very general.
Government of Canada	2018	Discussion Paper: Indigenous Knowledge Policy Framework For Proposed Project Reviews and Regulatory Decisions	Government of Canada	Government	This discussion paper describes the principles regarding TK that were the basis of writing TK requirements into bills C-68 and C-69, environmental assessment legislation, in 2018. It asks for feedback in the inclusion of TK on these bills and in the development of a policy framework for TK inclusion	9	https://www.canada.ca/content/dam/themes/environment/conservation/environmental-reviews/ik-discussion-paper-en.pdf	Discussion of TK inclusion is very general.
Emery, Alan R.	2000	Integrating Indigenous Knowledge in Project Planning and Implementation	Canadian Environmental Assessment Agency	Government	This document aims to contribute to the development of a framework within which affected Indigenous peoples can expect to receive information that will allow them to choose, on an appropriate collective basis, through FPIC, whether a development project should go ahead. And, if the project should go ahead, help them make decisions about its management.	164	http://www.kivu.com/wp-content/uploads/2012/01/Partnership-Guidelines.pdf	Guidelines and worksheets for the use of TK in environmental assessment, but not focused on watershed management
Government of Alberta, Aboriginal Affairs and Northern Development Canada	2003	Best Practices Handbook for Traditional Use Studies	Alberta Aboriginal Affairs and Northern Development, Alberta Department of Energy	Government	This is a handbook of best practices developed for Traditional Land Use Studies conducted in Alberta.	80	https://open.alberta.ca/dataset/d46f92fc-f34c-4177-a9f2-13deaf432452/resource/06aecba1-06f5-480f-a416-dde54c46301d/download/best-practices-handbook-for-traditional-use-studies.pdf	Handbook for TLUS studies
Parks Canada and Aboriginal Affairs Secretariat	2012	Working together, our stories: best practices and lessons learned in Aboriginal engagement	Parks Canada	Government	This brochure describes Indigenous initiatives across Parks Canada's work and celebrates the achievements of Parks Canada's partnerships with Indigenous communities - as a Parks' publication. It has limited operational information about TK.	28	http://www.deslibris.ca/ID/234850	Limited operational information about TK.
Mackenzie Valley Review Board	2005	Guidelines for Incorporating Traditional Knowledge into Environmental Impact Assessment	Mackenzie Valley Environmental Impact Review Board	Government	This guidelines document provides recommendations, primarily for project developers, about the proper way to build a relationship with an indigenous community regarding project development and incorporate TK in a way respectful of its nature and the IP and ethics issues surrounding TK.	42	http://reviewboard.ca/file/1349/download?token=GX5-vybi	Mackenzie Basin Relevant and constructive on advice re: using TK, but project proponent focused.
Calgary Aboriginal Urban Affairs Committee	2017	Indigenous Policy Framework for the City of Calgary	City of Calgary	Government	This is a policy framework for recognizing and sustaining reconciliation and relationships with Treaty 7 FN's and the Urban Indigenous Community - for Calgary.	84	https://www.calgary.ca/CSPS/CNS/Documents/CAUAC/Indigenous-Policy-Framework.pdf?noredirect=1	Not relevant in geography or content for Mackenzie Basin transboundary water management.

Orange: Highly Relevant   Green: Moderately Relevant   Blue: Low Relevance   Not Highlighted: Of interest

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
Indigenous Wisdom Advisory Panel	2017	Indigenous Wisdom Advisory Panel: Mandate and Roles Document	Alberta Minstry of Environment and Parks	Government	Describes the roles and objectives for the Indigenous Wisdom Advisory Panel. Helpful operational information on how this panel decided to incorporate Indigenous input. The panel consists of Traditional Knowledge holders from Indigenous Nations and meets bi-annually to provide feedback at the request of the AB Ministry of Environment and Parks and the Chief Scientist responsible for the Environmental Protection and Enhancement Act. Traditional Knowledge input for management is provided through consultation of this group.	8	https://www.alberta.ca/AGS-directory/MR_1014_2017-05-31_MRD_IndigenousWisdomAdvisoryPanel_toPost.pdf	Organizational structure information on incorporating Indigenous input into Government decision-making.
Government of Canada Panel on Research Ethics	2018	Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans – TCPS 2 (2018) – Chapter 9: Research Involving the First Nations, Inuit and Métis Peoples of Canada	Government of Canada	Government	This is the chapter of the TCPS that provides research guidelines on working with Indigenous peoples in research in any field in Canada.	N/A	https://ethics.gc.ca/eng/tcps2-eptc2_2018_chapter9-chapitre9.html	Standard for the application of TK should inform the TK framework. This is another key ethical guidance document within Canada.
Government of Northwest Territories	2005b	Policy 53.03 on Traditional Knowledge	GNWT	Government	Policy on Traditional Knowledge - Useful for reference for definitions	8	https://www.enr.gov.nt.ca/sites/enr/files/documents/53_03_traditional_knowledge_policy.pdf	This is useful as a reference for definitions and as the baseline document for TK in GNWT operations, but is not specific or helpful to the construction of a framework
Parks Canada	2011	Best Practices and Lessons Learned in Indigenous Engagement	Parks Canada	Government	This website reviews the collaborations between Parks Canada and its Indigenous partners to involve Indigenous groups in management decisions and include Indigenous content in what Parks Canada offers its visitors.	N/A	https://www.pc.gc.ca/en/agence-agency/aa-ia/te-wt/tdm-toc	Useful for understanding and identifying successful partnerships developed for conservation work, but not for constructing a policy framework
Government of Northwest Territories	2005a	Summary of Best Practices for Applying Traditional Knowledge in Government of the Northwest Territories Programming and Services	GNWT	Government	This document outlines best practices for the use of TK for government purposes. It outlines three key elements of Traditional Knowledge: (1) knowledge about the environment; (2) knowledge about the use and management of the environment, including cultural practices, social activities, land use patterns, archaeological sites, harvesting practices, and harvesting levels; and (3) Values about the environment, including moral and ethical statements about the relationship between humans, animals, and the environment. It outlines the important connection between language and TK and offers guidelines. It also discusses important cultural context aspects for the use and collection of TK information.	8	https://www.enr.gov.nt.ca/sites/enr/files/reports/tk_best_practices_summary.pdf	Very general guidelines on using TK. Includes a good definition of TK.
Borass, Alan and Knott, Catherine	2013	Traditional Ecological Knowledge and Characterization of the Indigenous Cultures of the Nushgak and Kvichak Watersheds, Alaska	US Environmental Protection Agency	Government	(Starts on Page 160 of PDF) This is an extensive Traditional Use Study conducted with two Indigenous groups in the impact area. It documents traditional ecological knowledge and values relating to the sacredness of water. There is a focus between the clean-ness of the water and the value/belief in water purity and sanctity in local indigenous spirituality, which is cited as a risk associated with mine development in the area. TK is discussed on p. 100, and water and spirituality on p.124 of the report.	315	https://www.epa.gov/sites/production/files/2015-05/documents/bristol_bay_assessment_final_2014_vol2.pdf	Very interesting use of TK in environmental assessment related to water, but not as useful for policy development

NWT-AB Bilateral Water Management Agreement TK Review - Other Sources

				Orange: Highly Relevant	Green: Moderately Relevant	Blue: Low Relevance	Not Highlighted: Of interest		
Author	Date	Title	Publisher	Reference type	Annotated Description		Number of Pages	Link/Reference	Note / Reason for Importance
Cowichan Watershed Board	2019	Pathways and Partnerships: A Framework for Collaboration and Reconciliation in the Cowichan Watershed	Cowichan Watershed Board, CVRD, Cowichan Tribes, POLIS Water Sustainability Project	Community	This report presents pathways for improving partnerships and reconciliation for the long-term health of the Cowichan watershed and its communities, located on Vancouver Island in B.C. It consolidates the thoughts, discussions, supporting research, and decisions emerging from a series of "Watershed Co-Governance Workshops" that were attended by local elected leaders and senior staff of Cowichan Tribes and the Cowichan Valley Regional District (CVRD), as well as water policy advisors.		28	https://poliswaterproject.org/files/2019/01/CWB_PathwaysAndPartnerships_Final_web.pdf	Of interest, but out of region.
Apropos Information Systems	2013	Draft Report: Traditional Knowledge Management Framework Scoping & Work Plan	Cumulative Environmental Management Association	Other	This is a report from a project by Apropos Information Systems for the Cumulative Environmental Management Association (CEMA). The two relevant parts are (1) a summary of workshop responses, starting on page 8. Herein there is a discussion of where and how TK is included in environmental management/monitoring. They also include a literature review, starting on page 10 of how to include TK in the Canadian context of environmental planning, management and monitoring. They have a 14 recommendations for how TK should be used.			http://library.cemaonline.ca/ckan/dataset/2013-0029	Not consise or useful for policy development upon review. Recommendations focus on common sense relationship guidelines.
Smith, Jeremy	2006	Traditional Environmental Knowledge Research Guidelines	Cumulative Environmental Management Association	Other	CEMA-Specific guidelines for conducting interviews and other research with/in Indigenous communities regarding Traditional Knowledge. Very detailed methodology and research ethics guidelines.		138	http://cemaonline.ca/index.php/administration/cat_view/2-communications/3-general	Common-sense ethics guidelines on researcher-community relationships
Wiens, Trevor; Apropos Information Systems	2012	CEMA Traditional Ecological Knowledge Data Standard	Cumulative Environmental Management Association	Other	CEMA-Specific guidelines for data collection, ownership, and use in CEMA Projects and mapping using GIS programs. The guidelines heavily draw on Living Proof (Tobias, 2009) for specifics.			http://cemaonline.ca/index.php/administration/doc_download/147-tek-data-standard-april-27th-2012	Information on IP issues re: TK
Emery, Alan R.	2002	Appendix 6: Best Practices for Project Planning with Indigenous Traditional Knowledge	Handbook for CIDA project Planning and Indigenous Traditional Knowledge	Other	This report provides 29 recommendations that constitute best practices for project planning.		3	https://kivu.com/wp-content/uploads/2012/01/CIDA-Guidelines.pdf	General recommendations on best practices regarding TK in project planning.
Buck, Keelan	2019	Roundtable on Indigenous Knowledge and Western Science: Summary of Literature	Institute on Governance	Other	This is a literature review and summary of recommendations from literature about TK. It focuses on developing more symmetrical relationships between Indigenous and non-Indigenous communities, achieving greater Indigenous representation in science communities, and respecting the diversity of TK.		13	https://iog.ca/docs/TIKWS_summary_of_literature_EN.pdf	A few minimal recommendations for symmetrical relationships between Indigenous and non-Indigenous knowledge communities.
Nuclear Waste Management Organization	2016	Indigenous Knowledge Policy	Nuclear Waste Management Policy	Other	This policy documents that the Nuclear Wast Management Organization (NWMO) recognizes the value of TK in decision-making, will insure that informed decisions are made by indigenous communities using TK, and that respectful knowledge sharing contributes to good decision-making. It also discusses how Indigenous ethics of stewardship should inform the NWMO's decision-making. It affirms that oral traditions and cultural norms ensure the validity of knowledge shared.		4	https://www.nwmo.ca/~/media/Site/Reports/2016/10/20/11/02/English_IndigenousKnowledgePolicy_2016.ashx?la=en	Strong example of TK policy.
Phare, Merrell-Ann, Ralph Pentland, Michael Miltenberger, Oliver M. Brandes, Mieke Coppes, Carolyn Dubois, and Tony Maas	2016	Transcending Boundaries: A Guidebook to the Alberta-Northwest Territories Mackenzie River Basin Bilateral Water Management Agreement	POLIS	Other	This report, authored by members of the Forum for Leadership on Water (FLOW) and developed in partnership with the Gordon Foundation, provides a detailed examination of the key elements of the Alberta-Northwest Territories Mackenzie River Basin Bilateral Water Management Agreement. It describes what these will achieve and how they will be implemented. It also provides a broader understanding of the Mackenzie River Basin Transboundary Waters Master Agreement.		61	https://poliswaterproject.org/files/2016/11/MRB_Guidebook_FINAL_WEB.pdf	Very Relevant to the AB-NWT BWMA, however very limited information about TK.
SENES Consultants Limited	2008	West Kitikmeot Slave Study State of Knowledge Report - 2007 Update	SENES Consultants Limited	Other	This a long report that includes information derived from TK and information on how TK was used in understanding information about the Slave Geological Region.		424	https://www.enr.gov.nt.ca/sites/enr/files/reports/west_kitikmeot_slave_study_2007_update.pdf	
Water Civilization International Centre	n.d.	Water and Traditional Knowledge: Learn from the Past for a Sustainable Future	UN Educational, Scientific and Cultural Organization	Other	This discusses techniques for water conservation from traditional knowledge around the world. It focuses on ancient traditional knowledge but not specifically Indigenous communities in settler states.		6	http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Venice/pdf/special_events/bozza_scheda_DOW_6_1.0.pdf	Focus on water conservation, not necessarily transboundary context.
The Secretariat of the Convention on Biological Diversity	n.d.	Traditional Knowledge and the Convention on Biological Diversity	UN Environmental Program	Other	This is an informational brochure about the role of TK in the Convention on Biological Diversity.		2	https://www.cbd.int/doc/publications/8j-brochure-en.pdf	Keystone document on TK
Food and Agriculture Organization	2005	Building on gender, agrobiodiversity and local knowledge: A training manual	UN FAO	Other	P. 7-9 outline a definition of Traditional Knowledge as it applies to the FAO		50	http://www.fao.org/3/a-y5956e.pdf	Provides insight into definitions of local knowledge (versus traditional knowledge).

Author	Date	Title	Publisher	Reference type	Annotated Description	Number of Pages	Link/Reference	Note / Reason for Importance
United Nations	2017	United Nations Declaration on the Rights of Indigenous Peoples	United Nations	Government	This United Nations declaration provides 46 Articles that outline rights inherent to Indigenous peoples that include but go beyond the rights outlined in the Universal Declaration of Human Rights.	32	https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf	Important as a reference document for understanding basic rights inherent to Indigenous peoples in the context of TK integration.