

INDIGENOUS WATER JUSTICE IN MANITOBA
THROUGH ENGAGEMENT IN WATER GOVERNANCE

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By

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ABSTRACT

Globally, negative impacts on water resources from land development, pollution, and climate change demand greater attention to more effective water governance. In settler colonial countries such as Canada, these negative impacts alter Indigenous relationships with water, land, and each other, and contribute to water insecurity and water injustice for Indigenous peoples. Greater engagement of Indigenous peoples in water governance, research, management, and planning is arguably one way to address negative impacts on water resources in Indigenous communities, but not all types of engagement are as effective as others. I characterize Indigenous engagement in water governance from three geographic scales. A narrative review of the water governance literature finds that Indigenous engagement in settler-colonial nations is generally lacking in both legislation and practice, perpetuating water injustice for Indigenous people. At a regional scale engagement, I examine the degree to which Indigenous participation occurs in provincial watershed planning in Manitoba. At the community-scale, a case study documents the impacts of historic and contemporary water-related decisions as felt by members of Wuskwi Sipiik First Nation, and their efforts in response. Participant observation and interviews with key informants provides practical insight into the water-related challenges facing the community and others in the province. Globally, multiple mechanisms and pathways to water justice are evident in the review, but their efficacy is highly contingent. In Manitoba, inclusion of Indigenous peoples in watershed planning is uneven, and there is limited evidence that Aboriginal and Treaty rights influence rates or nature of participation. Provincially decisions about water are made across different government departments, and Indigenous rights are unevenly recognized and respected between them. Additionally, existing regulatory processes and institutions, while procedurally fair, are not empowered to recognize or accommodate Aboriginal and Treaty rights. In this way, water governance is de-politicized, and settler and capitalist values are privileged above Indigenous rights and values. More support is needed to enhance Indigenous participation in watershed planning and water governance to attain water justice. Enhanced coordination, alternative institutional arrangements, and greater recognition and respect of Indigenous rights are needed to ensure water justice is attainable by Indigenous communities in Manitoba.

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I begin by acknowledging that my research took place in Treaty 4 and Treaty 6 lands, the traditional territory of the Dakota Sioux, Swampy Cree, Oji-Cree, Anishinaabe, Blackfoot-Niitsitapi, and homelands of the Metis. As an immigrant and naturalized Canadian citizen, I share with other Canadians and Indigenous Peoples the responsibilities and obligations that come with being a treaty person. As an academic, I also recognize that the institutions that have made this research possible are rooted in a history that has been disruptive and damaging to many Indigenous Peoples. In keeping with the Truth and Reconciliation's Call to Actions, and the UN Declaration on the Rights of Indigenous Peoples, this work represents my effort to practice and further reconciliation through research on water governance.

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LIST OF ABBREVIATIONS

AAFC	Agriculture and Agri-Food Canada
BWA	Boil Water Advisory
CCME	Canadian Council of Ministers of Environment
CCSM	Continuing Consolidation of the Statutes of Manitoba
CD	Conservation District
CWS	Canadian Wildlife Service
FN	First Nation
FPIC	Free, prior, and informed consent
GC	Government of Canada
GM	Government of Manitoba
IAPP	International Association for Public Participation
ILO	International Labor Organization
INAC	Indigenous and Northern Affairs Canada
IWMP	Integrated Watershed Management Plan
LPC	Louisiana Pacific Corporation
MBWS	Manitoba Water Stewardship
MLI	Manitoba Land Initiative
MR	Manitoba Regulations
MSD	Manitoba Sustainable Development
NRC	Natural Resources Council
SC	Statutes of Canada
SLWCD	Swan Lake Watershed Conservation District
TLE	Treaty Land Entitlement
TRCC	Truth and Reconciliation Commission of Canada
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
WPA	Water Planning Authority
WSFN	Wuskwi Sipiik First Nation
WTP	Water Treatment Plant

1 INTRODUCTION

As our collective impact on the world continues to grow on a global scale (Dalby, 2015; Lorimer, 2012), and amidst worldwide declines in ecosystem health and biodiversity, water resources around the world are under pressure (Vörösmarty et al., 2010), global water security is at risk (Cook & Bakker, 2012; Rogers & Hall, 2003; Zeitoun, 2011), and climate change threatens to disrupt our current approaches to managing water and environmental systems (Milly et al., 2008). Even though there are material aspects of water availability and quality not directly affected by human activities (Bakker, 2012; Bear & Bull, 2011), the Global Water Partnership (2000) has declared that the “global water crisis is mainly a crisis of governance,” meaning that human decisions are largely at issue in the water-related issues facing the global population today. However, the emergence and experiences of these crises are not evenly distributed across space, time, and populations. Women, children, marginalized, and Indigenous communities are often subject to water insecurity more frequently and more acutely than those with political and economic power (Gerlak & Wilder, 2012; Hadley & Wutich, 2009; Hanrahan & Mercer, 2018; Hanrahan, 2017; Sarkar et al., 2015; Stevenson et al., 2012). If water crises for these people are largely a crisis of governance, it follows that water governance must be investigated and transformed to ensure that the institutions and processes through which water governance occurs, and the legislation that structures it, is adequately including those who bear the negative impacts of water governance decisions.

Recent gains in the recognition of Indigenous rights have sparked a growth in social and academic attention to Indigenous Peoples and their well-being. In many settler colonial states, Indigenous Peoples have been subjected to on-going dispossession (Harris, 2004; Perreault, 2013; Porter, 2014), displacement (Finley-Brook & Thomas, 2010; Thompson et al., 2013), assimilative or genocidal policy-making (Royal Commission on Aboriginal Peoples, 1996; Rýser et al., 2020; Truth & Reconciliation Commission of Canada [TRCC], 2015), and exclusion from decision-making (Daigle, 2018; Perreault, 2013; Porter, 2014). European sovereigns asserted the doctrine of terra nullius, claiming ownership, control, and sole jurisdiction of lands and waters occupied by Indigenous Peoples based on the assertion that Indigenous Peoples had no stake

equivalent to European concepts of title, and so could not lay claim to the land (Asch, 2002; Mclean, 2014). In Canada and in other settler colonial nations, these claims are contested by Indigenous Peoples, who have repeatedly denied ceding territory, ownership, or rights through either conquest or contract (Krasowski, 2019). The on-going dispossession of land, water, forests, minerals, or ecosystems is seen by many as a key factor in the production and reproduction of settler colonialism: decolonization, they assert, means giving back the land (Tuck & Yang, 2012). Dispossessed, Indigenous Peoples rely on the state to recognize their rights or provide other mechanisms through which they can share their knowledge and voice their interests, values, and concerns heard by government and industry.

The recognition of state-based rights affords Indigenous Peoples some voice in government decision-making, but it is unclear to what degree this improves outcomes for Indigenous communities or the environment. Even with state-based rights, a multitude of factors may impede Indigenous representation in water governance, including education, gender, identity, socio-economic status, personal circumstance, and cultural norms. If the solution to a water crisis is ‘better water governance’, then what should we do to improve it? How are Indigenous Peoples engaged in water governance right now, and how ‘good’ or ‘effective are those different mechanisms of engagement? Two key sources give insight into why we are still asking these questions: the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and indigenous water declarations.

At national and international levels, the adoption and implementation of the UNDRIP provides a basis for renewed Indigenous-state relations. Foundational in the UN Declaration (2007) is recognition that Indigenous Peoples have a right to self-determination (Article 3), to be involved in decisions that affect them and their traditional territories (Craft et al., 2018), and that self-determination includes “constituent rights” to lands, territories, and resources. For example, Article 26 articulates the right to “own, use and develop ‘lands, territories, and resources that they possess by reason of traditional ownership or other traditional occupation or use, as well as those which they have acquired,’” with states called upon to provide “legal recognition and protection to those lands, territories, and resources” (UNDRIP, 2007, p. 19). In addition, Article 32 asserts the right to “Determine and develop priorities and strategies for the development or use of their lands or territories and other resources” (p. 23). Although Canada has endorsed the UNDRIP, the principle of obtaining free, prior, and informed consent of Indigenous Peoples

prior to government action or development of policy are not yet integrated into federal and provincial legislation (Jones, 2020). The implications of these changes for local, regional, provincial, and national water governance are still uncertain. However, recent works using justice-based frameworks to assess and analyze water governance and water management outcomes can provide insight into some of the legal, institutional, and practical changes needed to achieve equitable water-related outcomes (Curran, 2019; Jackson, 2018; Robison et al., 2018; N. J. Wilson, 2019). I discuss this further in chapters 2 and 4.

The UNDRIP has bolstered Indigenous Peoples in their struggle for justice and recognition of rights. Building on the UNDRIP and a generation of cultural resurgence (Alfred & Corntassel, 2005; Alfred, 2005; Borrows, 2002; Corntassel, 2012; Coulthard, 2014; Daigle, 2018), Indigenous groups around the world are asserting and reaffirming their inherent water rights, relationships, and responsibilities using water declarations. In 2003, Indigenous participants at the World Water Council's third World Water Forum formulated the *Indigenous Peoples' Kyoto Water Declaration* (2003). This declaration gives an account of Indigenous water relations, articulating how Indigenous water rights are linked to rights to self-determination, and establishing the expectation that, in accordance with the principle of free, prior, and informed consent, Indigenous Peoples be consulted prior to government making decisions that affect water in Indigenous territories.

Indigenous organizations are also releasing regional or national-level water declarations. In Australia, the 2007 *Echuca Declaration* re-asserts Indigenous sovereignty and title over traditional territory, and in response to severe environmental degradation, calls for a prioritized implementation of inherent Indigenous rights by establishing cultural flows through water allocation planning (K.S. Taylor et al., 2016). The 2016 *Fitzroy Declaration* was developed by Indigenous nations partially in response to hydraulic fracturing in the Fitzroy watershed. The declaration is an agreement between Indigenous Peoples to collaborate and partner in governance, conduct planning, and propose legislative changes that protect Indigenous interests and relations in the watershed (K.S. Taylor et al., 2016). In 2014, the Assembly of First Nations in Canada released the *National Water Declaration*, calling for Indigenous inclusion in water governance through the recognition of inherent and treaty rights, and recognition of the right to free, prior and informed consent prior to development in traditional territories. It also emphasizes the stewardship and caretaking role of Indigenous Peoples in relation to water (Assembly of First

Nations, 2014), a responsibility that is not currently recognized in provincial or federal legislation, but does have a significant role in the Northwest Territories' water stewardship strategy (Latta, 2018). The purposes, context, and style of these declarations vary, but all share a common goal of improving Indigenous People's engagement in water governance.

Through a multiplicity of engagements, Indigenous Peoples are seeking to reconcile their claims to land and water—based on historical occupancy and unextinguished title—with those of settler colonial states. They aim to increase recognition of their culture, rights, and laws; grow their representation in the institutions and processes of water governance; improve redistribution of power, wealth, and environmental risks; and achieve socio-natural integrity, or environmental justice. Progress is under way towards this reconciliation, but there are still many unanswered questions as to what strategies and mechanisms will be most effective, for whom, and in what situations. But between the declarations, the UNDRIP, and the many state-based mechanisms and processes through which government and its employees try to include Indigenous Peoples in decision-making, it is not at all clear how Indigenous Peoples can engage most effectively (Turner, 2006). Nor is it obvious which engagement strategy or mechanism is most likely to produce just outcomes for Indigenous Peoples, reproduce colonial dispossession through water governance (Robison et al., 2018; Strube & Thomas, 2021), or perpetuate water injustice (Mascarenhas, 2007; Perreault et al., 2012).

It is within this ever-evolving context of Indigenous relations with governments, water, and land that I explore what it might take to achieve water justice for Indigenous Peoples in Canada. The rest of this chapter provides additional context and background for the dissertation, exploring first the current state of water governance in Canada, and second the notion of Indigenous engagement in water governance. A brief set of definitions is given before the statement of the research purpose and research questions, and an explanation of the structure of the manuscript-style dissertation ends the chapter.

1.1 Water Governance in Canada

Canadians are often said to believe that Canada has an abundance of good quality fresh water (Foster & Sewell, 1981; Mitchell, 2017). However, the water realities experienced by Canadians depend on where they live, and who they are. For example, water scarcity facing agriculturalist in some parts of the prairies has been partially alleviated by irrigation and dams, but safe and good quality drinking water is still a concern for many rural communities (Diaz & Warren,

2012). For others, ‘excess water’ is the primary concern. Take for example surface water drainage in the prairie pothole region (Breen et al., 2018), where drainage of water from wetlands in agricultural fields creates ‘flood water’ downstream. Or consider how the construction of hydroelectric reservoirs and management of dams and diversions in Saskatchewan and Manitoba (Krotz, 1991; Waldram, 1988) can lead to both upstream and downstream flooding (Thompson et al., 2013), or fundamentally alter downstream ecosystems such as the Saskatchewan River Delta (Patrick & Baijius, 2021). Even where drinking water has been consistent and of good quality, climate change means that our expectations and assumptions about predictability in precipitation and water supply are no longer applicable (Milly et al., 2008). Arguably, the “myth of abundance” impedes much needed change in how we collectively and individually relate to, use, protect, and steward water in the face of global and local water crises (Brandes et al., 2005).

These different water experiences reflect unique relationships between humans, water, and the environment, and are often subject to the influence of broader norms, narratives, and institutions. One example is the ways in which governments are structured and organized, and this is of significant importance for water governance in Canada. Under the *Constitution Act (Schedule B to the Canada Act 1982 (UK))*, power is distributed between the federal and provincial governments, with provincial governments then delegating certain responsibilities and authority to municipal governments. For water, the federal government retains responsibility for “fisheries, navigation, federal lands and international waters,” the provinces and territories are responsible for “water resources and water supply” as well as pollution and hydroelectric development (P. Wilson, 2013), and municipalities often manage drinking water supply (Bakker & Cook, 2011).

As a result of this separation, decentralization, and delegation of powers, water is “subject to jurisdictional, territorial and scalar fragmentation...[creating] a series of governance gaps, overlaps and challenges” that, in addition to complicating water governance, can impair the recognition and respect of Aboriginal and Treaty rights (Bakker & Cook, 2011, pp. 278–9). Provincial, federal, and territorial governments also “share responsibilities for other issues...which also have a bearing on water resources in Canada” such as agriculture and health (P. Wilson, 2013, p. 12). Coordination of research, policy, and action across jurisdictions can occur through the Canadian Council of Ministers of the Environment (CCME; provincial) or

other institutions such as the International Joint Commission (federal) or the Prairie Provinces Water Board (Alberta, Saskatchewan, Manitoba), but by and large, even with these coordinating institutions, water governance in Canada suffers from “a number of complex logistical problems, inter-ministerial conflicts, duplication of efforts, and impediments to information sharing” (Bradford et al., 2017, p. 273). While fragmentation by itself makes water governance more complicated for provincial, territorial, and federal governments, it leads to frustration and even conflict when decisions that affect Indigenous Peoples and their rights are made without their inclusion or consent.

1.1.1 Indigenous Peoples and Water in Canada

For First Nations across Canada, access to clean drinking water is unevenly distributed (Patrick, 2011). Many Indigenous communities across Canada have experienced and continue to face limited access to clean drinking water, some for years or decades (Neegan Burnside Ltd., 2011a; Sarkar et al., 2015). As of March 9 2021, there were 58 long-term advisories in place for 38 communities, with the federal government and Indigenous communities continuing work to eliminate the advisories (Indigenous Services Canada, 2021). The time, money, and effort put into understanding and resolving these advisories has been significant, albeit not always consistent, well-informed, or effective (Morrison et al., 2015). On-reserve water quality can be impacted by changes in land and water use adjacent to, or far away, from reserves, but this is outside the jurisdiction of federal and First Nations governments. In these cases, boil water advisories may be but one of multiple water-related crises faced by Indigenous communities and the ecosystems upon which they depend (Black & McBean, 2016; Thompson et al., 2013; Waldner et al., 2017).

For many Indigenous Peoples in Canada, water is understood in a relational sense, recognized and respected as the basis for life as we know it (Latchmore et al., 2018). For the Anishinaabe and Cree peoples in and around the prairies, resource extraction and development in their traditional territories (Ermine et al., 2006) have had a negative impact on their ability to maintain relationships with and fulfill responsibilities to askiy/aki [Mother Earth] and nipi/nibi [water] (Craft, 2014; N. J. Wilson et al., 2019), and to follow mino-pimatisiwin [the way of the good life] (LaBoucane-Benson et al., 2012). Indigenous laws and norms also emphasize the role of women in protecting water (Anderson, 2010; Anderson et al., 2013; Blackstock, 2001; Chiblow, 2019; Lawless et al., 2013), and the need to protect water for more than just human

consumption (Jackson, 2017; McGregor, 2008, 2014; McLean, 2017; Somerville, 2014; N. J. Wilson & Inkster, 2018). A growing body of literature describes the relationship between Indigenous Peoples, water, and the state through many different theoretical and conceptual lenses, which I briefly survey to further situate the research.

1.1.2 Indigenous Engagement and Water Governance in Canada

Indigenous-state relations in Canada are primarily governed by the *Indian Act* (Government of Canada [GC], 1985). The *Act* mediates not only Indigenous-state relations, but also the relationship between Indigenous Peoples and their traditional territories. Under the *Indian Act*, Indigenous Peoples were (and many are still) considered wards in a fiduciary relationship with the state, interrupting Indigenous self-determination. Through its many amendments since 1867, it is described as “becom[ing] increasingly restrictive and controlling of the lives of First Nations people, and the management of their own lands and resources” (Bradford et al., 2017, p. 273). In addition to this and other assimilationist and repressive policies and legislation, settler colonial governments have unilaterally interpreted historic treaties between Indigenous Peoples and the Crown as agreements to cede land and rights in exchange for reserve land and treaty rights. Through this interpretation, the Crown claims ownership of and responsibility for Indigenous lands and waters not set aside under Aboriginal title (Krasowski, 2019). For Indigenous Peoples, this unilateral claim of cession produces and reproduces dispossession and disrupts Indigenous ways of living and being (Daigle, 2018; Perreault, 2013; Porter, 2014).

After extensive litigation and lobbying, Indigenous Peoples in Canada have achieved partial recognition of Indigenous rights, entrenched in the constitution as Aboriginal and Treaty rights. These rights differ in significant ways (Slattery, 2000) and are continually clarified and refined through legal contestation, but together they are intended to provide for Aboriginal peoples to live their traditional lifestyles and continue cultural practices. In areas not covered by historic treaties, such as British Columbia, Nunavut, Yukon, and the Northwest Territories, land claim settlements have strengthened Indigenous involvement in governance through the negotiated agreements that firmly establish the “obligation to take treaty and Aboriginal rights into consideration [in their] duty to consult” (CCME, 2016, p. 17).

Yet these rights are still subject to infringement or extinguishment based on ‘legitimate’ government action (Porter, 2014), and even with the duty to consult, water rights in these negotiated settlements do not always guarantee desirable or even substantively just outcomes (N.

J. Wilson, 2019, 2020; N. J. Wilson et al., 2019). Aboriginal and treaty rights are entrenched in many aspects of resource management, but not all: Aboriginal water rights in and of themselves are often not recognized or defined (J. B. Carter, 2003; Hopley & Ross, 2009; Laidlaw & Passelac-Ross, 2010; Matsui, 2009; Passelac-Ross & Smith, 2010; Phare, 2009a, 2009b). In regions of Canada where Indigenous water rights are not explicitly recognized, governments may instead have policies to formally include Indigenous communities in watershed planning and management (CCME, 2016), but without guarantees or evaluation of their efficacy in addressing Aboriginal and Treaty rights broadly.

Indigenous water rights are one example of a pre-existing, customary right that is not yet formally institutionalized or recognized by government. Phare (2009b) describes indigenous water rights as inherent rights that existed prior to colonisation and the creation of the Canadian state, as well as the provinces. They were never ‘given up’, and so Phare argues that indigenous water rights “require Indigenous Peoples...control or be involved as governments in decision-making regarding waters that are on their reserves, their treaty lands or their unceded traditional territories...or anywhere else in Canada where treaties did not eliminate such rights” (p. 46). Writing on aboriginal water rights, Bartlett, pp. (1988, pp. 1–2) affirms that water is an “absolute necessity...to [their] lives...[and this makes] it part of their spiritual and cultural existence.” Incidental water rights may be recognized in relation to other rights, such as rights to hunt, fish, or trap (Phare, 2009a), but the strength of these rights in achieving protection of water has yet to be thoroughly tested in the courts.

Even without recognized rights, many Indigenous Peoples across Canada, and around the world (Cohn et al., 2019; Jackson et al., 2012; Stefanelli, Castleden, Harper, et al., 2017), are and have been seeking ways to become more involved in water planning, management, and governance (Arsenault et al., 2018; Matsui, 2009; P. Wilson, 2013). Examples include the Chiefs of Ontario working to incorporate traditional knowledge into water governance in Ontario and the Great Lakes (McGregor, 2008, 2014), capacity-building through Indigenous-led community-based water planning (Hoverman & Ayre, 2012; Patrick & Baijius, 2021; Patrick et al., 2019; Prusak et al., 2015; Walker et al., 2013), co-governance in northern North America (N. J. Wilson et al., 2019; P. Wilson, 2013), as well as collaborative and community-based water monitoring and research (Arsenault et al., 2018; Bradford et al., 2017).

There are also tribally or regionally developed water declarations. In British Columbia, the Simpcw and Yinka Dene declarations addresses water quality and quantity, highlighting the role of Indigenous law and knowledge in the management of water from an Indigenous perspective (Bakker et al., 2018; Berry et al., 2018). Additionally, the Simpcw declaration emphasizes the role of self-determination in the exercise of rights and responsibilities to protect and defend water (Bakker et al., 2018; Reading et al., 2011). In Ontario, the *Water Declaration of the Anishinabek, Mushkegowuk and Onkwehonwe* emphasizes stewardship of water and the environment, “the special role of women and traditional knowledge in decision-making regarding water,” and is critical of the state for its non-recognition of Indigenous jurisdiction, authority, and responsibility (McGregor, 2012, p. 9). The declaration made by the Grand Council on Treaty #3’s Women’s Council (2019, p. 15) emphasizes the relationship between people and nibi [water], the spiritual and material importance of water as the lifeblood of aki [earth], the role of women, and “our collective responsibility to take action, give back and protect nibi and the environment for our children and future generations.”

Aboriginal and treaty rights, the UNDRIP, and grassroots efforts such as water declarations and community-based research are commonly discussed mechanisms of engagement. But which mechanisms work, to what degree, and for whom, are contingent on a wide range of variables, from ecological contexts to contemporary socio-economic and political realities to “historical, socio-cultural, and legal considerations,” as well as the ways in which “certain values, preferences, and worldviews” are privileged over others (N. J. Wilson et al., 2019, p. 2). These variables differ across space and time, by ecosystem and province, and so the approaches, experiences, and lessons from one region or First Nation are not always readily applied to others. In other words, the type and degree of Indigenous engagement in water governance, management, and planning varies by province and community (CCME, 2016; Shrubsole et al., 2017).

1.2 Critical Research Approach

This dissertation adopts a critical research approach. A critical approach acknowledges not only the social construction of knowledge (Sayer, 1992), but also that contemporary knowledge and understanding of reality are mediated by power relations and history (Tracy, 2020). Researchers adopting “critical approaches” frame research as including “an ethical obligation, such as helping to emancipate or liberate those who find themselves in situations that are immoral, unfair,

unethical, violent, or generally ‘not nice’” (Tracy, 2020, p. 53). In this dissertation, I critically situate Indigenous engagement within the historical and contemporary power relations of water governance in the context of settler colonialism.

Throughout this dissertation, I refer to settlers and settler colonialism. Settler colonization involves not only the initial expropriation of lands and resources by a sovereign through colonization, but also subsequent dispossession and displacement of Indigenous peoples to facilitate the distribution of lands by the state to permanent immigrants, or settlers (Veracini, 2011). Critically, settler colonialism is not a circular process of reinforcing power relations, but rather includes a ‘logic of elimination’ (Wolfe, 2006) in that the trajectory of settler colonialism continues until it “*extinguishes* the settler colonial relation” (Veracini, 2011, p. 7). In this regard, we can understand settler colonialism as a structure rather than an event (Wolfe, 2006), and so this research focuses on identifying and critiquing those settler colonial structures that impede or interfere with Indigenous water relations. While I deploy the term settlers to refer generally to non-Indigenous peoples in Canada, it is important to recognize that this incorporates a heterogenous group with very different interests and positions on Indigenous-state relations.

1.2.1 Mixing Methods and Methodologies

As part of a critical approach, I use multiple methods to examine Indigenous engagement in water governance from multiple perspectives. In general, mixed methods and methodologies can be used for at least five purposes: triangulation, complementarity, sequential development of methods or questions, and to expand on the breadth and range of inquiry (Schoonenboom & Johnson, 2017). In this dissertation, the purposes of mixing include: triangulation, achieved through multiple data types, methods, and scales (Tracy, 2020), and supporting the credibility of the research (Tracy, 2010); complementarity, as the findings from smaller geographic scales are investigated at larger geographic scales (international to regional, regional to local); and expansion, as each chapter uses different methods and data types to address different components of the inquiry in terms of breadth (multi-scale) and depth (desktop document analyses to community-based research).

As mentioned above, this dissertation also mixes scales of inquiry to establish multiple perspectives on what is ‘really’ happening with Indigenous engagement in water governance (Tracy, 2020). Scales are significant in this regard, as the geographic scope which we choose—whether watershed (Blomquist & Schlager, 2005), waterscape (Orlove & Caton, 2010; Budds &

Hinojosa, 2012) or some other boundary or scale (Swyngedouw, 1997)—will influence whose voices are represented, what data we will include and how we will collect it, and the recommendations that arise. Rather than fixing on one scale, this research moves through multiple scales to provide descriptions of and multiple perspectives on Indigenous engagement in different water governance contexts.

1.3 Definitions

For this dissertation, water governance broadly “consists of the processes and institutions by which decisions that affect water are made” (Lautze et al., 2011, p. 7), and can refer to either state-based or Indigenous institutions and processes. Whether informed by western or Indigenous science and law, water governance is a regulatory social function that controls the effects of human activities—such as resource development and management—on water resources and aquatic ecosystems (Pahl-Wostl, 2015; P. Wilson, 2013). Water governance occurs at multiple levels and scales, through numerous mechanisms, and with a range of actors.

As a system, water governance includes institutions such as “formal laws, societal norms, or professional practices,” as well as interactions between individuals throughout the “ensemble of political, social, economic and administrative elements that performs the function of water governance” (Pahl-Wostl, 2015, p. 6). Laws, norms, and practices give structure to water governance systems, and groups of these laws, norms, and practices can be described as water governance regimes (p. 7). Importantly, “water governance does not include practical, technical and routine management functions such as modelling, forecasting, constructing infrastructure and staffing. Water governance does not include water resources outcomes” (Lautze et al., 2011, p. 7). Functions and outcomes are considered as part of water management, which seeks “to keep the state of a water resource within desirable bounds” established through governance (Pahl-Wostl 2015, p. 27).

I use the term Indigenous or Indigenous Peoples in alignment with the International Labour Organization’s (ILO) Indigenous and Tribal Peoples Convention C-169, where article 1(b) describes Indigenous Peoples as:

peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or

colonisation or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions. (ILO, 1989)

I use the terms Aboriginal or First Nation when discussing Indigenous Peoples as defined in Canadian law.

As demonstrated in Chapter 2, the term Indigenous engagement is mostly undefined and refers to a wide range of practices and processes. As a preliminary conceptualization, engagement “refers to a range of relationships...[and] may apply to research activities, government decision making, economic activities, or any other interaction that will bring people into or affect...[a] community” (Hughes, 2018, p. 15). Bringing together the notions of Indigenous and engagement, this study investigates the interactions and relationships between Indigenous Peoples and state-based water governance regimes, including recognition of their rights, laws, and knowledge; and their representation and participation in decision-making institutions that control human activities in relation to water resources and aquatic ecosystems.

1.4 Research Questions

This dissertation asks: how, and to what degree, do the mechanisms of Indigenous engagement in water governance impede or support the attainment of Indigenous water justice through Indigenous engagement in water governance? Each chapter responds to more specific questions:

- i. Chapter 2: how is Indigenous engagement characterized in the academic literature on water governance, and what are the relationships between engagement and outcomes of water governance?
- ii. Chapter 3: how does Indigenous engagement vary within a provincial context, and what are the drivers of that variation?
- iii. Chapter 4: what lessons can be learned from an Indigenous community’s perspective on Indigenous engagement in water governance, and how can these lessons inform the practices and policies of state-based water governance?

1.5 Dissertation Structure

This dissertation examined Indigenous engagement in water governance from three perspectives, one in each of the research chapters, integrating three scales of analysis and using qualitative and quantitative data sources in a mixed-methods approach to develop a rich and nuanced assay of

Indigenous engagement in water governance. In Chapter 2, I reviewed the literature on water governance at an international scale to identify trends in, and characteristics of, Indigenous engagement in water governance. In Chapter 3, I adopted a regional perspective in which I described and explained variation in the practice of watershed planning in Manitoba, Canada by measuring the frequency and diversity of Indigenous-specific content in watershed plans. I also used geospatial data to determine the extent to which Aboriginal and Treaty rights influenced the degree of Indigenous engagement in watershed planning. In Chapter 4, I explored the actual practices of engagement from an Indigenous perspective through collaborative research with a First Nation in Manitoba. By combining these perspectives, the dissertation situates local and regional engagement practices within a global context, and illustrates the interconnections between local, regional, and international practices and policies of Indigenous engagement in water governance.

The formatting of this dissertation follows the ‘thesis by manuscript’ style adopted by the Department of Geography and Planning and College of Graduate and Postdoctoral Studies, University of Saskatchewan. There are five chapters, the middle three of which comprise the body of research. The research chapters are formatted and written as stand-alone manuscripts, and each is aligned with a specific research question:

Manuscript 1 (Chapter 2): Baijius, W., Patrick, R. J., & Furgal, C. (2022). A review of Indigenous engagement in water governance. *WIREs Water*. Accepted with revisions.¹

This manuscript provides an overview of how Indigenous engagement is discussed in the literature on water governance, and describes how certain engagement mechanisms, in specific contexts, lead to varying degrees of just outcomes in water management.

Manuscript 2 (Chapter 3): Baijius, W., Patrick, R. J., & Furgal, C. (2022). Indigenous engagement in water governance: Measuring engagement in

¹ Warrick Baijius designed and conducted the review, and is lead author for the manuscript. Robert Patrick and Chris Furgal supervised the study, and provided critical and constructive feedback on the manuscript content and structure.

watershed planning. *International Indigenous Policy Journal*. Accepted with revisions.²

This manuscript is a mixed method study that shows Aboriginal and Treaty rights do not appear to significantly influence the degree or character of Indigenous engagement in watershed planning in Manitoba.

Manuscript 3 (Chapter 4): Baijius, W., Patrick, R. J., & Furgal, C. (n.d.). A contemporary case study of Indigenous engagement in Manitoba's water governance regime. Not yet submitted.³

This manuscript is a case study of community-based research, documenting environmental changes experienced by members Wuskwi Sipiik First Nation in Manitoba, and describing the challenges to and opportunities for effective Indigenous engagement in provincial water governance.

² Warrick Baijius designed and conducted the study, and is lead author for the manuscript. Robert Patrick and Chris Furgal supervised the study, and provided critical and constructive feedback on the manuscript content and structure.

³ Warrick Baijius is the major contributor and lead author for the manuscript. Robert Patrick and Chris Furgal supervised the study and provided critical and constructive feedback on the manuscript content and structure.

2 A REVIEW OF LITERATURE ON INDIGENOUS ENGAGEMENT AND WATER GOVERNANCE

Preface

Indigenous engagement in water governance presents a range of opportunities to Indigenous Peoples, governments, resource managers, the environment, and the public. But water governance has been accused of emphasizing liberal principles and administrative procedures that, when implemented in the context of settler colonialism, strip governance of its political dimension. If so, practitioners, Indigenous Peoples, and decision-makers alike must be flexible, strategic, and pragmatic in their choices of which water governance structures, processes, institutions, and practices are most appropriate to implement in certain contexts. To date, a handful of reviews have examined mechanisms of engagement in water governance, but these are often specific to certain domains, such as on-reserve drinking water (Baijius & Patrick, 2019a; McFarlane & Harris, 2018) or water rights in national governance frameworks (Jackson, 2018). This paper surveys the academic literature on water governance to examine different mechanisms of Indigenous engagement, and to determine how and to what extent those mechanisms relate to Indigenous struggles for water justice. It is guided by the questions:

- How is Indigenous engagement defined and characterized in the water governance literature?
- How do these different types of engagement mechanisms relate to each other?
- Which types of engagement are more likely to produce just water outcomes, and to what degree?

Empirically, this chapter demonstrates:

- The rapid rise in scholarship on settler colonial water governance is dominated by research in Canada and Australia;
- Indigenous engagement mechanisms can produce outcomes that are (un)just in different ways, and to a range of degree;

- Low levels of engagement are commonly associated with unjust water outcomes, a one-sided form of reconciliation, and potentially lead to conflict;
- Higher levels of engagement are commonly associated with more equitable water outcomes, a relational form of reconciliation, but could still lead to conflict;
- There is limited research on links between mechanisms of engagement and desirable water or environmental outcomes.

Overall, this chapter serves as the broadest level of analysis for the dissertation, examining research and scholarship published from researchers in multiple settler colonial nations. The results reveal contingency throughout Indigenous engagement in water governance: there are multiple pathways to just outcomes, but not all outcomes are just in the same way, or to the same degree. This chapter asks broadly, which mechanisms are likely to produce just outcomes, to what degree, and why? Methodologically, this chapter exemplifies the potential that a narrative approach to reviews has for synthesizing a wide range and sometimes disparate collection of research.

This Chapter is accepted for publication in Wiley Interdisciplinary Reviews-Water, an international journal dedicated to reviews and expert commentary cross-disciplinary water issues (2020 Impact factor: 6.14):

- Baijius, W., Patrick, R. J., & Furgal, C. (2022). A review of Indigenous engagement in water governance. *WIREs-Water*. Accepted, under revision.

For the publication, as with this Chapter, I designed and conducted the literature review, and wrote the manuscript. Robert Patrick and Chris Furgal supervised the study, and provided critical and constructive feedback on the manuscript content and structure.

Abstract

In the water governance literature, the phrase ‘Indigenous engagement’ is increasingly used to describe very different engagement mechanisms and outcomes. The ways that states engage Indigenous Peoples in governance have significant implications for water management outcomes specifically, and the reconciliation of Indigenous-state relationships generally. While the literature discusses many mechanisms and interactions as examples of Indigenous engagement, few articles define what it means, or explain how the mechanisms and interactions relate to each other. Three levels of Indigenous engagement emerge from a review of the literature, each

associated with a range of possibilities in terms of how the state recognizes Indigenous Peoples and their rights, how Indigenous Peoples and their knowledge and values are represented in water governance and management, and how water, environmental outcomes, and decision-making power are redistributed. Outcomes of state-based Indigenous engagement are discursively framed as either conflict or consensus, but this ignores a suite of non-conflict outcomes that are contingent on the degree that the engagement mechanisms achieve recognition, representation, and redistribution. There are also examples of Indigenous engagement in the literature that are not bounded by interactions with the state or academic researchers, and the potential for these Indigenous water relations to be incorporated into state-based Indigenous engagement are discussed.

2.1 Introduction

Given the growing influence of internationally recognized and nationally adopted Indigenous rights frameworks (United Nations General Assembly, 2007), a resurgence of Indigenous culture and societies (Alfred & Corntassel, 2005; Borrows, 2002; Coburn, 2015; Corntassel, 2012; Daigle, 2018), and the recent reconciliation paradigms adopted by settler colonial nations (Heard et al., 2017; Manuel et al., 2017; TRCC, 2015), the ways in which Indigenous Peoples are engaged in, or by, water governance matters. Indigenous engagement—a term increasingly used in the resource management discourse and literature—has become a catch-all phrase describing a rich repertoire of interactions between Indigenous Peoples, settlers, governments, and industries, global to local in scale, embedded in particular political realities and distributions of power and capital (Cavaye, 2004; Escott et al., 2015; Australian Government, 2004; Head, 2007; Jason Hunt, 2013; Measham et al., 2009; Wyatt et al., 2013). Indigenous-settler relations are characterized by cycles of engagement in partnerships, consensual relationships, or conflict, and disengagement through exclusion or non-participation (Ermine, 2007). Within and between social domains (e.g. resource management, education, health) engagement and disengagement can exist concurrently, sometimes but not always as part of a strategy (Wyatt et al., 2019), sometimes but not always with conflict or consensus (Maclean et al., 2015), sometimes but not always based on rights, policy, or individual conscience. Such diversity and multiplicity can confound attempts to identify why they work, for whom, to what degree, and in why.

These characteristics of Indigenous engagement apply also to water governance, but there are key differences in terms of the resource being discussed (water is difficult to control, own,

and manage within administrative boundaries) as well as the legal and political context in which water governance is embedded. In Canada, for example, Aboriginal and treaty rights protect places, areas, and practices, but they do not typically include water rights. Incidental water rights may exist, in relation to other rights such as hunting or fishing, but they have not been tested in courts (Phare, 2009a). In Australia, a mix of approaches have been taken across the states, including Indigenous participation in water markets and using Indigenous values and knowledge to establish environmental flows. In the USA, recognition of water rights has spurred co-management of fisheries (Cosens & Fremier, 2018; Lee Rowlands & Wildman, 2018) and participation in transboundary water governance in the west (Norman, 2012, 2014), while other tribes have developed the capacity to implement culturally-relevant water quality standards enforceable off-reserve—achieving ‘treatment-as-a-state’ (Cohn et al., 2019; Diver, 2018). The trajectory of these engagement mechanisms has been contingent on local, regional, and national contexts making it possible for them to produce the expected (or sometimes unexpected) outcomes. What works for some Indigenous Peoples may not work for others, but there are still opportunities to draw lessons from other examples to strategize change.

Reviews of the literature provide such an opportunity to survey scholarship, develop lessons learned, and identify critical gaps and opportunities for future research and action. Three reviews of the water governance research have focused on engagement of Indigenous Peoples, reporting on topics of knowledge integration (Castleden, Hart, Cunsolo, et al., 2017) and knowledge implementation (Castleden, Hart, Harper, et al., 2017; Stefanelli, Castleden, Harper, et al., 2017) in water research and management, and national-level rights-based engagements (Jackson, 2018). The two reviews focusing on knowledge are similar in topic, method (systematic realist reviews), and questions used in the review, but differ in scope (Canada, and Canada, USA, Australia, New Zealand, respectively). Castleden et al (2017, p. 23) noted that in the context of growing pressures on the environment and water resources, discussions of supply-side management were far more prevalent in the literature than issues central to Indigenous rights such as water quality, “pollution, diversion, and water ethics.” Stefanelli et al (2017, p. 330) also found that even with valued and effective methods for assessment, evaluation, surveying, and collaboratively governing research, “current [research mechanisms have been] inadequate in addressing water disparities” through knowledge implementation. Together, these reviews show that researchers and Indigenous Peoples are collaboratively developing mechanisms to

implement Indigenous knowledge in water management, but that these mechanisms are stymied by state-based political decisions. In response, some authors are seeking to re-politicize the discourse on water governance (Curran, 2019) by adopting justice-based analytical frameworks into their analyses.

In their review of national water governance regimes, Jackson (2018) applied Nancy Fraser's (1995, 2000, 2005) tripartite justice model to "describe the leading approaches to recognition, representation, and redistribution that exist under the domestic [water rights] arrangements of nation-states" (Jackson, 2018, p. 2). These mechanisms and pathways include rights for rivers (legal personhood), market mechanisms, Indigenous self-organization, negotiated settlements, collective rights, and legal requirements to improve access to water. Jackson is critical of the "ambivalent institutional expressions of liberal and multicultural recognition" represented by these mechanisms, suggesting that 'opportunities for "cultural" recognition and political representation in water governance come more easily...than do the proprietary or commercial forms' (p. 11). Notably, Jackson cautioned that outcomes are subject to "contingency and context": there is no way to rank the mechanisms and pathways, they are not exclusive and may be combined. Jackson's review emphasized "institutional options", and so aside from a vignette on Indigenous water declarations and discussion of Indigenous self-organization as a mechanism, the focus was on mechanisms associated with national-level state-based institutions. This excluded mechanisms such as those in research noted above, or individual ethics (Groenfeldt & Schmidt, 2013; LaBoucane-Benson et al., 2012; Matsui, 2012; Schmidt & Shrubsole, 2013), and Indigenous law (Borrows, 1997, 2002, 2010; Clogg et al., 2016; Craft, 2014).

This systematic narrative review surveyed the literature on water governance to identify the ways in which water justice is implicated in a wide range of Indigenous engagement mechanisms. In doing so, it extends recent use of the tripartite water justice model in water governance and management literatures (Jackson, 2018; Robison et al., 2018; N. J. Wilson, 2020). A narrative approach gives depth to the recognition-based, representative, and distributive aspects of water justice, with examples from the literature used to articulate different levels within those three dimensions. Examples of Indigenous engagement aside from those with state and academic institutions are discussed as Indigenous water relations. The conclusion reprises key findings from the review, and highlights opportunities for future research.

2.2 Methods

For this survey of Indigenous engagement in the literature, I chose a narrative review. These types of reviews represent “a broad perspective on a topic...[by discussing] theory and context” alongside empirical results (Green et al., 2006, p. 103). Authors will often use the method to “critically summarizes theories, studies, and methods used in existing research” (Efron & Ravid, 2019, p. 21) within a field or discipline. Systematic reviews are similarly used to “[make] sense of large bodies of information” and find answers to specific “questions about what works and what does not” (Petticrew & Roberts, 2006, p. 2), but systematic reviews typically include only empirical articles. Narrative reviews can follow a systematic approach, but they focus on finding patterns or trends in the literature “with respect to pre-existing propositions, theories, methodologies or findings” (Paré & Kitsiou, 2016, p. 162).

A structured and systematic search method is used here to reduce potential bias and improve transparency of decisions made around search protocol and inclusion criteria. A systematic structure means the researcher/analyst considers aspects of the sampled literature such as year of publication, scope, topic, and concepts, to ensure the review represents the “state of the art in a particular domain” (Paré & Kitsiou, 2016, p. 163). This narrative review included empirical and review essays identified through two databases: SCOPUS and Web of Science. For each database, three search phrases were used to identify peer-reviewed journal articles and book chapters:

- “indigenous engagement”
- indigenous AND “water governance”;
- (aborigin* OR “first nation” OR metis OR iwi OR maori OR inuit OR dene OR indig* OR Indian) AND (engag* OR participat* OR consult* OR litigat* OR conflict* OR treaty OR consent OR negotiat* OR resist* OR protest* OR occup* OR recogn* OR research) AND “water governance”.

Results were aggregated and duplicates removed. Conference proceedings, bulletins, books, and non-peer reviewed articles were excluded, keeping only peer-reviewed, English language results.

Abstracts were reviewed for four attributes: currency, coloniality, topic, and degree of engagement. Only articles primarily addressing Indigenous-state or Indigenous-academic relationships in colonial water governance were included. The final set of articles were reviewed

for mention of Indigenous Peoples being involved in processes, institutions, arrangements, legislation, activities, et cetera focusing on water or water-related environments. Descriptive codes were applied to blocks of text according to the specific mechanism of engagement, with some blocks coded multiple times when mechanisms involved multiple sub-mechanisms. Codes were then iteratively sorted into categories based on their relation to the analytical framework. As some mechanisms had multiple associations with categories, they are not considered mutually exclusive. A priori thematic saturation was deemed to have been achieved when a high proportion of overall articles were coded to the categories, while inductive thematic saturation was deemed to have been achieved when iterative readings of the articles revealed no additional codes or themes (Saunders et al., 2017).

2.3 Analytic Framework

Essays on Indigenous water justice have used concepts from social and environmental justice (Jackson, 2018; McGregor, 2018), grounding their notion of justice alternately in articles of the UNDRIP (Robison et al., 2018), or in a tri-partite justice model based on political theorist Nancy Fraser's analytical model for justice (Fraser, 1995, 2000, 2005; Zwarteveen & Boelens, 2014). This model encompasses dimensions of (cultural) recognition, (political) representation, and (economic) redistribution. Jackson (2018) applied the model directly, while Zwarteveen & Boelens (2014) include a dimension for socio-ecological integrity to account for the inter-relationship between water and environmental justice.

Here, I extend the work of Jackson (2018) by applying the tri-partite model to a broader range of engagement mechanisms in water governance, such as resistance, conflict, and dispute resolution. I also adapt the socio-ecological integrity dimension in Zwarteveen & Boelens' (2014) model to represent unique relationships that exist between Indigenous Peoples and their traditional territories (Indigenous water relations). Indigenous water relations are those relations that are neither explicitly rights-based, nor are they strictly institutional; they are “the interactions between and across humans and water systems” (Neville & Coulthard, 2019, p. 2). As briefly described below, each example or instance of engagement can be mapped to one or more aspects of this justice model in terms of their shared underlying assumptions. The analysis section includes examples and additional description where necessary.

2.3.1.1 Recognition

Recognition is “a political strategy to redress historical legacies and injustices of exclusion, racism and other forms of discrimination, and to improve the position of Indigenous minorities, particularly in settler colonial nations” (Jackson, 2018, p. 5). Struggles for recognition “promote group differentiation [by] calling attention to, if not performatively creating” a specific group identity and asserting the value of that difference and identity. In the context of Indigenous Peoples, indigenous difference and collective rights can be a difficult concept for settler societies to reconcile with their heritage of individualism, liberal equality, and purportedly difference-blind justice (Fraser, 1995, p. 74).

In the context of Indigenous engagement, the implicit assumption is that, through recognition of Indigenous cultural differences and needs, water governance will be able to change and adapt to produce equitable water management outcomes. However, seeking recognition risks reifying unequal power relations, especially when the settler-state is the entity that “determin[es] how much differential treatment will be tolerated” (Jackson, 2018, p. 5). Building on critiques of recognition by Indigenous scholars such as Alfred (2005) and Coulthard (2014), Jackson (2018, p. 5) asks if state-based recognition is “at all desirable if it means accepting state-determined hierarchical rankings of legal systems that curtail or assimilate [Indigenous] water rights.”

2.3.1.2 Representation and participation.

Representation is “centred on issues of membership [who belongs] and procedure [how decisions are made and contested]” (Fraser 2005, p. 74). It is also a thoroughly “political dimension of justice,” and fundamental to justice by “specif[ying] the reach of those other dimensions: it tells us who is included in, and who excluded from, the circle of those entitled to a just distribution and reciprocal recognition” (p. 75). Fraser describes three levels of misrepresentation: ordinary-political, where claims of injustice are purportedly addressed by fair process under the norms of liberal equality; misframing, where arbitrary and taken-for-granted administrative boundaries (un)intentionally exclude people from communities or from participation in decision-making; and undemocratic processes of frame-setting, where “parity of participation at the meta-political level” (e.g. law-making) is not institutionalized, and so the affected peoples or groups are not included “in deliberations and decisions concerning the ‘who’” that is excluded through misframing (Fraser, 2005, p. 85).

According to Zwartveeen & Boelens (2014, p. 153), representation addresses “the issue of political participation in control and decision making, of sharing in water authority – both at local management levels and at broader scales of water governance.” Engagement mechanisms that claim to provide Indigenous representation (or participation) must thus be analyzed for instances of misrepresentation. Recognition and redistribution are also “contested and power-laden” and subject to politicization, but “struggles against maldistribution and misrecognition cannot proceed, let alone succeed, unless they are joined with struggles against misframing” (Fraser 2005, p. 74). Exclusion and a lack of representation in engagement are also associated with political non-recognition and economic maldistribution.

2.3.1.3 Redistribution

Broadly, redistribution applies to income and wealth, labour, and decision-making power (Fraser, 1995). In the context of water and environmental justice, redistribution also involves water allocation for Indigenous Peoples, and implicates water and environmental quality through the ways in which “environmental burdens and benefits [are distributed] across racial, ethnic, and economic groups” (McGregor, 2018, p. 7). Distributive injustices such as “economic disadvantage impedes equal participation in the making of culture, in public spheres and in everyday life” (Fraser, 1995, p. 72-3), while “redistributive remedies generally presuppose an underlying conception of recognition” (Fraser, 1995, p. 73). Distributive justice can improve representation, but success is also contingent on the degree of recognition of Indigenous rights, knowledge, interests, and values.

2.3.1.4 Indigenous Water Relations

The theme of Indigenous water relations seeks to recognize and represent Indigenous relations to water that may exist beyond the realm of state-based water governance. These relations, whether spiritual, ceremonial, a traditional practice or otherwise, are often considered integral to the specific culture or identity of the group or peoples. When these relations are impaired due to changes in the quality or quantity of water, this fourth dimension of socio-ecological integrity becomes more visible, often after contestation, protest, or increased participation in planning and management processes by Indigenous Peoples.

2.4 Summary Results

The chart in Figure 2.1 depicts the distribution of publication dates for the 132 articles included in the review, showing a rapid rise in the number of articles and book chapters that refer to Indigenous engagement. Table 2.1 tallies the number of publications per year by nation-state and highlights the spatial distribution of articles to contextualize the results and discussion. It also shows how academic interest in Indigenous engagement and water governance has changed over time and space. For example, research in Australia and New Zealand had an early start, with 20 publications as of 2013, compared to 7 results in Canada and the USA. Most articles focusing on Canada were published in 2017 and 2018.

Figure 2.1 Number of publications referring to “Indigenous engagement” and water

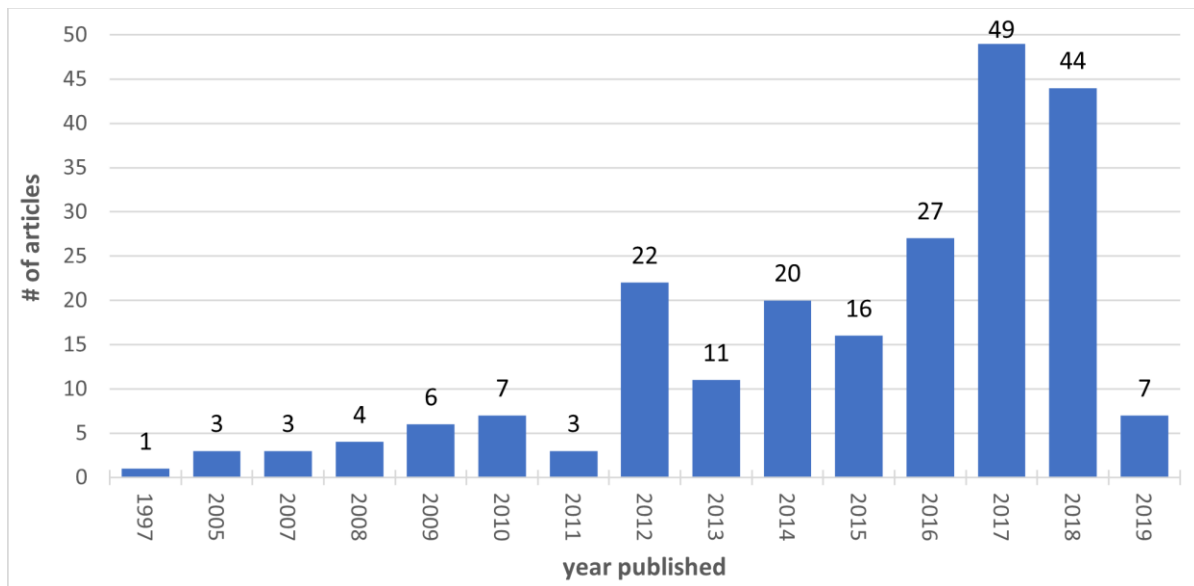


Table 2.1 Tabular summary of the number of results for each nation-state, by year

Nation-state	Year									Total
	2005-2011	2012	2013	2014	2015	2016	2017	2018	2019	
Australia	7	9	2	2	7	8	5	9	2	51
Canada		2	4	2	3	4	18	11	1	45
USA-N. America		1	1	1	1		3	5	2	14
New Zealand		1				3		3		7
Australia-NZ/ET		1					1			2
International/Transboundary		1			1	3	4	4		13

Notes: USA-N. America includes transboundary and comparative articles with USA and Canada. Australia-NZ/ET includes articles comparing Australia with New Zealand, and with East Timor. International/Transboundary includes transboundary and comparative articles with an assortment of Canada, the USA, Australia, New Zealand, and two articles with South American nations.

2.4.1 Definitions and Concepts

The phrase “indigenous engagement” appears in a total of 59 of the 132 results. In 15 results, the phrase appears in the abstract, keywords, or references only; in the remaining 42, it appears in the body of the article. In most articles, Indigenous engagement refers to participation and/or consultation, and often in terms of public or civic processes (J. L. Carter, 2010; Cranney & Tan, 2011; Escott et al., 2015; Lui et al., 2016; Martin, 2018). Though not discussing Indigenous engagement specifically, Tan & Auty (2017) frame engagement at an individual scale, noting that it often refers to public participation. Hughes (2018) is more expansive than most, describing ‘Indigenous engagement’ as

a range of relationships with indigenous peoples. Engagement may apply to research activities, government decision making, economic activities, or any other interaction that will bring people into or affect an indigenous community. (Hughes, 2018, p. 15)

Given that “there are many different philosophies, purposes and processes of engagement, and the outcomes that are expected from engagement vary widely” (Martin, 2018, p. 123), the specificity of language and consideration of theory is important when attempting to infer relationships between engagement contexts, mechanisms, and outcomes.

General use of ‘engagement’ reduces the repetition of phrases such as participation, inclusion, and consultation, but uncritical and non-specific use of the phrase risks conflation and confusion around what engagement is, and when it happens. For example, McGregor (2018, p. 8) notes that in Canada's federal system, “Engagement often precedes formal consultation if the engagement reveals adverse impacts, not previously known, on the exercise of Aboriginal and treaty rights.” In that case, engagement is a very specific, exploratory activity focused on fact-finding, the results of which may trigger rights-based consultation. In other cases, engagement includes Aboriginal tenure and ownership of land, recognition of rights in legislation and of interests and values in water management, representation in water management institutions, and negotiated management agreements (Hunt, 2012). In Hill et al. (2012), a range of organizations, institutions, plans, agreements, programs, land use designations, and declarations are considered as examples of engagement.

Although engagement can refer to a single interaction, Indigenous engagement does not happen in isolation, often occurring in a series of interactions, and likely alongside others—whether contributing to the same or different goals (Wyatt et al., 2019). This produces a mosaic comprised of multiple “generic ‘engagement’ threads...[chosen] to suit contexts, places and purposes” and includes a broad range of “strategies, representational types, communication modes, mechanisms, and tools,” from which specific activities and interactions are selected “based on contemporary and historical social context” (J. L. Carter, 2010, p. 199). Which engagement mechanism is chosen—and its outcomes—are inherently contingent on context, and this makes the prescription or use of general engagement practices largely inappropriate (J. L. Carter & Hollinsworth, 2009). Navigating this mosaic can be challenging not only for Indigenous Peoples who often have limited time and resources to engage in all of them, but also for practitioners and government agencies who need to meet performance measures or legal obligations for engagement.

Identity also factors in engagement, as spaces for Indigenous representation may be limited to a single entity or individual from a community, though Indigenous customs may

follow different norms for representation. Knowledge, interests, and values are heterogeneous within Indigenous communities, and responsibilities are often divided along familial, linguistic, tribal, class, educational, or other lines (J. L. Carter, 2010). Communities may rely on both internal representatives (elected, appointed, or hereditary delegates, Elders and Knowledge Keepers) and external professionals or experts (negotiators, brokers, consultants, advocates, and allies). The issues surrounding representation are complex and specific to place, time, and process, with the potential to significantly influence engagement processes and outcomes.

2.4.2 Qualities of Engagement

In the articles reviewed, assessments of Indigenous engagement are qualitative, with six articles mentioning use of the International Association for Public Participation's (IAPP, n.d.) spectrum of engagement to assess the quality of Indigenous engagement. The spectrum spans the degree of impact that the engagement will have on the decision, ranging on the low end with engagements that inform the public, to those that consult, then to involvement and participation, increasing with collaboration, and ideally full control over decisions through empowerment. Building on the IAPP spectrum, but not specific to Indigenous peoples, Tan & Auty (2017) adopt the 'water sensitive citizen' framework to examine individual motivation in water related engagement. The framework proposes a spectrum of engagement, ranging from cognitively knowing or agreeing, to emotionally caring and valuing, to behavioral engagement where the citizen will act or participate. Tan & Auty also note that the mechanisms of, or approaches to, engagement chosen by government in response to the level of individual or community engagement will vary in terms of devolution and jurisdictional fragmentation. This perspective importantly reminds us that structures and geography are not the only barriers to deeper engagement.

Engagement is also described as good or meaningful: good engagement is the "full and meaningful participation of Indigenous Peoples in decision-making" (Black & McBean, 2017, p. 712). Different levels of 'meaningful'-ness are typically derived from surveys of participants in the planning process or research and management institutions. Mid-level engagement is shallow and often symbolic, involving engagement mechanisms with one-way flows of information, such as when government sets out to inform or educate the public, or when government solicits information through public consultations. These mechanisms typically do not address uneven power relations (Black & McBean, 2017). Deeper levels of engagement go beyond informing and consulting (Simms et al., 2016) to include dialogue (two-way flows of information) and the

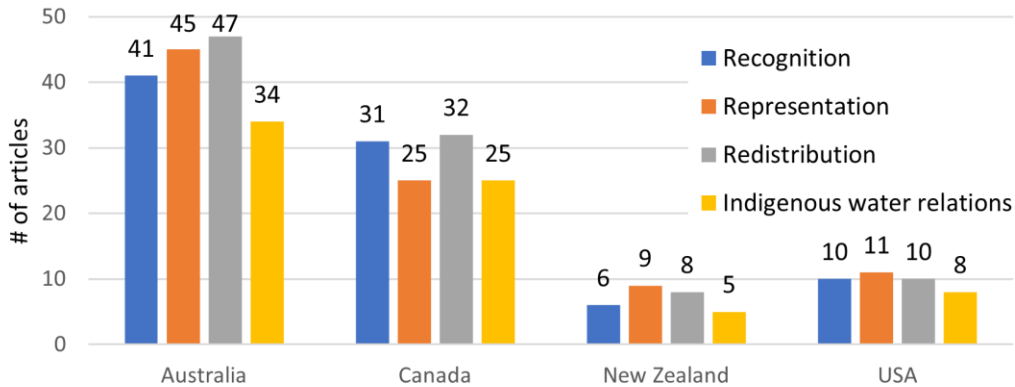
redistribution of power and resources (Stefanelli, Castleden, Cunsolo, et al., 2017). The ideal of meaningful Indigenous engagement is not only about procedural fairness or correctness: it requires a reciprocal relationship where action is taken “in response to the information learned from the relationship” (Hughes, 2018, p. 24).

An important consideration for assessing engagement is the method used. Whereas some researchers use participant surveys to assess engagement, Duncan et al. (2018) used content analysis of resource management plans. Their analysis describes three levels of engagement: absent, aspirational, and active. Absence of engagement was indicated by an absence of inclusion in plans, either from disengagement and self-exclusion by Indigenous Peoples, or their systemic or purposeful exclusion from planning by the state. Aspirational engagement was indicated by policy commitments or intentions to engage, but without evidence of participation in the plans. Active engagement is indicated by extensive evidence of inclusion and active participation.

2.5 Institutional Dimensions of Water Justice

The chart in Figure 2.2 below shows the number of articles with codes from each dimension of justice and codes from Indigenous water relations, grouped by nation-state. Of the total number of articles in the data set focusing on Australia, a high proportion touched on issues of Redistribution, Representation, and Recognition, and two-thirds mentioned Indigenous water relations. Canadian articles addressed the dimensions of justice less often than Australian, with lower relative proportions for Representation and Indigenous water relations. For New Zealand, all articles included Representation codes, nearly all had Redistribution, two-thirds had Recognition, and just less than two-thirds had Indigenous water relations codes. For the USA, coding was roughly the same across all dimensions of justice, with a slightly lower proportion mentioning Indigenous water relations. Tallies for New Zealand and the USA include articles that compare neighbouring nation-states (Australia and Canada, respectively; see Table 2.1) but are grouped this way according to their primary geographical emphasis.

Figure 2.2 Number of articles/chapters with codes for dimensions of justice and Indigenous water relations, grouped by nation-state



Below, examples from the literature are used to describe three levels each for Indigenous engagement, the three dimensions of justice, and for reconciliation outcomes; an additional outcome, conflict, is also discussed in the literature. Figure 2.3 provides a graphical representation of the potential relationships between engagement, justice, and outcomes. Each level may have within itself further gradation, and the relationships between level of engagement and outcome are not definitive nor linear: conflict in response to exclusion can trigger deeper engagement or further conflict and exclusion; aspirational engagements—emphasizing consistency with colonial water governance—may lead to conflict, resignation, or over time and with sufficient trust, a relationship. Meaningful and active engagements may still lead to conflict, though the people and processes are likely better equipped with the tools, experience, and understanding needed to successfully resolve conflicts and maintain deeper engagement. These nuances are discussed below.

Figure 2.3 Representation of relationship between levels of engagement, dimensions of justice, and outcomes as reconciliation or conflict

2.5.1 Recognition

Conceptually, recognition can be a way to incorporate “the political and epistemological views of indigenous peoples” (Young, 2016, p. 468) into resource management and planning. Legal and cultural norms would need to include those of Indigenous Peoples, with constitutional recognition of rights providing a mechanism for Indigenous Peoples to secure their rights (Hartwig et al., 2018). Hartwig et al., (2018, pp. 18–9) describe two levels of recognition: non-recognition and mis-recognition; for the third level of recognition, the discourse of reconciliation provides the ideal of mutual recognition (and respect) (Castleden, Hart, Cunsolo, et al., 2017; Cosens et al., 2018; Heard et al., 2017).

2.5.1.1 Non-recognition by intent or accident

Non-recognition occurs in “situations where Aboriginal peoples and their rights go unrecognized—perhaps unintentionally—as a result of institutionalized and bureaucratic systems” (Hartwig et al., 2018, pp. 18–9). The roots of non-recognition run deep, and are entwined with issues of representation: reciting the development of Treaty 9 in Canada, Indigenous scholar Daigle (2018, p. 164) notes how the seasonal timing of visits from commissioners during times of travel or harvest for Indigenous Peoples—and their privileging of male political leaders—not only “stifl[ed] communal dialogue” but also excluded “an entire segment of [female] political leaders,” subverting Indigenous modes of governance. This is of

particular significance for many Indigenous Peoples in Canada, as women are the keepers of water and responsible for its care (Latchmore et al., 2018).

2.5.1.2 Mis-recognition of values and rights

In water governance, mis-recognition occurs in two ways. First, as cultural essentialization, where some (cultural) values and uses are recognized in colonial water management, but not others such as commercial uses or water rights. Second, as systemic exclusion, where colonial water management recognizes Indigenous Peoples as stakeholders, but ignores any other claims to rights or inherent responsibilities (Hartwig et al., 2018). Cultural essentialization is evident when settler governments, unwilling to recognize Indigenous rights and title to water, will adopt ‘culture’ as a category of water use “because it accords with a preconception that Indigenous uses are pre-modern and therefore do not compete with so-called productive and highly water intensive uses” (Jackson, 2017, p. 23). As part of water governance and water management processes, (mis)recognition is necessary to make Indigenous knowledge, values, and rights consistent with existing state-based structures, institutions, and decision-making processes. In Australia, exclusion of Indigenous Peoples from water governance and markets means that settler values drive decision-making. Instead, environmental flows are established based on objectives that prioritize settler ecological values to the detriment of Indigenous values and objectives (Tan & Jackson, 2013). This represents the conflation of settler constructs of ecosystems and Indigenous culture with actual Aboriginal water needs, values, and interests (K. S. Taylor et al., 2016).

Systematic exclusion refers to an institutionalized form of mis-recognition, whereby Indigenous Peoples are recognized by governments as a stakeholder or citizen to be consulted in environmental decision making. Their claims to title or rights are typically denied, or partially recognized. For systemic exclusion, Indigenous knowledge can be documented through watershed planning, but documentation does not mean that Indigenous values or interests influence subsequent water allocation or conservation decisions (Cranney & Tan, 2011). Existing hydrological models may only incorporate aspects of Indigenous knowledge that fit within certain parameters (Escott et al., 2015), and are consistent with western approaches to research and decision-making (McLean et al., 2018). The intent to recognize Indigenous Peoples’ rights and include them in planning and management ends up being tokenistic in practice and effect:

“Indigenous People have little or no say over decisions affecting those processes that select water management objectives, and ultimately, over environmental quality” (Jackson, 2017, p. 19).

2.5.1.3 Mutual recognition and respect

Mutual recognition occurs at a level of engagement that is deep and meaningful (von der Porten & de Loë, 2014b), and involves the development by researchers, governments, and their employees of cross-cultural awareness of differences within and between Indigenous communities, and between Indigenous Peoples and settlers. Ecological contexts influence Indigenous interests, values, knowledge, worldviews, and beliefs; differences in prior experiences, agreements and rights, and contemporary socio-economic context can also influence the protocols of engagement set out by Indigenous communities and collectives for interactions with government and other organizations. For practitioners, researchers, and civil servants, mutual recognition and respect also involves self-reflection: a sensitivity to the diversity of values, interests, and experiences within and between Indigenous communities needs to be developed by individuals and incorporated into state-based and research processes (J. L. Carter & Hollinsworth, 2009; J. L. Carter, 2008, 2010). Those engaging with Indigenous Peoples are also called on to reflect on their relative position in power relations to recognize that colonial concepts of ‘water use’ are themselves cultural constructs (Jackson, 2017); to examine how colonial legislation and policy (re)produce inequitable outcomes; and to find ways to redistribute power and improve ecological or water-related outcomes relative to Indigenous values and objectives.

2.5.2 Representation

Degrees of representation range from exclusion to integration to collaboration. Exclusion results from the use of socially constructed boundaries to keep Indigenous communities and people from participating in, or contesting political or administrative decisions (Fraser, 2005). Integration is a form of ordinary-political representation, the type most associated with participatory democracy in a multicultural society. It can be further discerned as inclusion (weaker) or participation (stronger). Collaboration refers to the democratization of frame-setting, where the rules of governance and norms of engagement are deliberated and agreed upon, transforming existing power relations and structures. The full depth of representation—collaboration in water governance—is discussed less often than the integration of Indigenous

values, interests, and knowledge into settler colonial water governance through inclusion and participation in resource management and planning.

2.5.2.1 Exclusion from management and decision-making

Exclusion as misframing means Indigenous Peoples are not included in the institutions or processes of water management and governance; exclusion may be disengagement by Indigenous Peoples, or the absence of engagement initiated or sustained by the state. One factor implicated in many instances of both forms of exclusion is fragmentation. Jurisdictional fragmentation is a common cause of exclusion in Canada and Australia and is “far more troublesome for Aboriginal peoples” than other water rights holders because “Aboriginal and treaty rights cross jurisdictions” (McGregor, 2012, p. 6). Uncertainty around who and how to engage, and who needs to do it—common in fragmentation—increases the likelihood of Indigenous exclusion.

In Canada, the federal government is responsible for maintaining nation-to-nation relations with treaty Indigenous nations on behalf of the Crown, with whom historic treaties were negotiated. Provinces were granted responsibility for public lands and water resources within their borders, but not on reserve land; the federal government has a fiduciary relationship with and manages Aboriginal lands in trust. With responsibility for public land came responsibility for settlement and development, and so provinces surveyed and privatized public land. Whereas governments must consult with Indigenous Peoples about decisions that will affect their rights on public lands, Indigenous Peoples have “very little direct authority over land use decisions on private lands within...ceded territories” (Fox et al., 2017, p. 526). Notably, cession is contested by many Indigenous Peoples, who are also typically under-represented in decisions around land and water legislation and regulation. Self-exclusion from engagement is also evident in the data, sometimes to avoid potentially negative impacts on existing water rights or settlement claims (Collins et al., 2017), or from perceived lack of influence over decisions.

2.5.2.2 Integration through inclusion and participation

Integration refers to a mid-grade level of engagement, and can be further graded as inclusion or participation. Integration as inclusion is most shallow and aspirational: laws, policies, and institutions are amended to create space for Indigenous Peoples within existing resource management institutions or through additional consultation, but the actual involvement,

attendance, and meaningful participation of Indigenous Peoples in water management and planning is lacking. Allocating a seat on a panel or committee (inclusion) is not enough to ensure full and meaningful Indigenous representation in decision-making (participation). Without active participation, any recommendations in favour of Indigenous values and objectives are subject to the discretion of non-Indigenous decision-makers (Jackson et al., 2012). For example, in Queensland, Australia:

despite a formal architecture mandating the inclusion of indigenous values and interests in watershed planning, including in designated wild river areas, effective engagement and the extent to which indigenous customary and economic interests could be accounted for and implemented has been regarded as inadequate. (S. H. Shah & Rodina, 2018, p. 940)

Recognition of Indigenous claims to water rights, land title (Hartwig et al., 2018), or “ancestral and customary relationships with land and water” (Saenz Quitian & Amparo Rodriguez, 2016, p. 830) can lead to changes in legislation, policy, institutions, and processes. Yet Indigenous rights are often mis-recognized or only partially protected, or Indigenous Peoples recognized by state institutions only as members of the public, or as a cultural community—one of many stakeholder groups in competition with each other (Bakker et al., 2018; Carter & Hollinsworth, 2009).

2.5.2.3 Collaboration and nation-to-nation relationships

Collaboration is characterized by face-to-face interactions, inclusiveness, consensus and deliberation in decision-making, self-reflection, building of enduring relationships, and the pooling of resources (von der Porten & de Loë, 2014). Fraser’s democratic frame-setting occurs throughout collaborative water governance: negotiating water rights with the federal government as equals (Diver, 2018; Norman & Bakker, 2017), deliberating resource management policies and legislation with provinces or states as political entities “and not simply a cultural interest group” (Hemming et al., 2017, p. 2), or collaborating on research programs with academics as equal partners in all aspects of the project (Castleden, Hart, Harper, et al., 2017; Harmsworth et al., 2016; Stefanelli, Castleden, Harper, et al., 2017).

Collaboration generally is no panacea, with issues around implementation and power sharing standing out as pervasive and persistent barriers to effecting water management outcomes. Collaboration in water management is often constrained by unchanging institutions

and processes, which means they often “often fail to meaningfully include Indigenous values, forms of knowledge, and Indigenous approaches to governance and stewardship” (Moore, von der Porten, et al., 2017, p. 8). Most articles discussing collaboration focused on improving research and engagement practices in terms of equity, respect, diversity, and inclusion.

2.5.3 Redistribution

Redistribution can include “the granting of land and water rights, or social, political or material entitlements,” typically as part of settlements flowing from the recognition of Indigenous rights (Hartwig et al., 2018, p. 4, citing Balaton–Chrimes and Stead 2017). Codes for Redistribution involve the (re)allocation of human, financial, or material resources, and the socio-ecological impacts of water and resource management. Redistribution of human resources refers to the allocation of people and work time for Indigenous engagement in planning, research, and management. Financial resources include funding to build capacity (whether Indigenous or government, individual or organizational); to participate in planning processes; and entitlements or funding to participate in the water economy. Material resources include land (title or tenure), access to environmental water, and infrastructure for drinking water and wastewater services. Redistribution of power includes rights to access decision-making and influence land and water management, and to participate in the development of legislation and regulations.

2.5.3.1 Maldistribution of water and impacts

Maldistribution includes uneven and insufficient distributions of water, or negative and inequitable ecological and health outcomes from environmental change (Jackson & Barber, 2013; Moore, Shaw, et al., 2017). Both outcomes are linked to the non-recognition of Indigenous rights or the exclusion of Indigenous Peoples from water and resource management (Moore, Porten, et al., 2017). Indigenous spiritual connections to water and water places may be negatively impacted by insufficient flows, or traditional Indigenous ‘cultural uses’ may no longer be possible (Jackson & Barber, 2013). For example, “Indigenous water entitlements represent a minimum percentage of Australian water diversions, particularly in South Eastern Australia where water resources are overallocated” (Saenz Quitian & Amparo Rodriguez, 2016, p. 830). Maldistribution indicates an absence of engagement, non-recognition of Indigenous values, rights, and interests, and exclusion of Indigenous representation in management and decision-making. Resources internal to the administration of water management and research may also be

maldistributed: decisions on how time, funding, people, and power will be distributed in water governance are often made unilaterally, impeding deep and meaningful engagement (Castleden, Hart, Cunsolo, et al., 2017; Jackson & Douglas, 2015).

2.5.3.2 Competition with other stakeholders

Competitive redistribution involves the incorporation of Indigenous Peoples and their interests into existing allocative and regulatory systems (Avila-Garcia, 2014) using market-based mechanisms for (re)allocation, or stakeholder-based participatory mechanisms. In terms of (re)allocation, entrenched and powerful stakeholders may resist sharing water, and will prioritize existing distributions at the expense of Indigenous People's water requirements and rights (Berry et al., 2018). In terms of inclusion of Indigenous environmental values in water management, water conservation decisions often target species based on settler ecological values, at the expense of species valued by Indigenous Peoples for subsistence and cultural reasons (Duncan et al., 2018). Additional competition arises during budgeting processes. Funding to build Indigenous capacity, enable participation in water management, gain access to water, and participate in water markets are often competitive within government budgets, and between Indigenous funding applicants (Black & McBean, 2017; Escott et al., 2015; Hemming et al., 2017; K.S. Taylor et al., 2016; Woodward & Marrfurra McTaggart, 2016).

In Canada, competition or conflict between Indigenous and settler/state interests were historically resolved by treaty, or later by government relocating and dispossessing Indigenous Peoples of their lands and waters. Now it is resolved by extinguishing or infringing on Indigenous rights with or without an adequate consultation or compensation (Bischoff-Mattson et al., 2018; Hanrahan & Dosu Jnr, 2017; Holmes, 2012; Kanwar et al., 2016; Norman & Bakker, 2017).

2.5.3.3 Equitable redistribution of water and environmental impacts

Equitable redistribution is most likely to occur with meaningful and active engagement in a collaborative effort, and includes not only positive environmental outcomes, access to land, and water allocation (Jackson, 2018; McGregor, 2018), but also redistribution of financial and human resources to build Indigenous capacity (Hemming et al., 2017). Redistribution of land through Native Title claims has become a primary driver of—and framework for—Indigenous engagement, even in contexts where Aboriginal title is not likely to be allocated (J. L. Carter &

Hollinsworth, 2009; Hartwig et al., 2018). But title settlements are fraught with delays, restrictions, conflict, competition, and other barriers to timely and satisfactory resolution (Tan & Jackson, 2013). Financial restitution through a settlement may support water (re)allocation through purchasing rights, but mutually acceptable water sharing and monetary settlements are often difficult to achieve (Bischoff-Mattson et al., 2018; Kanwar et al., 2016; Memon & Kirk, 2012; Tsatsaros et al., 2018). Allocating funds and resources towards Indigenous objectives in water management are also examples of redistribution, often occurring through environmental conservation and restoration activities (Cosens & Fremier, 2018; Cosens et al., 2018; Holmes, 2012; Matsui, 2012).

2.6 Indigenous Water Relations

Analytically, the (water) justice model offers a normative framework to assess water governance, research, policy, and legislation. But Indigenous engagement in water governance also occurs outside of Indigenous-state or Indigenous-researcher relations. Indigenous Peoples are associating, assembling, and federating with other Indigenous nations (Bradford et al., 2017; Cosens et al., 2018; Holmes, 2012; Jackson, 2017), building their capacity and networks through community-based or regional water planning and education. Indigenous Peoples are affirming their rights to self-determination through water declarations, which establish expectations around engagement when it comes to water, articulate engagement protocols, assert Indigenous jurisdiction and authority over traditional territory, and state the responsibilities and values that the signatories hold for water. Declarations have been made in Australia [*Echuca; Fitzroy; Mary River; Ngarrindjeri* (Hemming et al., 2017; Jackson, 2018; K. S. Taylor et al., 2016)]; Canada [*Anishinabek, Mushkegowuk, and Onkwehonwe; Simpcw / Shuswap; Yinka Dene* (Arsenault et al., 2018; Collins et al., 2017; McGregor, 2012, 2014)]; North American [*Salish* (Norman, 2012)]; and internationally [*Garma* (Jackson & Palmer, 2012); *Kyoto, Tlatokan Atlahuak* (Berry et al., 2018; Jackson, 2018; McGregor, 2012; von der Porten & de Loë, 2014a)].

Some Indigenous water relations are easier to integrate or accommodate in colonial water governance and management than others. Indigenous water governance and water law, including the responsibility of speaking for country, may not be easily reconciled with settler water governance frameworks and claims of sole state jurisdiction (S. H. Shah & Rodina, 2018). For example, governments may only recognize an Indigenous person's responsibility to speak for their territory if they hold Aboriginal title, but then set out an arduous process to obtain title,

effectively ensuring that governments retain control over water and land use decisions (J. L. Carter & Hollinsworth, 2009; Dobbs et al., 2016).

Indigenous water governance may be more fluid, nuanced, or gendered than generic liberal-democratic water ethics can accommodate, complicating reconciliation between the two and the achievement of higher levels of engagement (Latchmore et al., 2018) and water justice. For example, Indigenous water laws—developed and adapted over long periods of ‘living with country’—establish normative relations between humans and their environments that include inherent responsibilities to both ‘care for country’ and ‘speak for country’, responsibilities that are still widely undocumented and unrecognized in colonial water planning and management (Macpherson & Ospina, 2017; R. J. Martin & Trigger, 2015; Moore, von der Porten, et al., 2017; Sam & Armstrong, 2013). The ways in which Indigenous relationships are recognized in governance and put into practice in water management varies by context, and some regions have received more attention than others (Castleden, Hart, Cunsolo, et al., 2017, p. 15).

Discussions about legal pluralism and mutual recognition of Indigenous water laws are scarce in the articles reviewed (but see Macpherson & Ospina, 2017; S. H. Shah & Rodina, 2018; Simms et al., 2016), showing that there is a significant gap in documentation of Indigenous water laws (Latchmore et al., 2018), and thus we can infer an overall lack of collaborative development of new water norms and laws overall. Fulfilling inherent responsibilities of caring for country often involves attempts to stop resource development and extraction, and brings Indigenous People into direct, inter-personal conflict with regulatory enforcers (Matsui, 2012), or systemic conflict through injunctions, interventions (Daigle, 2018; Tan & Jackson, 2013), litigation (Bakker et al., 2018; Simms et al., 2016), or social protest and physical occupation (Berry et al., 2018; Wyatt et al., 2019). Incorporating Indigenous values and interests into water management can avoid or resolve some of these conflicts (Saenz Quitian & Amparo Rodriguez, 2016), but short of mutual recognition and collaboration, such redistribution does not fully address the breadth and depth of many Indigenous water relations.

Caring for country (and water) includes living with and speaking for country (Hunt, 2012). Traditional and contemporary Indigenous land use practices occur on Indigenous land and across their traditional territory. Akin to stewardship, caring for country involves activities such as environmental protection (McLean et al., 2018), conservation, restoration (Kanwar et al., 2016; Makey & Awatere, 2018), and maintaining social and spiritual relations (Jackson et al.,

2015). In contemporary contexts, caring for country may necessitate engagement in water management for commercial purposes (Tsatsaros et al., 2018). When consistent with existing colonial approaches, some of these practices are readily recognized and institutionalized in water and land management through new or modified land use designations and conservation categories (Duncan et al., 2018; Hill et al., 2012; Hughes, 2018; McGaurr et al., 2016). Subsistence-based rights are often recognized to support living on country, but retaining state control over water management constrains the practice of other Indigenous water relations. For example, environmental or cultural flows may be used to incorporate Indigenous objectives into conservation-based management and these flows may help support ecosystem goods and services for Indigenous People living on country (Cranney & Tan, 2011). However, cultural flows may not be an adequate mechanism for other Indigenous Peoples, or to facilitate other Indigenous water relations (Bischoff-Mattson et al., 2018; C. J. Robinson et al., 2014; K.S. Taylor et al., 2016).

2.7 Conclusion

Cycles of engagement and disengagement are driven by social and political forces (Ermine, 2007). A growing awareness of Indigenous People's rights and relationships, academic interest in their knowledge, and validation of their experiences and claims through reconciliation and litigation have increased societal support for Indigenous causes. International mechanisms such as UNDRIP and principles such as free, prior, and informed consent are also highly influential, gradually becoming norms and not just aspirations. Yet political support for Indigenous engagement fluctuates, competing for attention with other regional or national issues, water-related or not. Public and political support for rights-based recognition, representation, and redistribution are also subject to global economic forces. Projected or actual economic downturns may hamper transformation of colonial structures, processes, and institutions in water governance, as governments try to reduce economic disruption by maintaining the status quo, at the expense of Indigenous rights. Reconciliation outcomes are also sensitive to political ideology, especially when it comes to legislating, regulating, allocating, and funding the implementation of mechanisms to respect Indigenous water rights.

Colonial governments are mostly willing to 'tolerate' some degree of Indigenous difference (Jackson, 2018)—for example by making slight changes in existing legislation or policy to facilitate the integration of Indigenous knowledges and interests into established

resource management institutions. This partial implementation of Indigenous rights—through minor changes—ultimately maintains the status quo for distributions of power, water, and environmental impacts. The complex and highly technical nature of resource management, bureaucratic administration, and burdensome and competitive processes for settling rights and title claims work to functionally exclude many Indigenous Peoples from water governance. A lack of guidance or criteria for planners and managers to assess their practices of Indigenous engagement, and a chronic lack of resources also effectively exclude Indigenous Peoples from representation and limit equitable redistribution.

As mechanisms of engagement, stakeholder-based integration and rights-based consultation can achieve only partial recognition, constrain collaboration, and prioritize accommodation or mitigation rather than redistribution. Consultation gives Indigenous communities and peoples an additional opportunity to provide information to government regarding development, but consultation redistributes resources in a competitive manner: accommodations are required ‘where appropriate’, but overall will be based on a ‘balance of convenience’ against other interests (Pasternak & Dafnos, 2017). That Indigenous Peoples are afforded additional consultation makes them more than stakeholders, but still less than nation-to-nation partners: they are ‘stakeholders plus’ (c.f. ‘citizens plus’, Cairns, 2000). An improvement over disengagement, the ‘stakeholders plus’ approach is meant to provide Indigenous Peoples the same consideration as Canadian citizens (or provincial residents) in resource management, while also affording them additional consultation on account of their Aboriginal and Treaty rights. In this way, Canadian resource management tolerates some (easily reconciled) differences, but will likely fail to attain long-term reconciliation as a relationship.

A key factor in moving from lower levels of Indigenous engagement to deep or meaningful engagement is to incorporate Indigenous legal concepts and mechanisms in a *sui generis* approach to water law and regulation. Legal pluralism is foundational for the uptake of Indigenous laws, but current approaches to representation in governance (as stakeholders plus) aim to fit Indigenous water relations into existing or slightly modified colonial legal descriptions of ‘appropriate water use’, considering them as part of ‘other’ or essentialized ‘cultural’ purposes. If appropriately structured and resourced, collaborative water governance offers Indigenous Peoples an opportunity to influence societal relations to water that are framed by

mutual recognition in law, and in that way can provide a path towards reconciliation of the relationship between Indigenous Peoples and settlers.

2.7.1 Future research and analysis

Specific to Canadian researchers is a need to direct more attention to the dimensions of representation (participation) and distribution (as environmental risks/benefits) in discussions of Indigenous engagement in water governance. While many articles called for, or referred to, the recognition of rights or cultural difference, authors often failed to include direction on which structures, institutions, and policies would need to be modified to achieve representation or redistribution. Given their inter-related nature, researchers must be aware not only of recognition, but also representation, redistribution, socio-ecological integrity, and the contingency of engagement mechanisms to achieve each adequate degrees of those dimensions of justice.

The lack of consistency in the use and definition of ‘engagement’ and its qualifiers reveals a need for researchers to be specific and careful in their use of terms and metrics. If the evaluation of engagement is to include outcomes, then an appropriate metric must be identified. Whether the IAPP spectrum of engagement or another descriptive framework, there is a need for ways to reliably measure or assess the quality of engagement mechanisms and practices, and potentially their outcomes. While the IAPP spectrum offers principles to assess participatory and collaborative processes, we might expect to find opportunity for Indigenous principles to also be integrated into such metrics (LaBoucane-Benson et al., 2012; K. S. Taylor et al., 2019).

Authors use the term ‘mechanism’ to describe a range of phenomena, but never articulate how that mechanism is envisioned to work or how it relates to or is different from other mechanisms (Avila-Garcia, 2014; Bark et al., 2012; Bischoff-Mattson et al., 2018; Bradford et al., 2017). There would be benefit in adopting a framework, such as in Hill et al. (2012), Fortier et al. (2013), or Wyatt et al., (2019) to classify these mechanisms and examine not only their institutional similarities and differences, but also their underlying concepts and assumptions. To do so would better equip analysts to determine whether mechanisms of engagement work (or not), for whom, and to what degree. Future work should focus on clearly conceptualizing the relationship between mechanisms of engagement, socio-ecological context, and substantive outcomes.

The use of “water governance” as a key search term to identify articles limits the dataset. While additional terms were used to identify synonyms for ‘engagement’, a similar attempt was not made for ‘governance’. The inclusion of alternative terms for governance could introduce key critical pieces and perspectives to the review, but for the purposes of the research question, and in consideration of my capacity as the sole analyst, the dataset was constrained to include only articles with ‘water governance’ in the title, content, or keywords.

This review included only peer-reviewed academic articles. There are many government, non-government, Indigenous, and industry sources that publish guidelines, reviews, and evaluations of engagement but not all are represented in academic literature. Further research should identify mechanisms of engagement in documents and frameworks developed by industry, government, and non-government to compare with those identified here and by others (Jackson, 2018). This review would also provide an opportunity to compare definitions and characterizations of engagement adopted by different groups, and further refine our broader understanding of Indigenous engagement in water governance.

Finally, while this review provides a broad survey of water governance to establish a relationship between Indigenous engagement mechanisms and their outcomes, it does not describe how or examine why the use of specific engagement mechanisms vary in their outcomes within national or regional water governance frameworks. Examples of such an approach to research can be seen in Baijius & Patrick (2019b) or McLeod et al. (2015), but there are still many mechanisms and regions that remain only partially described or assessed.

3 MEASURING INDIGENOUS ENGAGEMENT IN WATERSHED PLANNING

Preface

Whether institutional, individual, or spiritual, a multitude of mechanisms exist for Indigenous Peoples to engage or be engaged in water governance. Water governance that excludes Indigenous Peoples has arguably contributed to the many water and environmental crises facing Indigenous communities today. Some resource management policies, processes, and practices have incorporated Indigenous knowledge into management plans, and Indigenous values into water management objectives, but documentation of Indigenous knowledge does not always change water-related outcomes of resource management. Nor are these mechanisms of engagement universally applicable or effective to the same degree. To determine why one type or set of engagement mechanism(s) in water governance will produce certain outcomes but not others, I examine provincial watershed planning under Manitoba's contemporary water management and governance frameworks, using Indigenous-related content in watershed plans as evidence of Indigenous engagement in water governance. I count the frequency and describe the type of engagement represented in the watershed plans, and check for a potential statistical relationship between textual evidence of engagement and a suite of geospatial variables. This chapter is guided by the questions:

- How have practices of Indigenous engagement in provincial water governance in Manitoba varied?
- What type of relationship (if any) exists between Indigenous engagement and land use designation, Aboriginal tenure, and surface water extent?

This chapter demonstrates that:

- Evidence of Indigenous engagement in watershed planning varies significantly by watershed, but has increased over time;

- There is no observable relationship between evidence of high levels of engagement in watershed plans and land use designation, Aboriginal tenure, or surface water extent in a watershed;
- As with many other places and communities, Indigenous engagement in watershed planning in Manitoba is subject to both Indigenous community capacity and systemic constraints.

Overall, this chapter continues the analysis of Indigenous engagement in water governance, narrowing to a regional focus. The results in this chapter echo findings in Chapter 2, highlighting the contingent nature of engagement mechanisms and variability in their ability to produce just outcomes. Although the Manitoba government recognizes Aboriginal and Treaty rights in water policy, and has amended its legislation to better integrate Indigenous knowledge and values, the implementation of this policy emphasizes procedural justice (fairness and equality), there is no explicit direction to pursue redistributive justice by supporting Indigenous capacity building as a precursor to collaborative management agreements. Methodologically, this chapter blends qualitative and quantitative methods and data to provide a nuanced analysis of the influence that potential factors such as rights, tenure, and water have on the relationship between context, mechanisms, and outcomes.

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For the publication, as with this Chapter, I designed and conducted the literature review, and wrote the manuscript. Robert Patrick and Chris Furgal supervised the study, and provided critical and constructive feedback on the manuscript content and structure.

Abstract

Increasingly, water and ecosystems in the prairie region of Canada face pressure from development, agriculture, and climate change. To avert water crises for Indigenous communities, jurisdictional and organizational fragmentation in water governance must be mitigated, and ecosystems protected in a way that recognizes and respects Indigenous water rights are

recognized and respected. Indigenous engagement in water governance includes Indigenous participation in watershed planning. This research focuses on watershed planning in Manitoba, Canada to assess the extent and depth of Indigenous engagement in local water governance. Integrated watershed plans, published between 2009 to 2018, were analyzed thematically and the results were tested for statistical correlation with geospatial features. Emergent themes of participation, Aboriginal lands, Indigenous knowledge and experiences, rights, and Indigenous inclusion in implementation were unevenly distributed across plans. No strong relationships were found between thematic and spatial variables of surface water extent, protected land use designations, or Aboriginal tenure. Indigenous engagement in Manitoba watershed planning is increasing over time, but Manitoba's water governance regime is still lacking adequate recognition and implementation of Aboriginal and Treaty rights.

3.1 Introduction

Water resources and the ecosystems they support are at risk in the Canadian prairies, indicating a failure of water governance. Stressors include current and future climate change (Ermine et al., 2006; Wheeler & Gober, 2013), altered flow regimes from hydroelectric development, and extraction for irrigation or industry (Quinn, 1991; Waldram, 1988). Land cover change, whether forestry or agricultural, and wetland drainage (Bower, 2011) can combine with climate change and cumulatively produce changes to the environment felt most acutely by those who are not represented in decisions, or whose rights are not recognized or respected, in the context of environmental decision-making (Bakker et al., 2018; Mascarenhas, 2007; McGregor, 2018).

By way of altering waterways and ecosystems, provincial water management has and continues to have landscape-scale impacts that affect constitutionally protected Aboriginal and Treaty rights, but recognition of Indigenous rights and integration of Indigenous knowledge and values into water governance processes and institutions is nascent. State-based approaches to Indigenous Peoples and their rights vary across provinces and territories, but some approaches to Indigenous engagement in water governance have shown to be more effective than others (P. Wilson, 2013). Key contextual factors in engagement include historic and contemporary treaties, settlements, agreements, and recognition of rights (McLeod et al., 2015), especially in circumstances where resource development within Indigenous traditional territories is contested due to unsettled claims or non-recognition of Indigenous rights. Frustration over unresolved claims can lead to direct action, potentially disrupting local, regional, and national economies

(Bland, 2013) by halting the flow of material goods (Pasternak & Dafnos, 2017). Such direct action could be constructive by triggering dialogue towards reconciliation, but it may also create or aggravate existing divisions between Indigenous communities and non-Indigenous People (Manuel et al., 2017).

Fragmentation also plays a critical role in whether engagement is meaningful or effective. As noted by Bakker & Cook (2011, p. 277), Canada's "highly decentralized federation has important implications for environmental governance...[and] water is no exception." The division of powers under the Constitution retains "fisheries, navigation, federal lands and international waters" under federal control, with "water resources and water supply" described as a provincial responsibility. Within provinces, and even federally, water governance is then further fragmented between sectors and jurisdictions. Decentralization and devolution of responsibility for water resources management to provinces enables contextual approaches to, and innovation in, dealing with geographic and social contexts in water management. However, a lack of consistency can reduce the overall effectiveness of water governance in Canada (de Loë, 2008), while most Indigenous communities in Canada continue to wait for recognition of their inherent water rights (Phare, 2009b).

This chapter describes how practices of Indigenous engagement vary in a provincial context by focusing on water governance in Manitoba, Canada, and asks what type of relationship (if any) exists between Indigenous engagement and land use designation, Aboriginal tenure, and surface water extent. I have chosen geospatial features such as surface water and land use designations that are likely to implicate Aboriginal and Treaty rights, or some other form of engagement whether specific to Indigenous Peoples or not, through a planning or designation process. As a refresher, water governance "[consists] of the processes and institutions by which decisions that affect water are made" (Lautze et al., 2011, p. 7); watershed planning is a mechanism of water governance; and Indigenous participation in watershed planning processes an example of Indigenous engagement—engagement of Indigenous Peoples by government, and engagement with government institutions and processes by Indigenous Peoples. Textual representation in watershed plans—searching for keywords, concepts, and content in plan documents—is considered here as an outcome of Indigenous participation in watershed planning, and as evidence of their engagement in Manitoba water governance. My use of tenure to explore relationships between engagement and land use designations such as reserve land, I also

acknowledge that Indigenous interests extend beyond reserve boundaries and into their traditional territories, and that their relationships with those territories exceed the partial description of land embedded in dominant forms of cartography and land use management (Nadasdy, 2002; Natcher, 2001; Olson et al., 2016; Usher et al., 1992).

3.2 Indigenous Engagement and Canadian Resource Management

The engagement and disengagement of Indigenous-settler relations, at collective and individual levels, is influenced by general and contingent processes such as colonization, globalization, and Indigenous resistance (Ermine, 2007). Colonization and associated inequalities in power, well-being, water security, and well-being (Basdeo & Bharadwaj, 2013; Bradford et al., 2017; Patrick, 2011) are reproduced through institutions and norms that privilege certain (western/scientific) types of knowledge and prioritize settler values, interests, and rights. Settler colonization is a “complex social formation...[with] continuity over time” and is “a structure rather than an event” (Wolfe, 2006, pp. 388–90) means that attention must be paid to how it is produced and reproduced over time through legal, political, and social norms.

While globalization and technological advances have arguably accelerated and amplified the negative effects of colonization on Indigenous Peoples, supra-national organizations that guide and manage global relations between nation-states have produced declarations and binding conventions that recognize Indigenous rights and responsibilities, and which are recognized by most nations around the world. However, as with the UN Declaration on the Rights of Indigenous Peoples, not all those agreements are binding on signatory states, and even with international recognition, Indigenous rights and responsibilities are unevenly recognized, respected, or implemented by settler colonial governments according to their ideology, the economy, and national or regional social sentiment (Bland, 2013; Coates & Favel, 2016; Favel & Coates, 2016). For Indigenous Peoples and settlers alike, these (and other) processes influence Indigenous-settler relations, especially in resource management.

Although the laws and institutions of prairie water management vary by province (Shrubsole et al., 2017), they all adopt an ‘integrated’ approach. As part of that approach, water managers and planners seek public participation and engagement—a principle of both effective and good water governance and integrated water resources management (Mitchell, 2005; OECD, 2015ab; Rogers & Hall, 2003). Across Canada, provinces and territories create and empower institutions with the authority to conduct and implement watershed or water resources planning.

In doing so, government may require them to consult residents and industry stakeholders or encourage them to recruit residents as volunteers on planning and management committees. Elected officials from municipalities may also be included in planning, as additional representation for ‘public’ interests and values (Hurlbert et al., 2015). But can this type of stakeholder engagement, and can existing institutions of water management, account for and accommodate Aboriginal and Treaty rights?

Legislation, policy, and practices of water governance, management, and planning in the prairie provinces typically classifies Indigenous Peoples as Canadian citizens, placing their interests on equal footing as other residents under the assumption that equal access to an integrated resource management process is sufficient to meet Indigenous, social, or regulatory expectations of inclusion and participation (Baijius & Patrick, 2019b; Bakker & Cook, 2011).⁴ This assumption creates tension in Indigenous-settler relations, and sometimes these tensions grow into conflict (Bland, 2013; Castro & Nielsen, 2001; Coombes et al., 2012; Coulthard, 2014; Land, 2014; Maclean et al., 2015; Wyatt et al., 2019). While governments attempt to integrate Aboriginal knowledge, interests, and values into resource management and planning through well-established mechanisms of public engagement and participatory decision-making (Lucas, 1976), Indigenous Peoples are seeking the kinds of nation-to-nation relationships needed for water co-governance (von der Porten et al., 2015; P. Wilson, 2013). Further tensions arise when governments and industry fail to meet Indigenous demands—and international expectations and obligations—for the free, prior, and informed consent of affected Indigenous communities; Indigenous Peoples also seek meaningful representation in the development of resource policy and legislation—engagement in governance—to give effect to their inherent rights and responsibilities (Getches, 2010; Moore et al., 2016; Papillon & Rodon, 2017).

⁴ For example, Alberta’s *Water Act* (2000) and *Environmental Protection and Enhancement Act* (2000) make no mention of Aboriginal peoples or rights; the *Land Stewardship Act* (2009) includes Aboriginal peoples as residents of Alberta, and allows (but does not require) their appointment to regional advisory councils; the *Public Lands Act* (2000) mentions Aboriginal rights once in a non-extinguishment clause. In Saskatchewan, the *Water Security Agency Act* (2005) refers to settlement agreements, partnerships and “management, administration, development, conservation, protection and control agreements” with Indian Bands, for vesting exclusive property rights in water, and recognizing common law riparian rights in settlement lands. In Manitoba, the *Water Protection Act* (CCSM c. W65) specifies that First Nations with land in a watershed must be consulted, alongside district boards, planning authorities, municipalities, and “any other person or entity specified by the minister”; public engagement with residents is to occur through “one or more” public meetings (17(1-2)).

Given the mix of normative expectations, rights, legal responsibilities and obligations, how can we tell if current laws, policies, and practices of water governance are meeting contemporary expectations around Indigenous engagement? How does engagement happen now, and what role does context play in how it varies? One way to answer these questions is by examining resource management plans, policies, and legislation to identify and describe Indigenous-related content in the documents that structure engagements between Indigenous Peoples and the state (Barry & Porter, 2011; Libby Porter & Barry, 2015). Contemporary resource management plans are of particular interest due to their narrative aspects (Connell & Daoust-Filiatrault, 2018; Norton, 2008): in a way, each tells a story of Indigenous (dis)engagement.

Watershed plans are produced within a specific legislative and policy framework, and are developed, informed, and influenced by the people—members of the public, organizational representatives, or government employees—who facilitate, document, participate in, or are otherwise involved with the planning process. When multiple watershed plans are produced with the same planning process (and/or are written and designed by the same person, and/or based on previous plans as templates), they may share or have similar structure, content, and policies. Shared and variable characteristics makes watershed plans amenable to comparison to determine how plan content relates to planning context (Eagles et al., 2014; Wyatt et al., 2011). Categories of management, such as water quality, quantity, ecosystems, and fisheries are determined during the development of policy and legislation, prior to planning, , and are often required components of a watershed plan. By framing the practice of watershed planning as a translation of provincial water policy into action through water management, we can examine plan documents for evidence of Indigenous participation in provincial watershed planning to characterize the nature of their engagement in provincial water management.

Using watershed plan document as the object of analysis, and applying content analysis as the method to examine them, this study parallels the field of plan quality evaluation. Plan quality evaluation involves the “systematic acquisition and assessment of information “from plans, for the purpose of “provid[ing] useful feedback about the significance, worth, or condition of...plans, the planning process, planning outputs, or outcomes” (Connell & Daoust-Filiatrault, 2018, p. 265), and so too does this research seek to provide feedback on Indigenous engagement in water governance through a systematic analysis of watershed plans. While this study is not an

evaluation of the quality of watershed plans themselves, insights from the field of plan quality inform the identification and measurement of variation in the evidence of engagement. Before detailing the methods used in the study, I briefly discuss Manitoba's water management policies and institutions.

3.2.1 Tenure, Title, and Rights

In Canada, reserve lands were set aside for First Nations during treaty negotiations. These lands were and many are still held in trust and managed by the federal government. However, reserve land is not the same as land under Aboriginal title. In Canada, Aboriginal title exists unless it has been explicitly extinguished by government or ceded by First Nations. The distribution of Aboriginal tenure is uneven across both Australia and Canada (J. L. Carter, 2010; Duncan et al., 2018), with spatial variation in engagement a result. In Australia, tenure is “a critical factor to participation that remains largely unaddressed in Indigenous” community-based environmental management literature (J. L. Carter, 2010, p. 201) though not all Indigenous Peoples in Australia have extensive land tenure or settled land claims. Strategic engagement through tenure-based processes is often site-specific and notably different in process and outcome from the more general ‘country’-based engagement processes addressing broader territorial interests (Hunt, 2012). A similar situation exists in Canada, where some Indigenous Peoples have extensive reserve land tenure, others with minimal or none, and in some cases, extensive Aboriginal title (not just reserve tenure on Crown title land) is recognized—allowing for a range of different engagement mechanisms than available in the context of the numbered treaties.⁵

3.2.2 Manitoba's Planning Context

In a review of prairie water governance institutions, Manitoba's water governance is described as a mix of “centralized and decentralized management,” with Water Planning Authorities (WPAs) empowered to develop and implement watershed plans (Hurlbert et al., 2015). Watershed planning in Manitoba follows a ten-year cycle, with the first year or two for pre-planning, gathering information, conducting engagements, and drafting the plan. The draft is then reviewed, possibly with additional public engagement; ministerial approval is required for endorsement prior to implementation. Conservation districts (now watershed districts) implement

⁵ For numbered treaty First Nations, the 1935 Natural Resources Transfer Act is held up by provincial governments as proof that the provincial government is empowered to make decisions around resources without taking extra steps to include Indigenous Peoples when developing resource policy and legislation.

the plan during the rest of the cycle, after which planning starts again (see Figure 3.1 for a graphical depiction). Plans and their local water policies are intended to influence individuals and decision-makers at local and regional levels. For example, new or amended municipal zoning bylaws and development plans “require consideration of an approved watershed plan” (Unger, 2009, p. 14). Although municipal entities must consider the plans, they are not regulatory documents and because of this, most actions and recommendations in watershed plans are oriented towards coordination, education, and voluntary implementation.

Figure 3.1 Graphical depiction of Manitoba’s integrated water management planning process



Note: Retrieved from https://www.gov.mb.ca/sd/pubs/water/iwmp_handout.pdf

The WPAs receive support and funding from Manitoba Sustainable Development, giving the WPAs access to technical expertise in water, environment, and planning. To conduct public engagement and plan development, the WPA is supported by a ‘project management team’ with five to eight people that coordinate the actual planning process. Public consultations are complemented by more frequent stakeholder meetings involving local residents, representatives, and technical contributors—the ‘watershed team’—throughout plan development. Conservation districts, defined as “a group of neighboring rural municipalities (RMs) working in partnership

with the Province of Manitoba to develop programs to effectively manage the natural resources of their area” (Hurlbert et al., 2015, p. 91), are typically designated as the WPAs, though legislation does allow for other organizations or institutions to function as the planning authority.

Recent water policies in Manitoba focused on water quality, conservation, use and allocation, water supply, flooding, drainage, and education (Government of Manitoba [GM], 2000a). Bulk water removal was banned in 2000, and comprehensive drinking water regulation introduced with *The Drinking Water Safety Act* (GM, 2002). In 2003, the government released the Manitoba Water Strategy (GM, 2003), stating that policies from the 2000 strategy were to be implemented by developing an integrated planning and management system, updating water legislation, and funding both planning and water management implementation. In 2014, the Government of Manitoba released its Surface Water Management Strategy, which describes “three pillars of action” for sustainable water management: first, “improving and protecting water quality”; second, “preparing for extreme events”, and third, “co-ordination and awareness” (GM, 2014b, p. 6). The ways in which these policies relate to Indigenous Peoples is discussed next.

3.2.2.1 Indigenous Recognition and Rights

In 2003, strategic policy placed water management within a broad frame of reconciliation, emphasizing Indigenous-state relations in terms of “mutual recognition, respect, resource sharing and responsibility” (GM, 2003, p. 7). The 2003 strategy states that constitutionally protected rights are to be “defined and respected” through planning for water use and allocation (p. 13), but does not explain how this is to happen. Indigenous engagement was to occur through additional public consultations or by individual and group interviews—an ‘accommodation’ for Indigenous communities, yet still based on a model of public engagement, and conducted by institutions that may not be legally empowered to define, recognize, or accommodate Aboriginal and treaty rights (Promislow, 2013; Sossin, 2010).

Compared with previous policy directives, the 2014 strategy emphasizes the integration of “local priorities, issues, and solutions [into plans] within a municipal and provincial perspective” (p. 21), efforts to build capacity and improve or enhance participation; and the recognition of and respect for Aboriginal and treaty rights. By adopting language around rights and participation, the strategy presents a narrative around inclusion and Indigenous-Crown relations, but does not articulate how it will evaluate efficacy and outcomes of watershed

planning with respect to rights and participation. The strategy is sometimes at odds with itself for seeking better relationships, but still choosing to constrain engagement to management-level discussions: First Nations are repeatedly listed alongside other stakeholder groups, such as governments, producer groups, and conservation interests. The significant value that wetland ecosystems have for “First Nations and Metis traditional ways of life” (p. 11) is also recognized in the Strategy, and wetland protection is established as a policy goal but without measures and criteria of success. Pillar 3 of the strategy states that planners and decision-makers must “Ensure that shared governance approaches are inclusive of all watershed stakeholders, including Métis communities and First Nations” (p. 24), reiterating the governments position toward their relationship with First Nations in water governance. Until recently (2020), conservation districts were not able to enter into agreements with First Nations to partner in planning and management actions.

Changes to water legislation in Manitoba were enacted in early 2020. Amongst other changes in the 2005 version of the *Water Protection Act* (and associated regulations), conservation district boundaries have been adjusted to align (more closely) with watershed boundaries, are renamed as watershed districts, and empowered to enter into partnerships “with non-municipal entities, including Indigenous nations” (Manitoba Association of Watersheds, 2020). While enabling partnerships is a step towards greater Indigenous inclusion in management, it still does not resolve issues of disengagement in the development of water policy and legislation—a barrier to water co-governance (P. Wilson, 2013).

3.3 Methods and Data

This study is conducted in two parts. First, in a summative content analysis I count how often Indigenous keywords occur in Manitoba’s watershed plans, and code the content in which the keyword appears according to how it is used in the plan document. Second, to explore the potential influence of land tenure and land use designation on the evidence of Indigenous engagement in those watershed plans, I calculate relative proportions of different land uses and tenure. Land tenure and land use designations considered in this study focus on those that are likely to trigger Indigenous engagement in resource management: public (Crown) lands in forests, pastures, parks, and protected areas; municipal extents (village, town, city); and Aboriginal reserve land. Tenure and designation are considered in terms of proportion of watershed extent, and for Aboriginal reserve land, number of reserve parcels, and the number of

First Nations with land in the watershed. Surface water extents are used as a proxy for Indigenous rights-based fisheries interests, assuming greater water extent implies more fish habitat, and therefore potentially a greater degree of engagement between government and Indigenous Peoples in the context of managing fisheries as a result of the duty to consult.

The content analysis included 22 watershed management plans, encompassing all plans completed between 2006 and 2018 under Manitoba's 2003 water strategy. Later plans were potentially influenced by internal and public discussions surrounding the development of the surface water (GM 2014) and drought management (GM, 2014a) strategies. I include draft and final plans, but exclude related documentation such as technical research, memorandums of understanding, terms of reference, and stakeholder feedback summaries. Technical research is typically integrated into the plan as its factual basis, while memorandums and terms of reference are templated documents with little to no variation aside from the names of parties to the agreement. Stakeholder feedback or consultation summaries are incorporated throughout the plans, often as part of the factual basis, but sometimes as appendices with greater detail. It is important to note that these summaries report only on public stakeholder engagements; they do not necessarily include summaries from separate consultations with First Nations communities. The watershed plans bring all this information together, and for that reason they are the focus of the analysis.

3.3.1 Content Analysis

Content analysis is “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278), and is used in many different research contexts. The purpose of a content analysis is to “determin[e] patterns in texts, in order to draw inferences about related patterns in the contexts in which those texts are produced or used” (Butler, 2015, p. 29). A summative approach seeks to explore usage through manifest analysis (literal), and interprets its meaning through the context in which it is used through latent analysis (Hsieh & Shannon, 2005). Considering the context in which the words are used “strengthen[s] the validity of the inferences that are being made from the data” (Stemler, 2000) by including a qualitative dimension in the analysis.

I conducted keyword searches of plan text to identify content that may relate to Indigenous engagement in the watershed planning process. Occurrences of specific keywords:

“first nation?” OR “indig*” OR “aborig*” OR “m?tis” OR “cree” OR “dene”
OR “dakota” OR “nation” OR “indian”

were located, and a code applied to the keywords and surrounding text according to its context (manifest analysis for keywords in context (Krippendorff, 1989)). Codes were then sorted into categories, some of which were pre-established inductively from a subset of watershed plans with Indigenous content (Mayring, 2000), and coding iteratively revised and refined (Hsieh & Shannon, 2005) until categories were “mutually exclusive and exhaustive” (Stemler, 2000).

I established categories and coded the documents as the sole coder, an approach that can be criticized for potentially compromising the reliability of the analysis (Krippendorff, 1989; Stemler, 2000). However, validation of findings can be supported through triangulation (Stemler, 2000). This study uses triangulation from two sources: a spatial analysis to explore the potential influence that geographic factors have in the variation of Indigenous engagement, and semi-structured interviews with government watershed planners that wrote or were involved in producing some of the watershed plans included in the study. Interviews were conducted as part of the broader dissertation, with parts of them were used to gain additional insight into reasons for variation in evidence of Indigenous engagement; I report on the interviews in Chapter 4. I tallied the overall frequency of occurrence for each category and sub-category, and used the presence or absence of coding in each category within a plan to assign it a score for thematic diversity (how many categories appeared in a plan). These three values are then incorporated into the geospatial analysis as content variables, further described below, to identify potential relationships between content variables and selected watershed attributes, including land use designations.

It is important to note that the watershed plans used in the content analysis were not developed to answer the research question that structure my inquiry. As partial records of the planning process, they are limited in the level of detail they provide regarding what actually happened in the engagement of Indigenous peoples in the planning process (Bowen, 2009).

3.3.2 *Spatial Analysis*

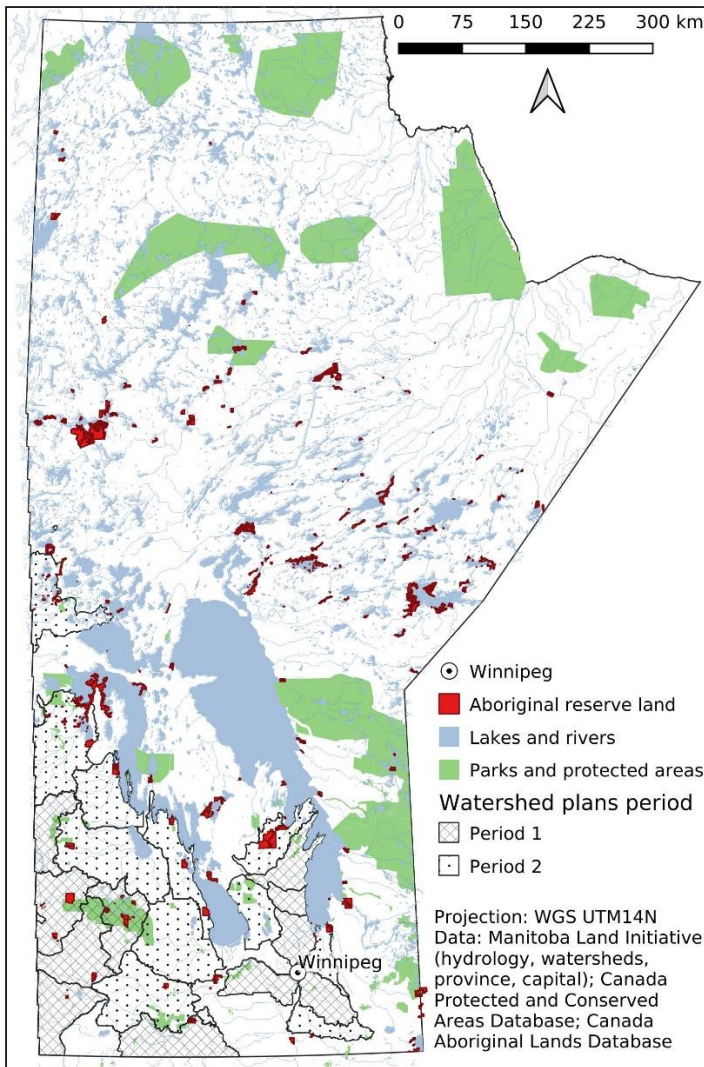
After describing the evidence of Indigenous engagement in watershed plans, I examined the relationship between plan content (keyword occurrence, category occurrence, thematic diversity) and selected variables in geographic planning context (Baijius & Patrick, 2019b). As mentioned

earlier, I use the concept of tenure—specifically Aboriginal tenure (Baxter & Trebilcock, 2009)—within watershed planning boundaries as a potential factor in government-initiated Indigenous engagement for, and as a proxy for Indigenous interests in, watershed-based water management. Aboriginal tenure, Aboriginal title, rights, and settler activities in lands with specific designation (typically Crown land) are often seen as triggers for the engagement and consultation of Aboriginal peoples in environmental management and resource development. By inference, the location of Aboriginal reserve land relative to the unit of planning—the watershed—could influence whether First Nations are included in planning, and to what degree.

New water legislation in Manitoba requires that watershed planning authorities (WPAs) consult with “any band, as defined in the *Indian Act* (GC, 1985), that has reserve land within the watershed,” (Manitoba Sustainable Development [MSD], 2018) a task that provincial planners usually help with. Factors such as capacity of the WPA to engage and the First Nation to participate, meeting location, format, and timing can influence the degree of Indigenous participation. Additionally, we might expect that consultation around rights-based protection of Indigenous valued ecosystem components could also spur engagement in watershed planning. As a coarse indicator of potential rights and interests in fisheries, I calculate the extent permanent and semi-permanent water bodies (Natural Resources Canada [NRC], 2019b). Aboriginal and Treaty rights are recognized in the context of fisheries management, and my intent was to examine the potential relationship between Indigenous engagement in that domain and evidence of their participation in watershed planning.

As a coarse indicator of potential rights and interests in ecosystems and heritage sites, I calculate the extent of environmental reserves, national parks and wildlife areas, non-profit conservation areas, managed forests, some parks, and provincial wildlife areas using Manitoba’s protected areas network dataset; datasets were checked against federal and additional provincial datasets to validate coverage, consistence, and currency (Canadian Wildlife Service [CWS], 2019). In addition to surface water and protected areas, the extent of Aboriginal tenure may serve as a proxy indicator for potential Indigenous relations, interests and values in a watershed. In other words, more reserve, forested, or protected land means more Indigenous interests and rights are subject to impacts from resource management and development, increasing expectations of greater Indigenous expectations.

Figure 3.2 Map of Manitoba depicting spatial variables and watersheds with plans



Reserve land extent may not be the only factor. The number of reserved parcels may also indicate interests and values, especially if Nations are strategically acquiring riparian or forest lands through land claim settlements. If strategic, then it is likely that the First Nation has both the capacity and interest to participate in watershed planning. Finally, the number of First Nations with reserve parcels in a watershed may influence engagement, whether through shared relationships to place driving a strong presence in resource management, or potentially as indicative of a large Indigenous population that leads to greater representation of Indigenous Peoples within the ‘general public’. This approach frames Indigenous interests in terms of colonial concepts around land (tenure, designation), but Indigenous Peoples had pre-existing

models and concepts regarding ‘tenure’ and ‘title’. Across all settler colonial nations, foreign land tenure models are imposed upon Indigenous Peoples and the land. Aboriginal ‘tenure’ here refers to a territorial extent, but does not speak to the nature or character of relationships Indigenous Peoples have with their traditional and contemporary territories (Belanger, 2010; Ladner, 2003).

Tenure may be ‘held’ by an individual Nation, or shared with one or more other Nations; some First Nations have tenure in multiple watersheds by coincidence or by strategic acquisition to protect site-specific values and relations, to establish urban reserves, or for economic development). Other possible factors that could influence engagement—such as proximity and adjacency of reserves to waterways and water bodies, and dominant vegetative land cover in the watershed and on reserves—are not explored in this dissertation. Although vector data sets were reviewed for consistency before and after processing, differences in geospatial projections and the potential amplification of inaccurate values through subsequent calculations means that calculated extents and proportions are only approximate, and may differ from calculations using different data sources and projections. Figure 3.2 shows a map of Manitoba, including the spatial variables analyzed, and the watersheds with plans, differentiated by time period.

Reserve land parcels (NRC, 2019a), provincial protected areas (Manitoba Land Initiative [MLI], 2017b), and surface water extents (NRC, 2019b) were first ‘clipped’ to provincial boundaries (MLI, 2001), and then proportions of each calculated by conservation district (MLI, 2009). Newer watershed district boundaries were not established at the time planning took place for the plans reviewed.

3.4 Content Results & Analysis

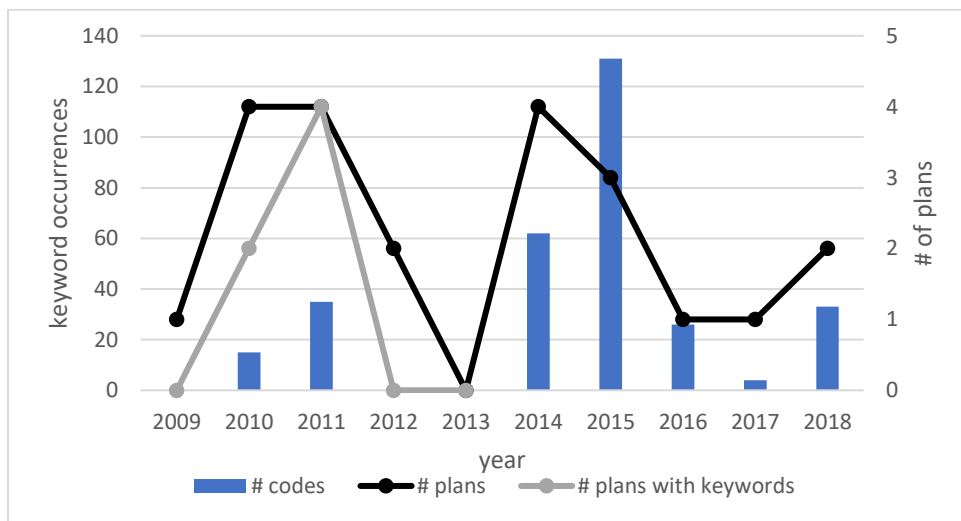
Results are first described generally, and then thematically based on the different contexts in which Indigenous keywords were found. By keyword occurrence, I refer to the presence of text related to the keywords. Proportion of plan coding by category describes the number of keyword occurrences in a plan that are coded to the categories, divided by the total number of all keyword occurrences in the plan. This calculates the relative distribution of plan codes between categories, and shows which categories are most emphasized in each plan. For example, of the 13 keyword occurrences coded in the Little Saskatchewan plan, 54% (7 occurrences) were related to participation, and 46% (6 occurrences) to land. Conversely, proportion of category coding per plan describes the number of keyword occurrences in a category in a plan, divided by

the total number of keyword occurrences in the category. The calculated value represents the proportion that a plan contributes to the total coding in each category.

3.4.1 Descriptive Statistics

In total, 306 blocks of text with Indigenous keywords (occurrences) were coded in 17 of the 22 watershed plans. The distribution of keywords and plans across time is shown graphically in Figure 3.3. The bars indicate the frequency of keyword occurrence, and the line indicates the number of plans completed in each year: the black line shows plans without keywords, and the grey line with keywords. For the first period, both lines are visible because not all plans had keywords. For the second period, only the black line is visible because all plans had keywords. Plans were completed and published in two periods, from 2009 to 2012, and 2014 to 2018, each with 11 plans. In the first period, 6 plans account for 50 keyword occurrences (16% of the total), averaging 8.3 per plan for those with keywords, and 4.5 per plan for the entire period. Plans in the second period account for 256 occurrences (84% of the total), averaging 23.3 occurrences per plan—a 5.1-fold increase for across all plans, and a 2.8-fold increase if excluding plans without Indigenous keywords.

Figure 3.3 Bar and line plot of number of plans completed by year and total keyword occurrences



3.4.2 Themes

Codes were labelled according to their manifest appearance (e.g. as part of a management action) or latent or contextual reference (e.g. recognition of rights). Codes were then iteratively grouped

and regrouped until five main categories emerged. Table 3.1 lists the categories, counts for number of plans coded and frequency of keyword occurrence, and calculated values for proportion of occurrence and average occurrences per plan. Some codes overlap within categories, and so their counts are not used in calculating totals; extent and distribution within categories are discussed later. An additional value, theme diversity, is a tally of the number of categories coded in a plan; the five categories and theme diversity are described in the following subsections.

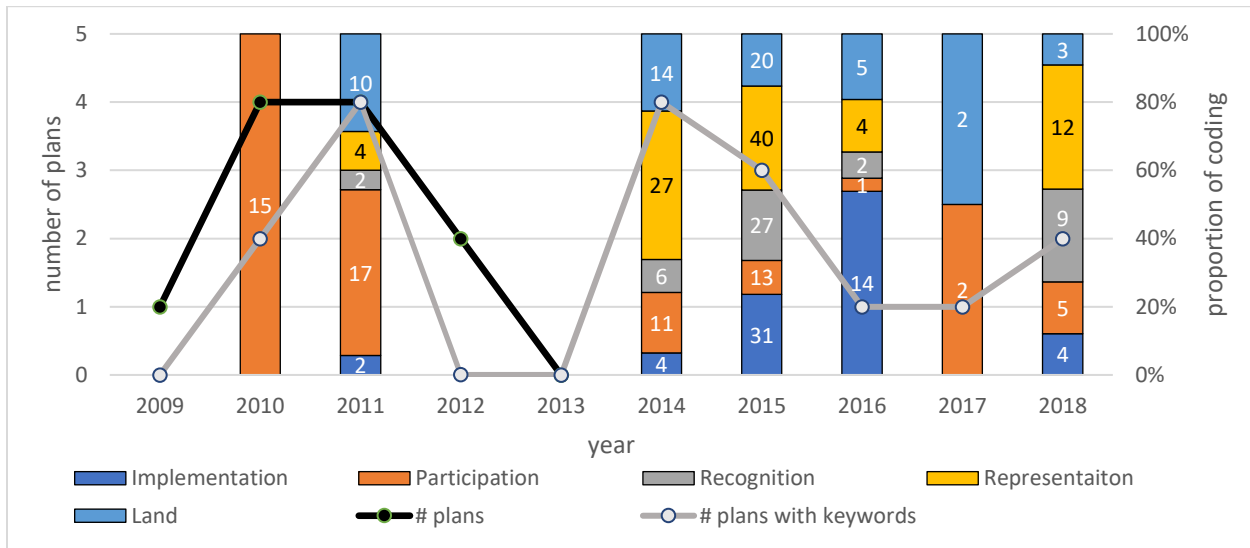
Table 3.1 Number of plans and keyword occurrences by category

Category	No. of plans	Keyword occurrences	Proportion (%) of occurrences	Avg occurrences per plan
Participation	16	64	20.9	4.0
Land	12	54	17.6	4.5
Representation	10	87	28.4	8.7
Recognition	10	46	15.0	4.6
Implementation	8	55	18.0	6.9

Note: Overlap between some sub-category codes means that totals of code occurrences in categories are not always equal to theme totals. The number of plans per category is a count of plans with codes in that category. Proportion refers to total keyword occurrences.

In Figure 3.4, the proportion of keyword occurrences for each year are shown as bars (total 100%), and the number of plans per year as lines—total number of plans in black, and number of plans with keyword occurrences in grey, only relevant for the first period. Within the bars, categories are differentiated by colour, with the size of each coloured section representing the proportion of categorical code words for that year. Keyword occurrences for the categories are included within the coloured sections for reference.

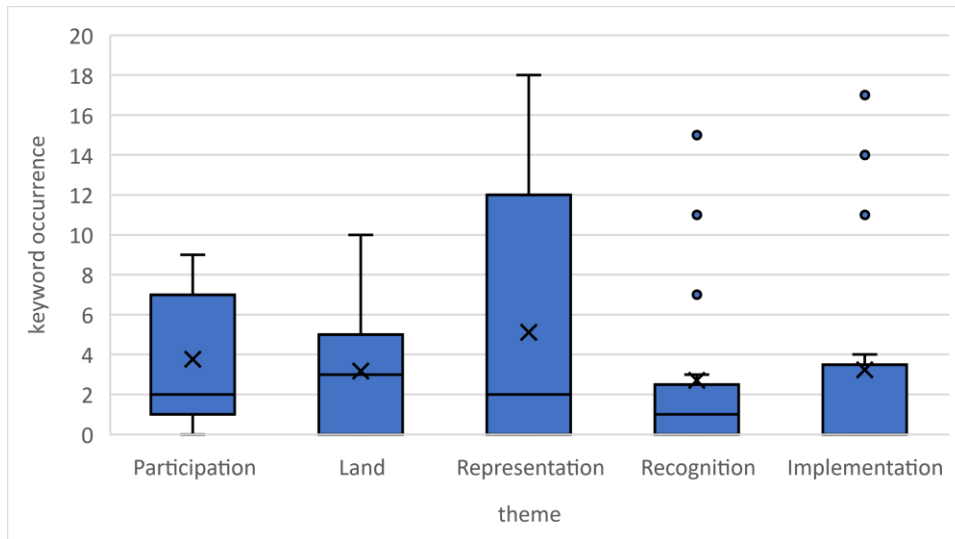
Figure 3.4 Frequency of keyword coding and proportion of categorical codes per year



Aside from the dominance of participation coding in 2010 and the land/participation coding in 2017, most years had keyword occurrences in all categories. Of the 6 plans with keyword occurrences in the first period, most codes (32 of 50) were participation-related, and 25 of those were invitations for First Nations to participate in the planning process. The second period shows an increase in implementation coding at first, but falling off in subsequent years. There is also a decrease in participation coding, and fluctuation in recognition, representation, and land.

In the rest of the analysis, I describe the distribution of codes between categories in three ways: frequency, proportion of total category coding, and proportion of total plan coding. Box and whisker plots in figures 6 and 7 show summaries for the frequency and proportion values. To construct the box plots, five values were used to summarize the categories: maximum, minimum, median, and values for the first and third quartiles. These values are used to construct box plots, allowing for easier visual comparison of the distribution of coding within and between each category. The distance between the ‘whiskers’ indicates total range of coding, but for the outliers, shown as dots. Between the top of the box (3rd quartile) and bottom of the box (1st quartile) is approximately 50% of the data; if a median value exists, it is shown as the internal line. The X symbol indicates the category average. Plans with zero total keyword occurrences are excluded from the box plots.

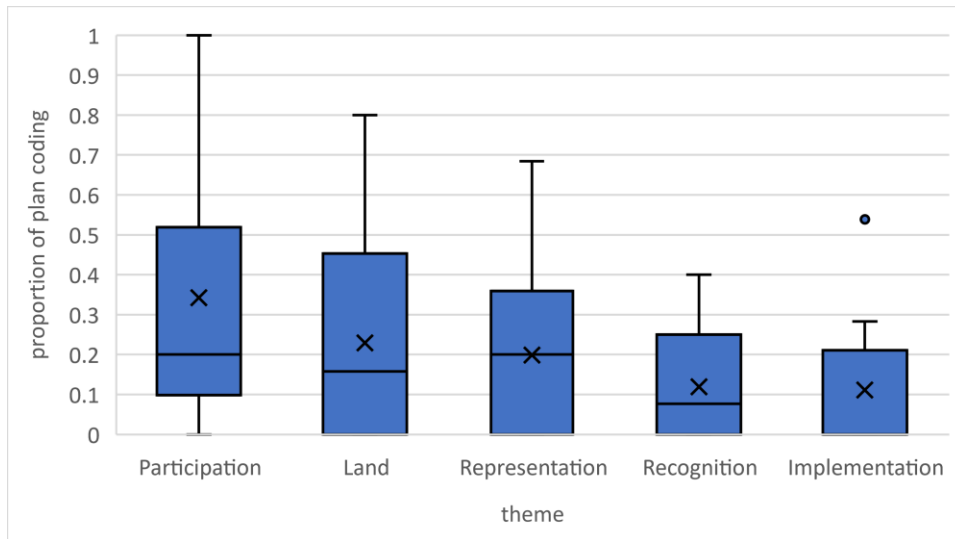
Figure 3.5 Box and whisker plot of frequency and keyword occurrences by category



In Figure 3.5, categories are presented in descending order by the number of plans with category coding, and then by total keyword occurrence; no trend in maximum, minimums, quartiles, or medians show with this ordering. Non-normal distributions exist for all categories. Outliers are in both recognition (Carrot-Saskatchewan, 15 occurrences; Fisher River, 11; Cook’s Creek – Devil’s Creek, 7) and implementation (Fisher River, 17 occurrences; Dauphin Lake, 14; Carrot – Saskatchewan, 11). Representation has the greatest range and no outliers, but only five plans account for most of the occurrences (Fisher River, 18 occurrences; Carrot-Saskatchewan, 17; Swan Lake, 14; Westlake; 13; Cook’s Creek-Devil’s Creek, 11), skewing the distribution significantly. With 8 of 22 plans accounting for 251 of 306 occurrences (82%), it is not surprising to see such an uneven distribution overall.

The distributions for proportion shown in the box and whisker plots in figure 7 are also non-normal, though with only one outlier (implementation; Dauphin Lake, 56% or 14 of 26). With the categories ordered from broadest to least extent, a show a gradual slope is apparent in the maximums, 3rd quartile values, and overall range. The median and average (X marks) values also show a consistent trend, except for implementation due to the outlier Dauphin Lake plan.

Figure 3.6 Box and whisker plot of proportions of total plan coding by category



Having examined the frequency, distribution of coding between plans (proportion of total coding), and distribution of codes within plans (proportion of plan coding), I next describe in greater detail each of the categories, including tallies for the number of plans and frequency of coding to categories and sub-categories.

3.4.2.1 Participation

Participation codes apply to text that documents the participation of Indigenous Peoples in the watershed planning process. Participation-related content is the most wide-spread, appearing 64 times across 16 plans, averaging 4 occurrences (see Table 3.2). Keyword codes for participation represent 20.9% of total occurrences, ranging from 0 to 100% of coding per plan but mostly between 0% and about 50% of plan coding. Coding is most frequent and extensive for engagement mechanisms, such as public meetings, invitations; infrequently, Indigenous Peoples are noted as participating on the project management team, and occasionally on the watershed team (effectively as a stakeholder).

Table 3.2 Extent and frequency of participation coding and selected sub-categories

Category	No. of plans	Keyword occurrences
Participation	16	64
Engagement mechanisms	16	49
<i>Public meetings</i>	16	18
<i>Invitations</i>	4	25
<i>Committee representative</i>	3	4
Acknowledgements	4	13

Public engagement meetings are counted as occurrences relevant to Indigenous engagement in keeping with the 2003 and 2014 policies, which frame Indigenous Peoples as members of the public in the planning process, in addition to being rights holders. In the planning process, First Nations are to be consulted only if they have land in the watershed, but not all Nations participate in those consultations. Even if a First Nation does not participate in consultations, they potentially have a ‘voice’ through public engagement. Where public meetings are mentioned in a plan, and the watersheds have reserve land, the public meeting is included as a form of Indigenous engagement. Notably, in only two occurrences were ‘public meetings’ discussed explicitly in relation to Indigenous Peoples, and only one plan indicated that public meetings were held on reserve or in an Indigenous community (Fisher). Other examples of participation coding include acknowledgments of Indigenous participants and their contributions, mention of participating agencies with an Indigenous mandate, and mention of Indigenous participation in other resource management committees.

3.4.2.2 Land

The category of land refers to the use of Indigenous keywords in describing some aspect of geographic space, and is the second most extensive category, reaching 12 plans with 54 occurrences, for an average of 4.5 per plan (see Table 3.3). Coding for land represents 17.6% of all keyword occurrences, ranging from 0 to 80% per plan. Land-related codes are most often and extensively applied to map labels (12 plans, 33 times), as well as when plans use text to describe relative location of various geographic features (7 plans, 12 times), and in terms of tenure as

reserve land and treaty land entitlement parcels in transition to reserve status⁶ (4 plans, 5 times), or Crown land designations where activities potentially trigger consultation (3 plans, 4 times).

Table 3.3 Extent and frequency of land coding and selected sub-categories

Category	No. of plans	Keyword occurrences
Land	12	54
Map label	12	33
Text description of location	7	12
Land tenure	5	9
<i>Reserve land</i>	4	5
<i>Crown land</i>	3	4

3.4.2.3 Representation

Representation refers to content that is either a direct quotation from an Indigenous participant, or an indirectly through summarizing interviews and Indigenous input through public engagement. As shown in Table 3.4, representation content was found 88 times across 10 plans, for an average of 8.8 per plan. Coding for representation accounted for 16% of keyword occurrences across all plans, ranging from 0 to 82% of coding per plan. Most codes were grouped into one of three major sub-categories, addressing environmental change and impacts, responsibilities and relationships, and interests and values, discussed below.

Table 3.4 Extent and frequency of representation coding and selected sub-categories

Category	No. of plans	Keyword occurrences
Representation	10	87
Environmental change and impacts	8	33
Responsibilities and relationships	8	32
Interests and values	6	19
Statements of concern	5	10

⁶ Not all Indigenous communities in Manitoba received the full amount of land originally set aside during treaty negotiations. The Treaty Land Entitlement (TLE) process is meant to facilitate the transfer of land, crown or private, to First Nations for the federal and provincial governments to meet this part of their treaty obligations.

Codes for environmental change and impacts were most wide-spread and frequent for the representation category (7 plans, 15 times), highlighting issues such as “more frequent flooding” and “increased surface water flows” (Cook’s-Devil’s), rising lake levels (Westlake), and changes in stream flow volume and timing (Swan Lake). Some of these changes are attributed to channelization and drainage infrastructure for agriculture (Pembina), breaks in beaver dams (Southwest Interlake), low-lying geography (Fisher River), or hydroelectric infrastructure and management (Carrot-Saskatchewan). Observations of erosion from denuded creeks and ditching in agricultural fields, with subsequent sedimentation downstream, are noted as negatively impacting the extent and quality of aquatic and riparian habitat (Swan Lake, Cook’s-Devil’s, Carrot-Saskatchewan). Agricultural drainage, forestry and peat harvesting activities are specifically identified as impacting riparian areas and fish habitat. The loss of habitat or its alteration (5 plans, 11 times) was described as affecting not only animals, but plants, medicines, water, and ice quality as well (4 plans, 7 times). Indigenous observers noted changes in animal population and behaviour because of these changes (4 plans, 8 times), noting dispersal (Swan Lake), changes in migration patterns and population—especially for moose (Westlake, Swan Lake, Dauphin Lake, Fisher River), and changes in fish species and abundance (Westlake).

Codes for text that discussed Indigenous relationships and responsibilities were almost as extensive and frequent as those for environmental change. Coded text refers to place-based relations (7 plans, 16 times) including stewardship (Netley-Grassmere, Fisher, Central Assiniboine, Cook’s Creek-Devil’s Creek), and familial and tribal connections to specific areas (Westlake, Central Assiniboine, Swan Lake, Carrot-Saskatchewan). There were also several generic statements about traditional and contemporary use (5 plans, 7 times), most often in relation to conservation-focused plan objectives to support traditional use activities. Indigenous relationships with and responsibilities for water (4 plans, 6 times) acknowledge water “as the source of life for all living things...[water is] alive and is a spirit” (Swan Lake, similar in Cook’s-Devil’s Creek, Carrot-Saskatchewan), and that “women are responsible for caring for the water” (Fisher River). All mentions of water in the context of Indigenous Peoples refer to the significant role water has in ecosystem and human health.

Representations of Indigenous interests and values emphasized fishing, wildlife, and medicines. Fishing interests and values (6 plans, 12 times) discuss the significance of fish species—such as sturgeon—to First Nations communities (Central Assiniboine, Swan Lake,

Fisher, Cook's, Carrot-Saskatchewan, Dauphin Lake); three plans referring to Indigenous commercial fishing interests. After fish, wildlife interests and values were second-most frequent and extensive (5 plans, 12 times), with observations on loss of wildlife habitat, declining moose population and health (Carrot—Saskatchewan, Dauphin Lake, Swan Lake), concerns about human impacts on wildlife generally, and comments about the important relationship between land, water, and wildlife. Only the Fisher River plan mentions Aboriginal and treaty rights in relation to wildlife. Finally, Indigenous access to medicines were interleaved with other concerns around traditional use, food harvesting, wildlife, and ecology (5 plans, 6 times). Less frequent and extensive codes include general statements of community concerns, descriptions of community drinking water systems, traditional knowledge quotations, and mentions of Indigenous non-government organizations.

3.4.2.4 Recognition

Recognition refers to text that discusses Indigenous Peoples and communities in terms of their integration into water and resource management processes and institutions, aspects of self-determination, and reference to Indigenous-Crown treaties. As shown in Table 3.5, recognition-related content appeared 46 times across 10 plans, for an average of 4.6 per plan. Coding for recognition represents 15% of keyword occurrences across all plans, ranging from 0 to 40% of coding in plans.

Integration is the most frequent and extensive sub-category under recognition (9 plans, 33 times), most predominantly consultation (peat harvesting in Fisher River and Cook's-Devil's Creek; hydroelectric water management in Carrot-Saskatchewan). Aboriginal and Treaty rights are also mentioned in relation to traditional land use and harvesting in areas now designated as parks (Dauphin Lake, Fisher River, Carrot-Saskatchewan) or peat harvesting due to potential impacts on wildlife (Fisher). Text referring to the integration of Indigenous knowledge is also coded under recognition, typically as an objective or goal to "incorporate traditional knowledge into development plans" (Swan Lake, Cook's Creek-Devil's Creek, Carrot-Saskatchewan), especially Elder knowledge. Additionally, a few plans mentioned agreements, partnerships, shared jurisdiction, funding, and the inclusion in planning of government agencies with a mandate to administer Indigenous programs, administration, and funding.

Table 3.5 Extent and frequency of representation coding and selected sub-categories

Category	No. of plans	Keyword occurrences
Recognition	10	46
Integration	9	33
<i>Consultation</i>	3	8
<i>Aboriginal and Treaty Rights</i>	3	5
<i>Traditional knowledge</i>	3	5
Self-determination	6	16
<i>Traditional territory</i>	6	12
<i>Development planning</i>	3	3
<i>Consent</i>	0	0
Treaty relationships	2	3

For self-determination content, traditional territory comprises the bulk of coding. Although text about treaty territory may describe location (land) or relationships to place (representation), text is coded as self-determination when the context references Indigenous inclusion in decision-making within historic and contemporary land bases. Self-determination is also referenced in terms of First Nations authority in development planning and band administration; there are no references to consent in any of the plans. Treaty relationships are mentioned explicitly twice (Cook’s-Devil’s, Carrot-Saskatchewan), with a third treaty reference made to treaty land entitlements (Cook’s-Devil’s).

3.4.2.5 Implementation

The category of implementation includes Indigenous Peoples and communities in relation to management actions (see Table 3.6). Implementation content occurs 55 times across 8 plans, for an average of 6.8 per plan. Implementation includes 18% of total keyword occurrences, and ranges from 0 to 29% of coding per plan, with an outlier of Dauphin Lake having 56% of its coding as implementation (14 occurrences).

Table 3.6 Extent and frequency of implementation coding and selected sub-categories

Category	No. of plans	Keyword occurrences
Implementation	8	55
Role	6	50
<i>Support</i>	5	33
<i>Lead</i>	4	9
<i>Co-lead</i>	3	8
Measures	6	45
Source water protection	4	9

The bulk of implementation coding focuses on management actions—as well as objectives or recommendations, effectively synonyms for management actions—and includes both roles for Indigenous communities and measures of success. Coding for roles in implementation is further differentiated into supporting, lead, or co-lead responsibilities. Source water protection for Indigenous communities is also mentioned (4 plans, 9 times), touching on issues of wastewater (Central Assiniboine); groundwater extraction, pollution, and aquifer recharge (Central Assiniboine, Fisher); source water protection zones (Carrot-Saskatchewan); and sealing abandoned wells (Fisher, Carrot-Saskatchewan).

3.4.3 *Thematic Diversity*

Thematic diversity refers to the number of categories with keywords in each plan. In Table 3.7, the plans are aggregated by year, and the number of plans at each diversity score tallied. The right-most columns sum the total number of plans, and the number of plans with keywords. Column totals for thematic diversity and number of plans are shown in the final row. In this table, the differences between the first and second periods of planning—identified in the content analysis above—are again visible in as two clusters of values, lower for period 1, and higher for period 2.

Table 3.7 Thematic diversity and number of plans by year

Year	Thematic Diversity						# of Plans	
	0	1	2	3	4	5	Total	With Keywords
2009	1						1	0
2010	2	2					4	2
2011		1	1	1	1		4	4
2012	2						2	0
2013	-	-	-	-	-	-	-	-
2014			1	1	1	1	4	4
2015					1	2	3	3
2016						1	1	1
2017			1				1	1
2018					1	1	2	2
Total	5	3	3	2	4	5	22	18

Table 3.8 shows the proportion of each category’s coding according to the plan’s overall thematic diversity. For all categories, the greatest proportion of occurrences are in plans with a thematic diversity score of 5. At a score of four, most coding is in representation or land. Plans with a score of 3 have the lowest proportion of categorical coding compared to all other diversity scores (aside from 0). For plans with a diversity score of 2, coding is either for participation or land. All coding in plans with a diversity score of 1 is related to participation (invitations). While participation is the most widespread category, most participation codes are in documents with diversity scores of either 5 or 1. Land-related coding appears most often in plans with all five categories, but is also the most frequent in plans with a score of 2, and second most frequent in plans with a score of 4. Occurrences of representation and recognition categories are almost entirely in plans with diversity scores of 4 or 5, while implementation is exclusively in plans with a score of 4 or 5.

Table 3.8 Proportional distribution of categorical coding by thematic diversity

Thematic diversity	Category				
	Participation	Land	Representation	Recognition	Implementation
1	0.34	0.00	0.00	0.00	0.00
2	0.16	0.22	0.00	0.00	0.00
3	0.05	0.04	0.02	0.07	0.00
4	0.05	0.20	0.24	0.11	0.11
5	0.41	0.54	0.74	0.83	0.89

3.5 Spatial Results & Analysis

Variables included watershed extent, surface water extent and proportion of watershed, Aboriginal tenure extent and proportion, land use designation extent and proportion, as well as the number of reserve land parcels and number of First Nations with land in the watershed. Of the 22 watersheds with plans, 16 have reserve land parcels and 2 have Indigenous keywords but no reserve parcels; I discuss only these 18 plans in the spatial analysis (see Tables A.1, A.2, and A.3 in Appendix A). To identify potential relationships, I constructed exploratory scatter plots of pairs of variables (e.g. keyword occurrences and proportion of reserve extent; keyword occurrences and proportion of surface water extent) using values from each watershed plan. Between keyword occurrences, thematic diversity, and any of the Aboriginal tenure, land use designation, or surface water variables—whether extent (land and water), frequency (keywords and diversity), or proportion (land, water, keywords)—no relationships were apparent.

In the content analysis, coding frequency is significantly different for the two time ‘periods’. Extending the spatial analysis to similarly consider time, I summed the variable values for land (extents of watershed, aboriginal tenure, protected area designation), surface water, and keyword occurrences by the time period. I then calculated the ratio of change for each variable to characterize the magnitude of difference between the periods (Table 3.9). Although no relationships were evident at a per-plan level, aggregation into time periods clearly shows an increase over time across all extents and keyword occurrences, greatest in keyword occurrence and reserve land extent.

Table 3.9 Extents and ratios for land, surface water, and keyword variables by time period

Variable	Period		Ratio (p ₂ /p ₁)
	1	2	
Watershed extent (ha)	2,863,337	5,437,484	1.9
Surface water extent (ha)	94,512	265,573	2.8
Reserve land extent (ha)	33,249	140,096	4.2
Protected area extent (ha)	223,764	320,587	1.4
Keyword occurrence	50	256	5.1

3.6 Discussion

This study aimed to characterize Indigenous engagement in watershed planning, and to describe the relationship (if any) between Indigenous engagement and land use designation, Aboriginal tenure, and surface water extent in Manitoba, Canada. Aboriginal reserve land is identified in legislation as a trigger for basic consultation with First Nations communities, yet Aboriginal tenure is neither widely discussed nor apparently related to the degree of engagement evident in plans. Although no relationships were found between overall or categoric keyword occurrences and protected area, reserve land, or surface water extents at a granular level, an overall increase in the amount of Indigenous engagement between time periods suggests there are other influences driving the increase. Part of this may be explained by the government of Manitoba’s renewed emphasis on Indigenous inclusion noted in its 2014 surface water strategy, but the results of this study suggest that the policy intent to increase inclusion is not being achieved uniformly. Furthermore, government has yet to propose a review or assessment of their progress in achieving this policy goal.

Before discussing policy implications, I address two assumptions associated with the notion that tenure or land cover influences engagement. The first is that greater extents of certain land use designations (e.g. reserve land, crown land, or otherwise designated land within a First Nation’s traditional territory) will lead to more opportunities and/or obligations for Indigenous Peoples to be involved in resource management. However, plans for watersheds with extensive reserve or protected land did not have proportionally more evidence of engagement. The second assumption is that Indigenous engagement in resource management over time increases

community and individual capacity to engage, making them more effective in their participation in water governance. While Aboriginal and Treaty rights in the context of forestry, parks, and protected area management planning are mentioned in watershed plans when applicable, the presence and relative extent of land use designation, tenure, and surface water extent did not show any relationship with evidence of engagement. The apparent lack of relationship may partly be explained by community self-selection or self-exclusion from resource planning, but may also be a result of methodological limitations, as opposed to the incorrectness of the assumption.

With respect to policy, a core disparity between the academic literature on Indigenous engagement in water governance and the Government of Manitoba's approach to engagement is in the framing of relationships between government and First Nations. Treaty relations are foundational for Indigenous-Crown (government) relations, yet Treaty-related content in plans is brief and without thorough discussion of the implications of that relationship, especially when it comes to as-yet undefined and uncertain Aboriginal water rights within traditional territories (Laidlaw & Passelac-Ross, 2010; Matsui, 2009; Phare, 2009b). Instead, Indigenous Peoples are repeatedly referred to as stakeholders, and their interests and values weighted equally with those of other stakeholders. Community consultation, as an extension of public consultation within the existing water management framework, reproduces the stakeholder relationship model, and continues to exclude Indigenous Peoples from nation-to-nation water governance (von der Porten et al., 2015; P. Wilson, 2013). While there are examples of cooperation between First Nations and conservation districts, there has been no representation of Indigenous Peoples on conservation district boards (Cuvelier & Greenfield, 2017), and no consultation with First Nations on development of water policy and legislation.

The stated policy intent to define and respect Aboriginal water rights through planning for water allocation and use (GM, 2003) did not lead to the articulation of water rights in watershed plans, nor are allocation and use of primary concern to Indigenous Peoples represented in the plans. More recent government policy focuses on Indigenous Peoples' interests in wetland ecosystem. Indigenous observations of environmental change documented in plans show that community interests and values extend beyond wetland ecosystems and water allocation, but Government policy lacks mechanisms to define and uphold Indigenous rights in relationship to wetland values.

Even if water-related rights were to be articulated through watershed planning, plan actions are voluntary and watershed districts have no regulatory authority over the land use and environmental changes impacting First Nations when those actions occur on private land. For example, agricultural drainage—leading to declines in water quality, declines and loss of plants and animals from wetland removal—may impact Aboriginal rights to fish, hunt, and gather, yet plans included no discussion of how drainage regulations would be enforced, impacts mitigated, or communities compensated for infringement of their Aboriginal water rights. Conservation districts are involved in the licensing of some drainage activities, but are not required to consult or even inform potentially affected First Nations; interviews with watershed planners and community members (see Chapter 4) also indicate extensive illegal drainage impacting Indigenous Peoples, with limited enforcement by Government.

More recent policy foci to increase inclusion, build capacity, and recognize Aboriginal rights (GM, 2014b) were not accompanied by programs to evaluate existing engagement efforts, funding to build Indigenous capacity, efforts to define and articulate Indigenous interests and values in relation to Aboriginal and Treaty Rights, or attempts to integrate the watershed planning process with existing community-based environmental planning processes (von der Porten et al., 2015). Legislative changes in 2020 allow for partnerships between conservation districts (now watershed districts) and First Nations, but the new legislation still does not seek to establish nation-to-nation relationships between government and First Nations in water governance. Water legislation does not empower water planning authorities to consult, and where appropriate, accommodate Indigenous Peoples in accordance with constitutionally protected rights (Promislow, 2013; Sossin, 2010).

With respect to water management and impacts on Aboriginal and Treaty Rights, it is important to note that major hydroelectric projects in Manitoba are planned and managed by Manitoba Hydro, a Crown corporation, and effects from these projects are therefore not considered within the domain of watershed planning. While hydroelectric development receives a significant amount of media and scholarly attention, they are not the sole water-related developments that affect Aboriginal and Treaty rights. Drainage, farming, and resource extraction can also impact Indigenous Peoples' rights to fish and hunt, but the non-regulatory nature of watershed plans, combined with unrecognized Aboriginal water rights, means that the planning and management activities of conservation/watershed districts—in some cases

including the authorization of drainage—do not trigger a legal Duty to Consult, and where appropriate, accommodate. Any attempts to address Indigenous interests and values are limited to unenforceable recommendations and promotion of beneficial management actions that focus on ecosystem goods and services, rather than Aboriginal and Treaty rights.

As a final point of discussion, I want to be clear that even though the analysis shows an increase in evidence of Indigenous engagement over time, data did not address the actual quality of face-to-face interactions as engagement. Nor do the data or analysis examine if Indigenous engagement effectively influenced decision-making and environmental outcomes, beyond influencing the content or structure of watershed plans (Wyatt et al., 2011). This could be addressed in future research.

3.7 Policy Recommendations

Based on the findings, four policy interventions are recommended. First, government should collaborate with First Nations to identify needs and opportunities for increased engagement. This could include the development of a framework to assess the practices and outcomes of Indigenous engagement in water governance, planning and management. Such an evaluation would inform government about what is working and what needs improvement in terms of the planning process or water governance institutions. It is likely that increased Indigenous engagement will require in-house and community capacity building, with funding for training and employment. Existing federal funding for Aboriginal lands management, and potentially new programs for enforcement and monitoring, could provide this funding. Additionally, appropriate techniques for engagement will need to be co-development with Indigenous communities, planners, and water managers.

Second, government should establish a mechanism whereby communities are notified of drainage proposals within their traditional territory, and are given ample opportunity to comment, consent, dispute, or object to license terms or project approvals. There are likely examples from other resource domains, where Aboriginal and Treaty rights are entrenched in policy and legislation, such as mining.

Third, an alternative approach should be investigated to identify which First Nations are to be consulted during watershed planning. Community interest zones, as used during property selection processes for land claims settlements, or data from traditional land and water use surveys could be used to identify potentially affected communities. Establishing a database of

this information would also inform licensing and permit decision-makers, so that any potential impacts to Aboriginal and Treaty rights could be identified early during the process and trigger appropriate consultations.

Finally, government should explore the use of cultural flows, Indigenous ecosystem objectives, or both into their water governance regime. For example, as part of a traditional land use and occupancy study supported by a water planning authority, cultural flows and ecosystem objectives would be developed as part of watershed planning. These objectives or flows would establish parameters to be included in water quality and quantity modeling, and incorporated into subsequent administrative decision-making processes for drainage licensing and approvals. To ensure these objectives are met, Government must also increase its enforcement of drainage regulations and monitoring of cumulative effects from illegal drainage.

As shown in this chapter, the implementation of a single set of water governance policies and processes can lead to significantly different outcomes for Indigenous communities across time and space. It is likely that a similar pattern will be found for other mechanisms in other regions or nations. Whereas Chapters 2 and 3 addressed engagement at international and regional or provincial scales, there are also uncertainties as to how effective Indigenous engagement in water governance can be, or is, at the community scale. Through community-based research, it would be possible to not only dig into the finer details about what worked (or did not) for engagement, but also reveal how communities are attempting to address water-related concerns through resource management institutions and processes beyond water governance.

4 THE POLITICS OF INDIGENOUS ENGAGEMENT IN PROVINCIAL WATER GOVERNANCE

Preface

As shown in Chapter 2, scholarship on water governance has rapidly taken up Indigenous interests and concerns in research and practice, from reviews of the literature to detailed case studies of community-based research with Indigenous communities. Chapter 3 shows how Indigenous participation in watershed planning—as a mechanism of engagement—varies in its outcomes across time and space, with the efficacy of participation in watershed planning for Indigenous Peoples contingent on many factors. Given the strong influence of socio-ecological and political economic contexts on the practices and outcomes of Indigenous engagement, many lessons can be learned about current approaches to water governance in Canada and their ability to support engagement. Provincial governments have recognized Aboriginal and Treaty rights in the provincial laws and policies that structure and guide water governance, but there is limited research on whether current processes and institutions are able to recognize and accommodate those rights, and to what degree. To address this gap, I present a case study of community-based Indigenous engagement in water governance. This chapter is guided by the questions:

- How do First Nations experience engagement in water governance?
- Do Aboriginal and Treaty rights significantly influence water governance decisions or water management outcomes? If so, how and to what degree?
- What are the barriers and opportunities to achieving water management outcomes that address Indigenous values, interests, and rights?

This chapter demonstrates that:

- Historical decisions about the distribution of powers between governments, and the historical trajectory of water management in Manitoba have combined to produce water injustice for community members of Wuskwi Sipihk First Nation;

- Modernized water regulations and legislation, along with participation in watershed planning and resource management, do not sufficiently address the water or environmental injustices facing Indigenous Peoples in their traditional territory;
- Aboriginal and Treaty rights are not yet influencing the practices of water governance nor outcomes of water management and planning;

Overall, this chapter presents the final scoping of the dissertation, providing a fine-grained level of detail to examine the practices and experiences of Indigenous engagement in water governance. The results affirm the contingent relationship between context, mechanism, and outcomes described in Chapters 2 and 3. Achieving a fine-grained level of detail requires that the methods and sources in this chapter differ from the previous two, and I do so by using participant observation and interviews to obtain first-hand accounts of Indigenous engagement. By turning to the lived experience of individuals and communities involved in water governance, this chapter's findings and recommendations complement the dissertation's extensive use of textual documents and primary or secondary literature.

This Chapter is not yet submitted for publication, but is currently being formatted for *Water Alternatives*, a leading international journal focusing on social aspects of water. (Clarivate 2020 Impact factor: 2.13). For this manuscript, I designed and conducted the literature review, and wrote the manuscript. Robert Patrick supervised the study, and provided critical and constructive feedback on the manuscript content and structure.

Abstract

Across the Canadian prairies, water management concerns extend from drought and overallocation to agricultural drainage and flooding to hydroelectric generation and displacement. Rural Indigenous communities often observe and are affected by environmental changes that result from decisions they were not involved in making, often impacting their livelihoods add well-being, or impinging on their rights. Administrative and legal processes within water governance—including the establishment of arbitrary boundaries—may exclude Indigenous Peoples from participating in or contesting decisions, while institutions of water governance may not be equipped to recognize and respect Aboriginal and Treaty rights. In Manitoba, Canada, recent changes to water legislation and regulations seek to boost Indigenous participation in watershed planning and water management, while also conserving and protecting

wetland ecosystems. Indigenous Peoples similarly seek to address environmental degradation, but primarily to ensure their ability to maintain their cultures by practicing constitutionally protected rights. Few studies of water governance in Manitoba have addressed Indigenous engagement, and none have examined how water governance is practiced in the converging contexts of impacts from forestry and agriculture. This case study documented the experiences of an Indigenous community engaging in water governance. Through participant observation, semi-structured interviews, and document review, it identified how Manitoba's water governance regime isolates land and water use decisions, and ultimately erodes the ability of Indigenous Peoples to maintain relationships with the land and to practice their constitutionally protected Aboriginal and Treaty rights. The protection of ecosystems that support Aboriginal and Treaty rights is found to be subject to economic decisions, both public and private. Indigenous resistance to agricultural drainage and forestry practices is stripped of its political basis and channeled through administrative processes that emphasize fairness but cannot address equity or rights. A suite of recommendations for change are made, most of which will rely on a long-term effort to build capacity within Indigenous communities and fund their participation.

4.1 Introduction

Amidst calls for greater Indigenous involvement in water management and research (Arsenault et al., 2018; Bradford et al., 2017; Castleden, Hart, Cunsolo, et al., 2017), critical analyses of First Nations drinking water insecurity (Alcantara et al., 2020; Basdeo & Bharadwaj, 2013; Dupont et al., 2014; Hanrahan & Dosu Jnr, 2017; Irvine et al., 2020), and a growing literature focusing on Indigenous water justice (Perreault, 2014; Robison et al., 2018; Zwartveen & Boelens, 2014) and Indigenous water governance (Craft, 2014; von der Porten & de Loë, 2013; Simms, 2015; N. J. Wilson & Inkster, 2018), scholars and researchers have recently called for the 're-politicization' of water governance (Curran, 2019; N. J. Wilson et al., 2019; Zwartveen et al., 2017). In the context of settler colonialism, the 'de-politicization' of water governance occurs through the privileging of colonial norms and desires to the point of exclusion of all others—a lack of pluralism or dialogue in the laws that guide governance. Justice is also often defined narrowly, focusing on procedural correctness in planning and management (Sossin, 2010; Promislow, 2013). This applies to issues about giving the public adequate opportunities to voice their concerns and interests, providing options for them to dispute administrative decisions.

Curran (2019) makes a bold claim that water governance depoliticizes Indigenous engagement by first unilaterally proclaiming water as an exploitable resource. This, Curran argues, lays the foundation for provinces to (re)produce settler colonialism. The hegemonic valuation of water according to settler norms and economic imperatives means that discussions of water and land rights centre on private property and commodification. This privileging of settler norms and legal systems marginalizes the rules of Indigenous law and role of Indigenous knowledge in water governance. When governments set legislation and policy about land and water, they may seek public feedback. Administratively, Indigenous Peoples are included as members of the public, but may not be afforded additional consultation as rights-holders, nor opportunities to collaborate as nations under treaty. Policies and legislation developed without Indigenous representation structure how projects are defined, assessed, and approved—often with a site-specific or localized scope of impact that occludes cumulative effects on ecosystems; ecosystems that support Indigenous rights and well-being.

De-politicization can occur when legislators “channel Indigenous rights challenges to decision-making about the environment into state-based administrative and legal processes” (Curran, 2019, p. 2) that comprise water management, delegating consultation to administrators. Consultation may be deployed for license and permit approvals on a case-by-case basis, where criteria typically exclude cumulative impacts (Curran, 2019). Consultation must be procedurally just, with opportunities to negotiate and requirement for government to show a strong chain of evidence to justify infringement of rights, but does not have to be substantively just: no outcomes are guaranteed, and consent not sought (N. J. Wilson, 2020). In some cases, governance decisions may not lead to rights-based consultations.

Indigenous water rights are not yet legally recognized in most of Canada (Bartlett, 1988; Laidlaw & Passelac-Ross, 2010; Phare, 2009b), but given that they are affected by water management decisions, provincial governments generally acknowledge that Indigenous Peoples should be included in watershed planning. Whether inclusion in planning or inclusion in governance, how this happens will vary between and within provinces.⁷ Relative to other provinces and territories, little attention has been paid to the relationship between Indigenous

⁷ Ideally, water co-governance would provide a space where “Indigenous communities can address the method of governance itself, and how their own laws, governance practices and rights are expressed” (N. J. Wilson, 2020, p. 2).

Peoples and state-based water governance in Manitoba. Chapter 3 showed how watershed plans reveal uneven involvement of Indigenous Peoples in watershed planning across the province, finding that Aboriginal and Treaty rights are discussed, but often not in the context of consultation or co-management. Only a few academic studies specifically examine water governance and management in Manitoba from the perspective of Indigenous Peoples (Kamal et al., 2018; Thompson et al., 2013; Waldram, 1988), all focusing on the impacts of hydroelectric development.

This chapter contributes to the literature by examining how political aspects of Aboriginal and Treaty rights are muted and mediated by the structures, processes, and institutions of water governance in Manitoba. Presented as a case study, I weave together data from participant observation, semi-structured and informal interviews, and document review to describe how changes to land and water impact members of Wuskwi Sipiik First Nation. I also document how water governance structures, institutions, and practices force them to engage in multiple processes and institutions to address degradation of water and the environment in their traditional territory. I discuss the findings in terms of economics, misrecognition, and cumulative effects, identifying how Manitoba's approach to water governance elides the question of politics from water governance. The study concludes with a range of recommendations to re-introduce the politics of Indigenous rights into Manitoba's water governance.

4.2 Water Governance and Management in Manitoba

An in-depth history of water governance in Manitoba is beyond the scope of this paper: for a history of drainage and watershed management, see Bower (2007, 2011); for the evolution of water management in Manitoba, see Venema, Osborne, & Neudoerffer (2010, pp. 34–62); and for background on water management institutions (conservation districts), see Osborne, Venema & Tyrchniewicz (2007, pp. 32–40). Below, I introduce some context to situate the rest of the chapter.

4.2.1 Situated in Time and Space

South and central regions of Manitoba have been described as a “soup bowl” of “wet prairie,” with lands often inundated and “swampy” (Bower, 2007). Rather than adapt settlement to local topography, early federal and provincial settlement efforts included extensive drainage infrastructure and promoted a culture of drainage to ‘improve’ wet prairie for agricultural production (Gibbs, 2009; Matsui, 2009). On-farm ditching consolidated small and dispersed

wetlands, and large canals, diversions, and channelization removed (and continue to remove) large cumulative volumes of ‘excess water’ (Bower, 2007, 2011). As technology evolves and farm equipment grows larger, agriculturalists see remaining wetlands as impediments to profit, ‘nuisance costs’ that cause economic losses due to overlap during seeding and application of pesticides and fertilizers (Cortus et al., 2011).

Recognizing the importance of water and wetlands in the context of climate change, the province and federal government are now trying to reduce, rather than expand, drainage, but there are challenges. In 1999, the province conducted an information campaign in some regions, including Swan River, to inform farmers about drainage regulations (GM, 2000b). A 2008 report found that a lack of resources had rendered the responsible government department unable to “meet [its] statutory obligations” regarding drainage approval and enforcement (Hamilton et al., 2008, p. 4). A cumbersome drainage application process, lack of technical capacity, under-enforcement, “inadequate environmental impact assessment[s], and deficiencies in administrative systems” led to a major backlog in drainage approvals that likely spurred widespread illegal drainage (p. 4). In 2014, the province proposed a “no-net loss approach” to wetland drainage, aiming to manage drainage to “reduce the risks to property from excess water, safeguard human health, conserve and protect wetlands and other sensitive habitat, provide resilience to droughts, reduce the risk of flooding by retaining water within the watershed, and minimize the loss of nutrients from the landscape” (MSD, 2014b, p. 12).

In 2017 and 2018, Manitoba began consulting on modernization of its water governance regime, with changes implemented in 2019 and 2020. Conservation districts were renamed as watershed districts and their boundaries adjusted to more closely align with watershed boundaries (from 18 CDs to 14 WDs), and their mandate modernized to enable partnerships with First Nations. Drainage regulations were updated, the no-net-loss policy implemented for assessing wetland drainage projects, and a new classification scheme adopted for both wetlands and drainage projects. Drainage licensing was streamlined, and increased resources allocated for enforcement (MSD, 2018). Lastly, conservation programming was expanded, with funding to pay farmers for protection of ecological goods and services, adoption of beneficial management practices, restoration of wetlands, and water retention projects (MSD, 2017a). Priority outcomes for the new ecological goods and services program are to improve watershed resilience and water

quality through water retention projects; wetland and upland conservation, restoration, or enhancement; riparian area management; and retention of buffer strips.

In addition to upland drainage, forestry management and peat extraction in the boreal and boreal plains regions also affect water throughout traditional Indigenous territories (N. Taylor & Spivak, 1999), with the potential to significantly impact Aboriginal and Treaty rights and Indigenous communities. Further north, water is predominantly managed for hydroelectric production, altering upstream and downstream ecosystems and hydrology. Construction of major dams and diversions began in the mid-1900s without consultation or consent, and often through dispossession of Indigenous lands and relocation of Indigenous communities (Krotz, 1991; Quinn, 1991; Waldram, 1988). Build-out of the system continues, but social conscience and recognition of Aboriginal and Treaty rights has changed the ways government and industry engage with Indigenous Peoples on these large projects.

Aboriginal and Treaty rights are recognized in the provinces' two water strategies. The 2003 Water Strategy adopts "principles of mutual recognition, respect, resource sharing and responsibility" to guide relationships with Indigenous Peoples in the context of water management, and in the context of Use and Allocation, "Aboriginal rights to water should be defined and respected" (GM, 2003, p. 7). In the 2014 Surface Water Strategy, government "must ensure that water governance and planning approaches respect treaty and aboriginal rights" (GM, 2014b, p. 6). This study focuses on Indigenous engagement in water governance prior to the legislative and programming changes proposed in 2017-8 and implemented in 2019-2020, and in the context of agriculture and forestry.

4.2.2 Indigenous Engagement in Watershed Planning

As was shown in Chapter 3, Indigenous participation in provincial watershed planning is inconsistent, but typically entails the inclusion of traditional knowledge in watershed plans and collaboration on management actions such as outreach, celebrations, ceremonies, conservation and protection of cultural heritage and sites, and more recently, partnerships on specific projects such as on-reserve source water protection planning or decommissioning of groundwater wells. The few published studies of water governance in Manitoba that reference Indigenous engagement are worth reviewing.

Two unpublished theses studied watershed planning in south-central Manitoba, and discuss Indigenous engagement in watershed planning processes (Burt, 2014; Huck, 2012).

Reflecting on integrated water management in Manitoba, Cuvelier & Greenfield (2017) reflect briefly on Indigenous engagement in the context of Manitoba's integrated approach. These studies highlight the Fisher River watershed planning process for First Nations involvement. Both Fisher River Cree Nation and Peguis First Nation were represented on the project management team, with the chief of Peguis FN chairing it (Burt, 2014; Cuvelier & Greenfield, 2017). Both Nations reported impacts from flooding they believe is caused by "upstream land clearing and drainage improvements" (Burt, 2014, p. 38). A high level of Indigenous representation in the planning process was attributed to a "genuine willingness by all parties to collaborate" (Cuvelier & Greenfield, 2017, p. 434). For the Netley-Grassmere process, Huck (2012) does not discuss evidence of Indigenous participation. In the Pembina River process (Pembina Valley CD), invitations to participate were extended to Swan Lake First Nation multiple times, but there is no mention of whether or to what degree the Nation participated.

All three of the reports above identified barriers to First Nations participation in watershed planning, including a lack of funding for CDs to engage and build relationships with First Nations; limited awareness amongst First Nations about the structure of CD's, their function, and the role of watershed planning in water governance; that First Nations lands managers are not trained in watershed planning, and that CD managers and government planners themselves were not adequately trained on how to engage with First Nations in culturally appropriate ways. Of the 18 CD managers surveyed in Burt (2014), eight reported 'some' involvement of First Nations in either management or planning, even though most watersheds have reserve land within their boundaries. Cuvelier & Greenfield (2017, p. 434) conclude their reflection on integrated water management in Manitoba with the "hope..[that] First Nations will be formally represented on conservation district boards and will have a significant role in the IWM planning process in Manitoba."

Drinking water has and continues to be a significant risk and priority for many First Nations in Manitoba. According to a 2011 assessment, 30% of homes on reserves in Manitoba were serviced by water truck (Neegan Burnside Ltd., 2011a), more than double the national average of 13.5% (Neegan Burnside Ltd., 2011b). Vulnerabilities in truck-to-cistern supplies vary in intensity throughout the year, and include: poor quality source water, inadequate initial treatment, contamination in the truck or in unmaintained or cracked cisterns, and contamination in household piping (Bradford et al., 2018). These risks, along with negative effects from

consuming contaminated or low-quality tap water, lead to distrust, avoidance of tap water, and greater expenditure on bottled water (Dupont et al., 2014; Waldner et al., 2017). A survey of on-reserve households in eight Saskatchewan First Nations revealed a range of expenditure from \$50-100 per month, with differences in spending between households due to composition and preferences, and more burdensome an expense for some more than others, sometimes leading to consumption of unsafe or undesirable tap water (Waldner et al., 2017).

4.2.3 Engagement in Other Domains

In seeking to improve relations between Indigenous peoples and the province, the government of Manitoba has passed *The Path to Reconciliation Act* (2016). This Act defines reconciliation as a process aiming for equity and inclusivity, and describes the principles of respect, engagement, understanding, and action that are to be reflected in a strategy for reconciliation that is “guided by the calls to action of the Truth and Reconciliation Commission and the principles set out in the United Nations Declaration on the Rights of Indigenous Peoples” (s. 4). Notably, there are no references to *The Path to Reconciliation Act* in any water, forestry, or fisheries legislation or public policy.

Healthy and functional ecosystems are necessary for the realization and practice of Aboriginal and Treaty rights (Curran, 2019). Aboriginal and Treaty rights are recognized in both forestry and fisheries management, and potential infringements on those rights trigger the duty to consult and where appropriate, accommodate. These consultations differ between forestry and fisheries, but both must uphold the honour of the Crown by engaging in fair dealings in consulting with, and accommodating Indigenous Peoples when their rights may be infringed upon by executive government action (Newman, 2015). In Manitoba’s *The Forest Act* (CCSM c. F150) makes no mention of Aboriginal and Treaty rights, but submission guidelines for 20 year forest plans, the province provides for consultations with First Nations as it “recognizes that its legal duty to consult with Aboriginal peoples” given the nature of potential impacts on “the exercise of an aboriginal or treaty right” (MSD, 2007, p. 1).

Indigenous participation occurs primarily after the high-level forest management plan is completed, but before operating plans are finalized (Scrafield et al., 2020). High-level decisions which tree species and the volume of wood allowed to be harvested can affect how much water leaves the watershed, and when (Teuling & Dijke, 2020). Consultations involve a review of “plans and timber allocation requests...[by] community members and industry

representatives...[with] open dialogues to discuss timber harvesting, access development and rehabilitation, and any forest renewal activities...near their communities” (MSD, 2017a, p. 28). Aside from participation in operational planning, there are efforts to employ Indigenous Peoples in forestry and establish collaborative initiatives with Aboriginal governments (Griffith et al., 2015).

Fish habitat and populations are affected by changes in surface water and land cover, including agricultural drainage and logging, which brings fisheries management into the domain of water governance. Indigenous interests in fisheries management include rights-based and commercial fishing. The federal government devolved partial jurisdiction over fisheries to the provinces through the provincial *The Manitoba Natural Resources Transfer Act* (CCSM c N30) and federal *Manitoba Natural Resources Act* (SC 1930), but reserved Indigenous rights for fishing on unoccupied crown lands, and retained jurisdiction over fish habitat. Indigenous rights are only somewhat limited by provincial fisheries regulations, specifically with conservation closures, which trigger consultations (MSD, 2020). Indigenous Peoples also participate in the commercial fishery, but are subject to the same regulations as other commercial fishers.

4.2.4 Structures and Institutions

A constellation of legislation directly and indirectly affect water; here I focus on a few that directly affect how and when Indigenous Peoples can engage in and with state-based water governance.

The Water Rights Act (CCSM c. W80) establishes the framework for water governance in Manitoba, defining what water is and a priority list of the purposes for which it can be used. The Act claims all rights to water for the Crown, who are also in charge of licensing and permitting water works or diversion. Licenses and permits are subject assessment of impacts to ecosystems, primarily considering water levels and flows (9.1(1)). Requirements for public notice (6(3)), and avenues for dispute are laid out (6(3)b) and 24(1)). The Act also allows the minister to enter into agreements regarding transboundary waters or data collection and analysis, but only with federal or provincial governments (21(1)). There is no mention of Indigenous Peoples or Aboriginal and Treaty rights in the Act.

The Water Protection Act (CCSM c. W65) lays out a framework “to provide for the protection and stewardship of Manitoba’s water resources and aquatic ecosystems” (2), describing what must be included in a watershed management plan (16(1)) and establishing the

general requirements and criteria for planning (15). Persons or entities (e.g. watershed or planning district board, municipal council, individual) or a partnership thereof can be designated as a water planning authority (WPA), empowering them to develop a watershed plan (14). The requires WPAs to consult with federally recognized First Nations that have land in the watershed (17(1)). A provincial watershed planner assists the WPA in planning, and the province funds public consultations and supports the process with data and analysis from resource managers and technicians.

The *Watershed Districts Act* (CCSM c. W95) establishes the form and function of watershed districts (formerly conservation districts). The districts represent municipal governments within a geographic watershed, with each municipality contributing financially and having a say in local surface water management. Board structure and roles are primarily for municipal representatives, elected and non-elected, with space for two to three appointed members (10(2)). Boards investigate and implement water management ‘schemes’ to “benefit the district by protecting, preserving, conserving, managing, controlling or prudently using the resources of the district” (21(2)). Four conservation/watershed districts are mandated to license and manage drainage infrastructure (*Watershed Districts Regulations*, MR 141/2019), while the province retains authority and responsibility over drainage in the rest. Watershed districts typically coordinate plan implementation and conduct education or outreach, but most lack the authority to license drainage or enforce government regulations.

The *Conservation Districts Act [CD Act]* (CCSM c. 175), in place prior to the *Watershed Districts Act*, did not recognize First Nations bands as eligible for partnerships. This lack of recognition in the *CD Act* was a barrier to First Nations collaboration on programming and implementation (Hurlbert & Andrews, 2018). Later revisions to the *CD Act* allowed additional, non-municipal board appointees, but this did not increase Indigenous participation in CD boards (Hurlbert et al., 2015). The CD program was critiqued for missing “significant provisions for scientific monitoring and progress evaluation” (Osborne et al., 2007, p. 36), and for performing poorly in the use of dialogue and deliberation to resolve drainage-related disagreements (Hurlbert & Andrews, 2018).

The *Municipal Board Act* (CCSM c. M240) establishes the quasi-judicial Municipal Board, which is currently responsible for public consultation and dispute resolution under the *Water Rights Act* and *Water Resources Administration Act* (CCSM c. W70). A process is

articulated for the board to make final and binding decisions in the contestation of government decisions to approve drainage applications. Though not a primary institution in water governance, it is key here in its role as a mediator of water conflict. In making their decisions, the municipal board is mandated to recognize Crown and private (property) interests, but not interests rooted in Aboriginal and Treaty rights. Instead, Indigenous Peoples must dispute license approvals through the same mechanisms as the public, but without reference to Aboriginal and Treaty rights as the board does not consider those to be legitimate interests.

4.3 Methods

This chapter draws on data from participant observation, interviews, and document review, and is presented in a case study format. Given that Indigenous engagement occurs through different mechanisms, in a multitude of contexts, over varying lengths of time, and with varying degrees of efficacy (Wyatt et al, 2013; Wyatt et al 2019), knowing what counts as engagement, where it occurs, and who is involved requires setting boundaries between context and the ‘phenomenon’ of engagement. Where one engagement ends and another begins may not be clear, and the boundaries between engagement in water governance and other resource domains are sometimes ambiguous. If water governance is understood as “the processes and institutions by which decisions that affect water are made” (Lautze et al., 2011, p. 7), then it occurs in multiple places, through time, and involves more than just decisions made in watershed planning or management.

Any resource domain where management actions influence or interact with water can potentially become part of a broader web of water governance and water relations, even if not formally through legislation and policy. According to Yin (2013, p. 16), in situations where the “boundaries between phenomenon and context may not be clearly evident,” then case studies can provide a suitable research approach. However, some scoping of the research is still necessary. For this study, the ‘community’ is taken as the unit of observation, with multiple samples of their engagement in the ‘spaces’ where decisions that involve water are made (Gerring, 2006). The detailed study of one community’s experience allows for future comparison with research on the experiences of other First Nations communities, while also identifying key mechanisms of engagement that can be targeted for changes in policy and practice.

4.3.1 Community-Based Research

This case study reports on community-based research project conducted in partnership with Wuskwi Sipiik First Nation. Community-based research can encompass a wide range of participatory research approaches and activities (Halseth et al, 2016). Broadly, it can be defined as research that is “conducted by, for or with the participation of community members” (Halseth et al, 2016, p. 17, citing Sclove et al., 1998, p. 1). In the context of this dissertation, my work with Wuskwi Sipiik First Nation represents our approach to community-based research. The work was made possible by funding from the Natural Sciences and Engineering Research Council, as part of their CREATE H2O program through the University of Manitoba. I was referred to the community by a program coordinator, and met initially with the lands manager (a settler) and a band member (and councillor at the time) to determine if my skill set and training were appropriate for their needs.

We collaboratively established a shared purpose—to share the community’s story of seeking to repair and reclaim their traditional relations with water—and established my role in collecting data for the story. Our approach would centre on a community-based planning process to document existing concerns and to identify potential avenues for action. Interviews with community members supplemented the data collected through the planning process and community meetings. My role was to facilitate and provide technical support and research for the planning and community meetings, and to conduct the interviews. We also negotiated a research and data sharing agreement following the principles of OCAP (Ownership, Control, Access, and Possession). A clear delineation was made between community-owned data that would not be published, and interview data that was eligible for inclusion in this dissertation and related publications. The research was approved by the University of Saskatchewan’s Research Ethics Board (certificate BEH 17-107). During the consent process, participants opted to use their real names. Data from interviews with watershed planners and resource managers were used to investigate how forestry, fisheries, and watershed planning are implicated in the issues and concerns of WSN members.

Documents reviewed include resource management reports and plans, legislation and regulations, climate and hydrological records, newspaper reports, and historical accounts. These provide historical and contemporary context, and additional data for triangulation (Yin, 2013).

Results from interviews and informal conversations are blended with information from government reports, documents, academic research, and field notes from participant observation.

4.3.2 Interviews

Semi-structured interviews were used to gather first-hand accounts of community members, and was to include spatial data regarding valued water places and observations of change in water and water-related environments. Spatial data were collected using the QGIS software package. Notices about the research soliciting participation were posted in the community hall and distributed by staff. The planning committee and band staff aided in the development of the interview guide, developed a list of potential interviewees, and assisted in contacting and organizing interviews. The list included youth, Elders, knowledge keepers, and those with lived experience on the land, on water, and in providing drinking water on-reserve. In total, six community members were interviewed eight times: Elder Marilyn Stevens (2018; former teacher, Elder Committee chair), Lawrence Brass (2018; employed in forestry), Craig Stevens (2018; former band councillor, special projects manager), Marcel Brass (2018, 2019; knowledge keeper), the late Brian Brass Jr. (2018), and Sheldon O’Neil (2019; commercial fisher, water truck driver, former water treatment plant operator). Interviews were conducted in the community hall or in private residences, and ranged from 30 to 90 minutes.

Seven additional semi-structured interviews were conducted with key informants involved in water governance or a related field, and having experience with Indigenous engagement. The interviews cited in this chapter include: Sharla Dillabough (2017, 2018; Manitoba Sustainable Development [MSD]- watershed planner), Erin Dunbar (2018; MSD – watershed planner), Suzanne Chiupka (2018; MSD – watershed planner), Ian Kitsch (2019; MSD – fisheries manager). Other interviews not cited included Dale Hutchison (2018; Manitoba Hydro – waterway community engagement) and Amanda Karst (2017; community engagement specialist, Nature United). These conversations informed my understanding of the broader institutional and systemic contexts in which indigenous engagement in water governance takes place.

4.3.3 Participant Observation

According to Kuwalich (2005), “Participant observation is the process enabling researchers to learn about the activities of the people under study in the natural setting through observing and

participating in those activities.”. From 2016 to 2019, I visited the community nine times to participate in community events, conduct interviews, and facilitate committee meetings. In addition, I worked with community members and staff to develop a community-based water monitoring program, apply for various grants to fund committee meetings, purchase of water monitoring equipment, and support water monitoring activities. My observational stance was that of an observer-as-participant. As an outsider, I was invited to participate in specific community activities to gain trust, build relationships with community members, and gain an understanding of the realities facing them (Kuwalich, 2005). In working not only with community members but also staff and civil servants, my participant observation was 1) long-term; 2) centered on social relations and processes, specifically in terms of water governance; 3) was holistic, in that it encompassed issues around subsistence along with water and land-based relationships; and 4) involved befriending people who were once strangers (O. Shah, 2017).

4.3.4 Study Area

4.3.4.1 Geographic Context

According to Statistics Canada (2018ab), the province of Manitoba covers over 550,000 km², includes seven treaties (1 through 6, and 10), and extends across a diverse range of ecozones from arctic and taiga uplands in the north to the rocky boreal shield through the north-central and eastern regions, the treed and boggy boreal plains in the central and mid-east regions, and prairie plains in the southwest. The province is entirely within the Hudson Bay ocean drainage area, and mostly within the Nelson River drainage basin. Catchments in the Nelson River basin include the Assiniboine flowing from the west, Red River from the south, and Saskatchewan River from the east. Within those catchments are many thousands of small lakes, sloughs, streams, creeks, and drainage ditches. The 2016 (Statistics Canada, 2017) census reports that the population of Manitoba was approximately 1.2 million, with an Indigenous population of 223,310, mostly First Nations (approx. 130,000) and Metis (90,000). Just over half of status First Nations lived on-reserve, with the other half in population centres such as Winnipeg (92,810), Brandon (7,015), Thompson (5,870), and Portage la Prairie (3,990).

The specific focus of the research is on the western edge of Manitoba in the transboundary Swan Lake watershed, with 4,380 km² in Saskatchewan and 5,780 km² in Manitoba for a combined extent of approximately 10,160 km². Settlement of the Swan Valley first burgeoned around 1900, as population overflowed from the nearby settlement of Dauphin;

by 1926, there were approximately 2,700 farms in the Valley, and forest reserves were established on the Duck and Porcupine Mountains (Parker, 1932). Clearing of land along the escarpment edges of the mountains led to significant erosion and downstream deposition of sediment in drainage ditches, and caused lowland flooding until it was restricted in the 1930s (Carlyle, 1980). After World War II, a second wave of settlement brought further agricultural expansion to the valley, as the provincial government set aside 40,000 acres in the watershed first to settle war veterans, later expanding to 55,000 acres and including non-veterans. The settlement program provided settlers with 160 acres, approximately 50 of which was cleared initially by developers. Additional land was cleared by farmers over time. Development required roads, which were paired with drainage ditches “eight to ten feet in depth” to lower groundwater levels and improve soil conditions for agriculture (Vanderhill, 1959).

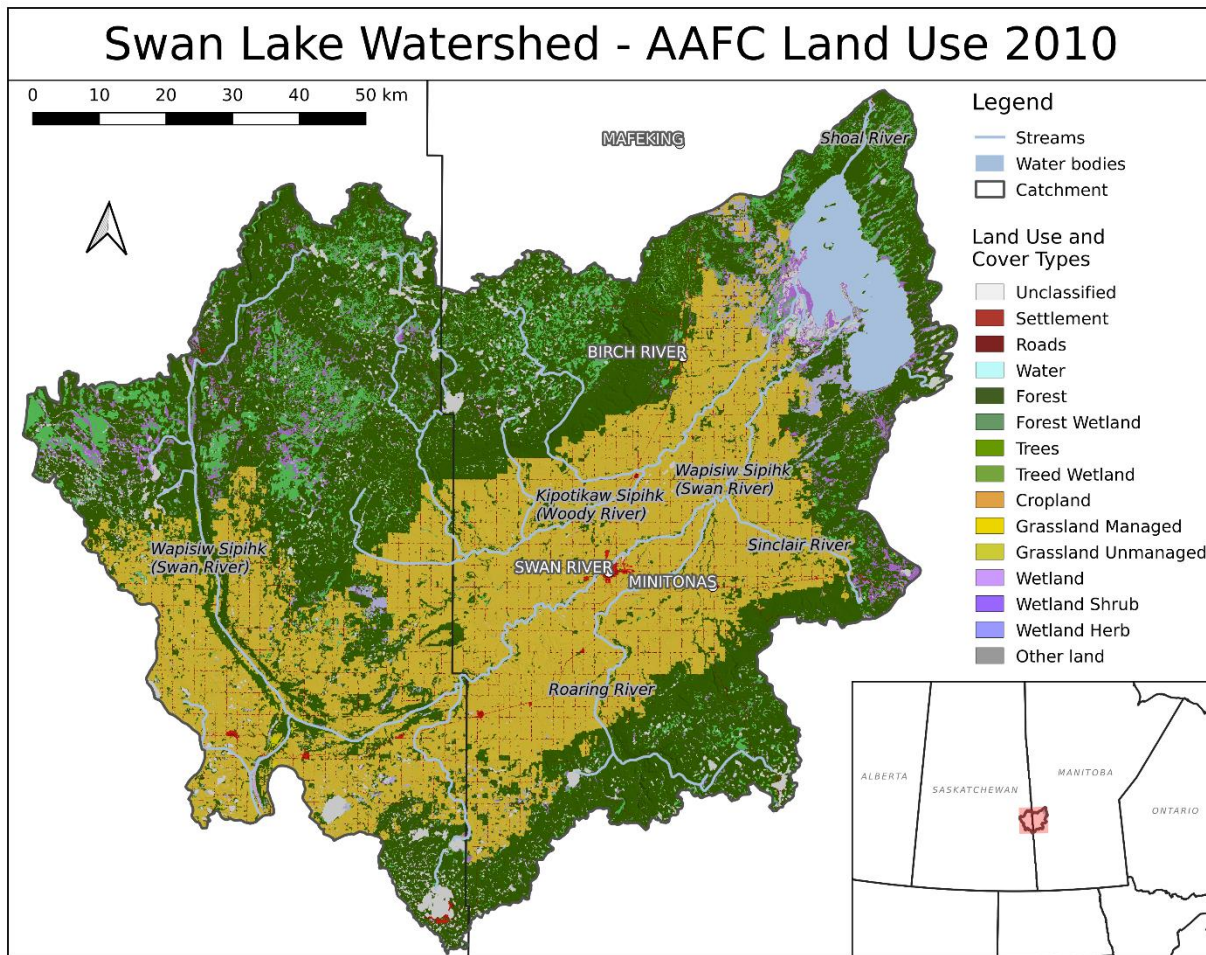
According to Statistics Canada’s 2011 and 2016 Agriculture censuses (2018a), farm type, composition, and size have changed significantly. From 2011 to 2016, the number of farms registered in Swan River’s agricultural district dropped from 664 to 590, and on average increased in size from 1,181 to 1,294 acres. Most farms report oilseed and grain production (332), cattle ranching and farming (123), other crop (68), and other animal production (46). Consolidation within, and increasing flows of capital into, agriculture are evident: the number of farms reporting capital between \$500,000 and \$1 million dropped from 148 to 103, while farms reporting capital of over \$3.5 million more than doubled from 60 to 134 (Statistics Canada, 2018b). Forestry, agricultural drainage, and expansion of agricultural fields are still the primary drivers of change in the regional landscape, intensifying over time in response to global, regional, and local economic and political pressure.

The Kipotikaw Sipiik (*Woody River*) and Wapisiw Sipiik (*Swan River*) are the largest streams, draining most of the watershed into the catchment’s largest body of water, Wapisiw *Sakahigen* (*Swan Lake*). Water flows into Lake Winnipegosis, then Lake Winnipeg, and eventually north to Hudson’s Bay through the Nelson River. In the watershed, there are approximately 646 km of documented drainage ditches (i.e. roadside, not within farms) accounting for approximately 2.5% of the provincial total. Almost all surface water entering Swan Lake flows through agricultural lands.

Depicted in Figure 4.1, 2010 estimates of land cover data from Agriculture and Agri-Foods Canada ([AAFC], 2013) indicate that approximately 45% of the watershed is forested

(commercial forestry; 3,710 km²), 35% is crop land (3,556 km²), 12% is wetland (including herbs, shrubs, forests, and other wetlands; 1,219 km²), and the remainder includes urban, roads, and other. Nearly all forested lands in the Manitoba portion of the watershed are designated as provincial parks (1,650 km²), within which logging is permitted. Logging is also permitted on the Saskatchewan side (2,060 km²), but under regulations requiring deeper riparian buffers. Louisiana-Pacific Corporation (LPC), a multinational manufacturer of building materials, holds a large forest management license in western Manitoba, harvesting aspen and mixed woods from the Porcupine and Duck Mountains to supply their nearby processing and production facility.

Figure 4.1 Land use and land cover in the Swan Lake watershed



Note: Figure by Warrick Baijius, with land cover data from AAFC (2010), hydrography (NRC 2019b), cities (MLI, 2020), watershed (MLI, 2017a) and provincial (MLI, 2001) boundaries.

4.3.4.2 Partner Community

This paper reports on a collaborative research project with Wuskwi Sipiik First Nation. Research was conducted in partnership with Wuskwi Sipiik First Nation (WSFN), the Band government representing a small Indigenous community near the city of Swan River, Manitoba (MB), located approximately 550 km northwest of Winnipeg, MB. Much of the traditional territory for community members is within the Swan Lake watershed, but also extends to areas outside of the watershed boundaries. The Nation is an 1874 signatory to Treaty Four, and was administratively aggregated with Sapotaweyak Cree Nation by the federal government until 1982, when WSFN separated to form its own band government with have a separate reserve (INAC, 2002). WSFN is also part of the Swampy Cree Tribal Council, sharing resources and coordinating services with other nearby First Nations band governments. Members of Wuskwi Sipiik trace their heritage to Swampy Cree from the northeast and Anishinaabe (Ojibwa, Chippewa) from the east and south. Population and band membership estimates vary by source: from 556 (MSD, 2014a) to 640 (Swampy Cree Tribal Council, n.d.) to 679 band members, most of whom live off-reserve, with more males on-reserve and more females off-reserve (INAC, 2021).

4.4 Results

Interviews, discussions, media, government and non-government reports, and my own observations reveal how changes to the landscape—brought on by colonization, settlement, development, and extraction—have impacted Indigenous Peoples. Forestry and agriculture have changed land, water, and wildlife in and beyond the watershed, and have affected the ability of members of Wuskwi Sipiik to maintain traditional cultural practices and relations with the land.

While we sought a wide range of community voices, not all of those we identified were willing or available to participate. In more than one planned community visits for interviews, deaths in the community resulted in the cancellation or postponement of interviews. As a result of these two circumstances, we purposively (O. C. Robinson, 2014) selected key community members that had specific knowledge and experience to speak to environmental changes on the land and in the water, or to relationships between the community and government, or band and provincial or federal governments. We considered these participants as experts in their own right, but the lack of broader inclusion means that there are still many other perspectives and experiences that must be documented, and that will add depth to the account given here. For

interview data, I reference the participant by first name, list their affiliation, and the month and year interviewed. Participants and their affiliations are described in the methods section.

4.4.1 Development Pressures and Impacts

4.4.1.1 Forests, dams, and stream flows

Community members I spoke with informally and those I interviewed identified changes in the timing of peak flows, flow duration, turbidity, and frequency of flooding as key indicators of change in local hydrology. Flow duration refers to the period of time that a creek has flowing water; low flows affect riparian and aquatic ecosystems, potentially impacting fish spawning habitat when creeks dry out. Flooding impacts municipal, provincial, and First Nation's infrastructure and housing alike (*Flash Flood Mafeking [Images]*, 2011; Grabish, 2017; Schroeder, 2013). Upland erosion from logging was also raised as a concern.

Observations of changes in the timing of peak flows in local tributary streams was raised during consultations for watershed planning, but government hydrologists found no significant changes in the overall timing of flows for the two main streams (MSD, 2014a, p. 11). I was asked by the community-based planning committee to investigate why, in recent years, a few creeks near the highway reserve had gone dry but not others. Time-series satellite imagery showed progressive deforestation within the upper catchment for the creeks. As these creeks are not gauged, it is difficult to precisely know the relationship between upstream logging and downstream flow peaks and duration.

I discussed some of these issues with Andrew (personal communication, 2018), a regional forester manager based out of Swan River. While he suggested that the relationship between logging and downstream water quality is not clear cut, he resisted overharvesting as a definitive cause of downstream flooding but did not disagree that harvesting affects the water holding capacity of forest wetlands. He notes that soil erosion is occurring when riparian trees die—from age or from waterlogging—and are blown over and soil is exposed to precipitation. Andrew suggested that reducing erosion would require either leaving more trees (a buffer) to reduce blowdown of riparian vegetation, or to harvest wetland and riparian areas more completely but leaving more upland forest untouched.

According to Andrew, changes in the frequency of flooding and levels of erosion are driven primarily by changing precipitation patterns and an abundance of beaver in the mountains.

With fewer trappers controlling the beaver population, dam complexes in the forests are expanding, flooding parts of the forest and creating a sense of urgency amongst government and industry to harvest trees while they still have economic value. When these pre-emptive ‘salvage operations’ are followed by heavy precipitation, the resulting surface water flows can overload beaver dams and trigger a cascade of bursts through the dam complex, causing downstream flooding.

4.4.1.2 Agriculture and water quality

In the valley, agricultural drainage and farm operations continue to shape the landscape and alter the extent, flow, and quality of surface water. In the late 1990’s, three years of above-average precipitation was followed by an acceleration of illegal drainage in Swan River. To raise awareness of drainage regulations in 1999, Manitoba Conservation mailed “1,500 letters...to every registered farm, and 36 letters to heavy equipment operators” in the Swan River district (GM, 2000b, p. 37). Widespread drought from 1999 to 2004, and again in 2012 (GM, 2014a), lessened flooding impacts from drainage, but also facilitated the filling and contouring of ephemeral wetlands for seeding to crop or forage. With a return of precipitation to 30-year normal levels, rates of drainage and land cover change have again increased:

[farmers are] clearing land and the natural waterway run offs, they take it all out and run their tractors and their machinery over it, turn the dirt over, and then where the natural waterways were filtered through the grass ...that’s all gone now...Where you used to see bush for miles now it’s just straight open fields. (Sheldon, community member [CM], 2019)

going to the main community [by the lake] five years ago you would have seen a lot of bush along the last two-mile stretch there. Today it’s mostly farm field. There was marshland in there that was water filtration. The water retention is gone. A couple of creeks in there are gone...things like that happen all the time. (Craig, CM, 2018)

Local observations are similar to those made in other watersheds:

In Manitoba...we've been in a wet period for several years ...we've also gone through some pretty significant floods through the Assiniboine and the Red Rivers in the past few years as well. So there's more of a culture, I believe, or

feeling like there's too much water and we need to get rid of the excess, and not really planning for when we don't have enough...[so] there are a lot of wetlands that get drained. (Sharla, MSD, 2017)

In addition to draining and filling wetlands, I observed and heard about farmers cultivating road allowances to the edge of drainage ditches, leaving little to no riparian vegetation. During high intensity rain events, stream banks without permanent cover erode and degrade downstream water quality. Channelization is also prevalent, with streams straightened and dredged to improve efficiency at the expense of increasing flow rates which aggravate downstream erosion and flooding.

Farm animals also alter water quality. Provincial water quality testing of the Wapisiw and Kipotikaw show an initial increase in detection and subsequent minor fluctuations of *E. coli* between 1993 and 2004, but below recreational objectives (MSD, 2011c, p. 9). Aggregate levels may not exceed objectives, but this approach masks hotspot creeks—where community members and their children fish and recreate—where *E. coli* may be concentrated prior to dilution in the main streams. While the “application of a substance containing nitrogen or phosphorus [such as manure] to land by a person” is regulated, direct deposition of manure into waterways by animals is not an offence under the *Nutrient Management Regulations* (MR 62/2008) section 1(3)) and therefore not directly subject to penalties under the Act. Fencing out cattle from streams and restoration of riparian buffers are identified as priority actions in the Swan Lake watershed plan, but implementation relies both on funding and voluntary uptake by farmers rather than through enforcement orders.

4.4.1.3 Declining Wildlife and Biodiversity

Moose have been a significant and prized part of the community’s traditional diet. Soon after LPC built roads into the forests and increased harvest rates, moose populations began to decline (Soprovich, 2010). Populations in the northern part of the watershed have stabilized and in the southern part they appear to be increasing, but both are still low enough that hunting restrictions remain in place (GM, 2020). A leading contributor to the moose population decline in the Duck Mountain area is identified as logging road construction, which provides easier access to moose by predators and hunters (Louisiana-Pacific Ltd, 2014). Agricultural land clearing and wetland drainage also affect moose population and health: “They clear-cut [the bush in the valley] and

destroyed good moose habitat. And we're going through a moose closure because of the population almost dying out" (Craig, CM, 2018). Greater declines in local species abundance have been observed with wetland birds such as the mud hen (American coot, *Fulica americana*): "[there] used to be millions of them here in the marshlands that were our territory. Now you'll be lucky to see 10 in a summer" (Craig). Local declines are contrasted with an overall increase in coot populations within the province, serving as an indicator of change in local wetland habitat quality and extent (Kiel, 1955).

As land cover is changed from wetland bush to forage or field crops, many culturally valued species of plants have declined or disappeared from the local landscape. Raspberries and bottle berries (possibly mountain fly honeysuckle, *Lonicera villosa* var. *villosa*) once gathered from across the lower reaches of the Valley are now mostly lost to agricultural land clearing. Places where community members once gathered medicinal plants, herbs and flowers have been ploughed, flooded, dried up, or experienced growing conditions, including soil and water chemistry and exposure to nutrients and pesticides. Depending on what they are seeking, many community members must now travel farther from their homes to find these species, though some pockets of species can be found within the reserve or in northern portions of the watershed, where lesser agricultural pressure means more natural areas.

4.4.1.4 Impacts on Aquatic Habitat and Fish Health

Community members rely on fish to supplement their diets, and some are also employed in commercial fishing. In the last 5 years, changes in local fish health have been observed, including tumour-like growths or warts on some species, and deformed snouts found on some northern pike (jackfish). In addition to fish health, fish populations have also changed. Sheldon (CM, 2019), a commercial fisher, noticed that "15 years ago we had a hard time to catch pickerel [walleye]. Now we're just catching enormous amounts of them...been getting better...every year." Brian (CM, 2018) also noted an abundance of pickerel and increasing populations of pike and suckers. But not all fish populations are thriving, with Brian, Craig, and Sheldon noting significant drops in other species such as perch and goldeye:

where I used to catch five to 10 tubs of perch a day, now I'm lucky if I see two or three perch in the whole winter. That's the same with the goldeye; there are just none. And that's happened over the last 10 years...the smaller species of the

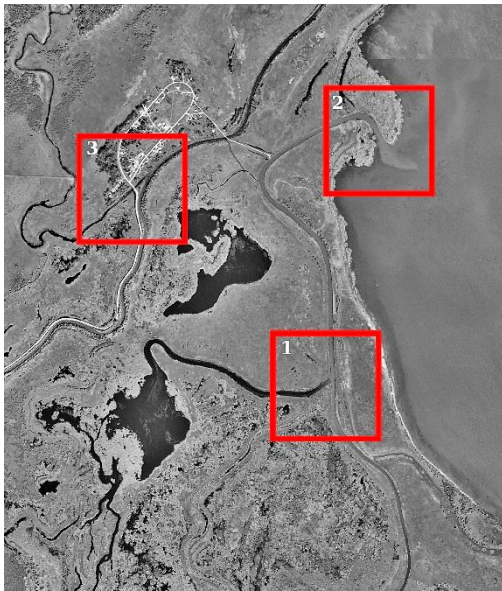
fish...they've been pretty much pretty near wiped right out. (Sheldon, CM, 2019)

Regional fisheries manager Ian confirms that fish populations in Swan Valley have fluctuated in recent times, but currently there is no need for regulation:

I'd say most of our fisheries [in the northwest] are better today than they were 22 years ago...in the nineties we were in a very dry cycle and a lot of our lakes were low. We had a series of extremely poor spawning year 'cause the runoff was bad...Spawning opportunity was poor...we're slowly getting back into that wet cycle, although I think we're in a dry one right now. (Ian, MSD, 2018)

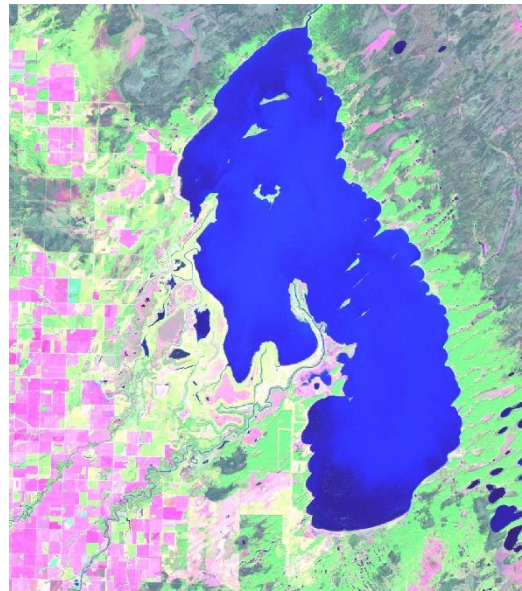
In the 2014 watershed plan, Elder Buddy Brass noted significant levels of silt deposition in the lake. Turbid water is visible from space, with aerial imagery from July 1998 in Figure 4.1 showing (1, lower box) the confluence of the turbid Kipotikaw Sipihk (*Woody River*) with outflow from a wetland prior to (2, upper) entering Wapisiw Sakahigen (*Swan Lake*) and creating a significant sediment plume. Also highlighted is (3, left) is where the also turbid Wuskwi Sipihk is diluted by the Wawayanagan River. In Figure 4.2, a false colour composite of satellite imagery from September 2002 shows turbidity (as light blue) in most of Wapisiw Sakahigen (*Swan Lake*), with some clear water (dark blue) in the south and a few pockets in the north and northwest.

Figure 4.2 Aerial image of sediment load and plume



(Manitoba Conservation [MC], 1998)

Figure 4.3 False colour composite image of sediment load in Wapisiw Sakahigen



(MC, 2002)

During community meetings and events, and in the interviews, community members voiced concerns about the impacts of land use and water management decisions on fish spawning habitat. Sedimentation and silting in of deltas are widespread problems in the lakes Ian manages, with significant impacts on fish migration, but addressing the problem is difficult: “you’re dealing with some big players...it involves so many players that it’s a hard one to tackle” (Ian, MSD, 2019). Fisheries manager Ian notes that his department does not conduct habitat assessments because “habitat is a responsibility of the federal government.”

Background reports for the 2014 watershed plan highlight the need for riparian enhancements, wetland conservation and restoration, and controlling streambank erosion to reduce downstream nutrient and sediment deposition (MSD, 2011ac). Watershed planner Sharla notes that in the plans she has worked on, she strives to include implementation actions that focus on “keeping buffers along the rivers and the water courses...not developing in flood prone areas...[and] maintaining wetlands.” When funding is available, the province may intervene to improve fish habitat by adding material to stream and lake beds, but they do not conduct upstream riparian enhancements or stream restoration.

4.4.1.5 Drinking Water Insecurity

The changes documented above have also impacted community's drinking water. First, it is important to note that at the time of our project, two different water systems were servicing the two main WSN settlements, both subject to different risks and potential sources of contamination and points of failure. The first water treatment plant (WTP), built around 1990, provides piped water to houses and buildings on the lake-side reserve, and until recently sourced its water from the Kipotikaw Sipiik (Woody River), previously drawing from the Wuskwi Sipiik (Indian Birch River). Prior to construction of this WTP, people would collect water from the Wuskwi, other streams, or the lake. Houses and buildings on the reserve by the highway are serviced by a truck-to-cistern system, until recently with water fetched from the nearby community of Birch River. The Nation has gradually shifted housing and services to the highway-side reserve, reducing demands on the original WTP. A new WTP in the highway reserve was completed in July 2020, using groundwater as its source. The water truck still delivers to households and buildings by the highway, and to the old WTP for distribution to houses and buildings by the lake (Ben, WTP operator, pers. comm, 2018). A third water system services a small group of houses separate from the lakeside and highway reserves, but discussions of drinking water quality amongst community members focused on the main settlements.

Prior to the new WTP, both the piped and truck-to-cistern systems were subject to water quality issues. In April 2014, treated water from the old WTP exceeded federal guidelines for haloacetic acids (a disinfectant by-product) and a Boil Water Advisory (BWA) was issued. With a damaged filter membrane, the WTP was already compromised, but then rapid snow melt and spring rain produced two pulses of above-average stream flows in the Kipotikaw Sipiik (Woody River), which eroded cultivated creeks and stream banks, pouring organic matter downstream. The excessively turbid water required greater levels of chlorination, producing more haloacetic acids. Sheldon (2019), a former WTP operator and current water truck driver, discussed his experience at the old WTP: "It was a little stressful that our plant kept breaking down on us. We were having a lot of trouble with the intake pump house. The river's pretty dirty so [the filter] kept plugging up." To reduce chlorination, WTP operator John improvised by settling river water in one tank for 24 hours, then pumping it into another tank for treatment and distribution (pers. comm., 2017). While this has made it possible to continue providing water suitable for some

residential uses, it does not resolve the BWA, and instead creates other issues related to the continued build-up of silt in the settling tank.

There are multiple pathways to contamination in a truck-to-cistern system. The source water quality in Birch River is poor, subject to a long-term provincial water quality advisory for arsenic issued in 2011 (Manitoba Drinking Water office, pers. comm., 2019) and also high enough in mineral content to cause issues with plumbing and appliances.⁸ Community members identified cistern maintenance as an on-going issue, with many households waiting 24-48 hours after delivery before using, to give time for sediment to settle in the cistern. Some cisterns are cracked, with groundwater entering the tanks after significant rainfalls. Even for non-consumptive uses, the water quality is sometimes bad enough that Sheldon “knows kids that get rashes from having to bath in the water...I hear people complain about it.” People are not supposed to be drinking the water he trucks in, but he knows some people do: “it’s just no good. I feel terrible having to haul it to the people but that’s what I got to work with” (Sheldon, CM, 2019).

Most of the community members I spoke with purchased drinking water in 18 litre jugs and cases of 500 mL plastic bottles instead of boiling water. Costs of purchased drinking water varied by household size and composition, ranging from \$40 to \$140 a month, but not all households are able to afford this expense. At \$40 a month, Elder Marilyn (CM, 2018) comments “it’s not a big problem [for me] but for other families it is.” Water sharing within the community reduces the burden for some families, but unemployment means others forego clean drinking water. Some families will use boiled tap water for food-related tasks (cleaning, cooking), but others choose not to: “I still gotta haul water to wash my dishes even, ‘cause we eat off those plates” (Lawrence, CM, 2018). Use of bottled water for dishwashing reveals a deep-seated distrust in the existing water system, and places a greater financial strain on the household.

The community’s BWA seems to result from a ‘perfect storm’—equipment disrepair, rapid melt, and rain—yet poor water quality in the watershed is not unusual. For the Wapisiw Sipiik and Kipotikaw Sipiiks (Swan and Woody rivers, respectively), water quality index scores were ‘fair’ from 1992 to 2008: total phosphorous concentrations between 1988 and 2012 were typically well above river objectives; and total suspended solids were relatively low from 1988 to

⁸ As of March 4, 2021, there was also a short-term boil water advisory issued; https://www.gov.mb.ca/sd/waterstewardship/odw/public-info/boil-water/advisory_public.pdf

1993, but then with very high fluctuations from 1993 to 2012 (MSD, 2014a). In both catchments, land cover and use are predominantly agricultural and forestry, and so forestry and agriculture occurring beyond reserve boundaries can significantly impact on-reserve water quality.

4.4.2 Degree and Kind of Relations

At a general level, community members expressed dissatisfaction with the relationship between their community and government:

government itself don't seem to listen or care. And they say, "Oh we have this [law] in place." But the people who live the land know the changes that have happened. [Government decision-makers] don't because they're in their offices. They read a little report. But they don't go to the grassroots and go and talk to those people who live that life, who live that role of trying to save our lands. (Elder Marilyn, CM, 2018)

This type of 'tokenistic' engagement by government in resource management and planning falls short of inclusion in governance, with legislation and policy developed without adequate consultation and Indigenous representation. Elder Marilyn is frustrated that:

When they say they come and engage First Nations, already the legislation is in place without us knowing it...and then later on they'll say 'Oh we already met with them'. [They] just inform us and that's it...We depend on the government who don't seem to care or listen...they come for one meeting...we would rather see them five times, 30 times so we can make them understand our point of view. (Elder Marilyn, CM, 2018)

Sometimes, water-related issues facing the community cross jurisdictional boundaries, with fragmentation leading to "jurisdictional squabbles" that confound Indigenous engagement in water governance:

The province is fond of saying that to the federals, "That's your problem. Deal with it." Even though we're in Manitoba and we're considered Manitobans, we're not really. We're Canadians and that's it. There is no provincial terminology for us because the province don't recognize us enough. Yeah they see us. They know we have reserve lands but these are federal-regulated lands.

They have no authority there whatsoever. And so because of that they try to pass the buck all the time to the [federal government] and that's the way it's always been. (Craig, CM, 2018)

Craig's comments that First Nations are not yet involved as "idea makers... [in] true democratic form" suggests that inclusion in management and planning is not meeting the expectations of First Nations who want to be involved in higher level decisions. These comments generalize across many different interactions and engagements, and so it is important to understand how the different resource domains contribute to the perceived sense of exclusion and lack of influence.

4.4.3 Participation in Watershed Planning

The 2004 transboundary watershed plan jointly developed by the Saskatchewan Watershed Authority and Manitoba Water Stewardship shows no evidence of participation by WSFN or neighbouring First Nations. The 2014 watershed plan focuses only on the Manitoba portion of the watershed. Watershed planner Sharla—who grew up in Birch River—met with and interviewed members of WSFN, including Elder Buddy Brass and band Councillors. These engagements were meant to create dialogue and solicit the community's "values, concerns...what different things they'd like to see moving forward...[and] suggestions for any actions in the plan" (Sharla, MSD, 2017). In addition, then-Councillor Craig Stevens represented the community on the Project Management Team, attending planning meetings and providing input throughout plan development.

Key issues raised by community members and documented in the 2014 plan include erosion, illegal drainage, degraded water quality, sedimentation of lakes and creeks, wildlife habitat loss, and changes in wildlife populations. These concerns, originally solicited in 2010, were repeatedly raised during this study. However, many of these issues are considered "out of scope" for watershed planning and water management. Speaking of her experience in another planning process, Suzanne recalls:

Leaving the meeting feeling like we didn't get anywhere because they wanted to talk about moose hunting and they wanted to talk about fisheries and all these things...[which aren't]really things that we address in a watershed management plan. But they were things that they wanted to meet with government

about...And I have no background in that. It's not with my job. It's not even part of my branch at the department...everybody kind of left being frustrated...because they don't have an understanding of the organizational structure of the department, they don't understand why I can't talk to them about that. (Suzanne, MSD, 2018)

Suzanne also noted that these limitations are a result of how the process is structured:

we [government] are the ones who decide these are the 10 things we talk about in IWMPs; anything else is outside. And [First Nations are] saying, "Well, but this is important to us." ... I have to follow the Water Protection Act of what it requires for an IWMP and anything beyond that we don't require so we're not gonna spend time on it, you know? It's not like the problem is coming from the community. It's because we're trying to get them to cooperate with a system we've designed. And it's just not compatible the way we've set it up really. (Suzanne, MSD, 2018)

Water-related issues in agriculture, fisheries, and forest management are discussed in the watershed plan, but the non-regulatory nature of watershed planning means that neither the planners nor the watershed district are able to compel action to mitigate or address water-related issues: "[we can't] enforce changes in other areas of legislation or in other departments or upon other groups or communities" (Sharla, MSD, 2018). Water legislation enables the province to enforce remedies, but watershed districts are instead meant to encourage and persuade individual change through education, adoption of beneficial management practices, and payment for ecosystem services.

4.4.4 Participation in Forestry Planning

Although not included in establishing license parameters such as the annual allowable cut (volume of wood that can be harvested) or in establishing regulations for riparian buffers, First Nations are consulted for more site-specific forestry operations planning. In these consultations, foresters produce maps with satellite imagery overlaid by polygons to represent areas they would like to log, with primary and areas. Community members are then asked to identify places within the primary areas that they would like protected, and exchange that protection for logging in the contingency area. For community members, this can be an effective way to protect some of their

interests: “if we don’t allow [logging], that’s the only way we protect our plants, our herbs, our water” (Elder Marilyn, CM, 2018).

Logging has changed both the Porcupine and Duck Mountain provincial forests in terms of biodiversity and hydrology, with impacts on the Valley’s wildlife, water, and infrastructure (Soprovich, 2006). LPC’s first license was approved in the face of opposition: Local citizens and First Nations protested government approval of LPC’s license and plan (Love, 1994; Sullivan, 1994), with WSN and Sapotaweyak Cree Nation declining to participate in the environmental assessment, claiming the process was “legally flawed and unfair” (Manitoba Clean Environment Commission, 1996, p. 18). LPC’s environmental impact statement for the 1996-2006 plan asserted that a 600,000 m³/yr harvest would be sustainable “for the next 100 years” whereas in 2004 the province assessed that 349,000 m³/yr would be sustainable (Soprovich, 2009). Although it began with conflict and discord, the community’s relationship with LP has improved, though members of WSN are still concerned about the impacts of forestry activities on water.

4.4.5 Participation in Fisheries Planning

Fisheries management decisions, such as closures, can impact Aboriginal and Treaty rights. Fisheries manager Ian notes that since 2016, the province’s fisheries department has had a “shared management” mandate, marking a radical change from when he first started with the department in the 1990s:

a lot of our decisions were made in our office and...we didn’t have as much [interaction] then as we do now with our various user groups... their local knowledge, their traditional knowledge is built into these plans as well...That doesn’t mean we agree on everything. We have different management philosophies and ideologies maybe. But the bottom line is they got a lot to teach me as well. (Ian, MSD, 2019)

Shifting from a top-down “boardroom biology” approach to a “shared management” approach is entwined with political and economic realities, notably budget cuts. Whereas WSN and other Indigenous communities were previously less involved, now fisheries staff will meet with Chiefs and Councils in the northwest region “as much as we can,” often inviting wildlife and forestry staff to give presentations on moose and forestry as an “opportunity for exchange, for ideas, for

concerns, for comments...[to give] Chief and Council the opportunity to talk about any topic under the sun resource related.” Ian finds that fisheries staff and First nations have “very open relationship[s] now more than it ever has been...we keep getting invited back because they feel it’s worthwhile... now we have the opportunity or now we sit down with the First Nations and jointly manage these issues instead... of us sitting in a boardroom in one of our regional offices coming up with decisions” (Ian, MSD, 2019)

Contrasting with Ian’s assessment of the tone and utility of these meetings is Sheldon’s (CM, 2019) perspective: “[they] basically update us on what’s going on and what we can catch, our quota...Not too much really happens at the meetings. We don’t share too much with them and they don’t share too much with us. We argue a lot [laughs]. It’s not very good. Nothing really gets settled in the meeting.” While government and fishers’ perspectives differ, the structure of the fisheries meetings—including an open agenda and representation from multiple departments with regulatory authority to effect changes—is markedly different from the structure of watershed planning process and the institutional arrangements of watershed districts.

4.4.5.1 Funding, capacity, and resources as barriers

In Sharla’s experience, unless a First Nation community has a coordinator or employee that can be tasked with attending meetings and participating on resource committees, or someone who has a strong interest and is willing and able to dedicate themselves, communities will often decline invitations to participate. In contrast, watershed planner Erin (MSD, 2018) commented that “I haven’t really found a situation where a community wants to be involved but doesn’t have the resources—whether it’s time or financial or human resources—to participate.” These differing experiences come from engagement with different First Nations and planning processes, each in a specific socio-ecological context with different capacities and resources. Where resources are a barrier, there are opportunities to support Indigenous communities. Participation on watershed district boards serves as an example. While the new *Watershed Districts Act* “removes a restriction” on partnerships with First Nations, it “still doesn’t establish any kind of structure for [Indigenous representation on district boards] to happen... it’s not doing anything proactive.” Without financial support to participate, Indigenous representatives on watershed district boards must volunteer their times, in contrast with municipal representatives who “are being accommodated [paid] for their time to participate” (Suzanne, MSD, 2018).

Cuts to provincial funding for wildlife management has made it difficult for the community to maintain their moose management consultation committee, the community's core group that engage with government. Honoraria and payment for interviews are considered by community members as compensation for their time and knowledge, and recognition of the value of their contributions. Federal funding could increase Indigenous engagement in watershed planning, but Suzanne (MSD, 2018) is unsure if the federal government would pay for "Indigenous communities [to] participate in provincial initiatives," and is also unsure how to inquire about federal funding opportunities. Access to funding, whether federal or provincial, could help improve rates and depth of participation in water governance generally—such as through capacity building or honoraria—but successfully accessing federal funding can be challenging for small communities with limited capacity and resources to begin with.

WSFN's lands manager, Dan, is a wildlife biologist with experience working in government and as a consultant. He has helped the band in their forestry planning and moose consultations, manages their TLE lands—including the Nation's forestry activities and agricultural leases. Community members recognize Dan as integral in their ability to engage with government, in terms of the knowledge he provides, and his ability to get funding for their resource planning and management work. For our community-based planning process, the lands manager, a band councillor, and I developed and submitted four funding applications to two separate federal funding streams before managing to secure funding. This federal grant made it possible to compensate committee members for participating in meetings, and to buy equipment to conduct water quality testing.

4.4.5.2 Stewardship and conservation

One of the aims of participatory watershed planning is to bring people together to discuss local issues and find ways to address them (MBWS, 2003). Many of Manitoba's integrated watershed management plans include raising awareness and education as two ways to foster a sense of water stewardship in the community. Elder Marilyn finds that stewardship is sorely needed, as are awareness and dialogue:

For us Native people, we've always been stewards of the land. We didn't have ownership but we took care of it...And I am worried now because we've relinquished that role to be stewards of our own land...Yes I realize they have to

live, the farmers too. But they got to realize also what they're destroying...we have to curb those tendencies...Putting their poison into the land and into the waters. They gotta be curbed somehow. And I don't think I've ever heard of any big meeting happening where these issues have been brought out at a type of convention. To invite different groups. To try and open their eyes to what's happening with our earth. (Elder Marilyn, CM, 2018)

Aside from the project management team, the four public meetings in the Swan Valley were attended by 28 people in total (MSD, 2011b). Some planning approaches may allow for the type of dialogue and discussion that Elder Marilyn envisions, but low attendance makes it difficult to foster meaningful dialogue with a wide range of residents. Other than fostering a sense of stewardship and common understanding, other mechanisms to influence farming practices mentioned in the interviews included active enforcement of drainage regulations, greater penalties and fines for violations, and expanded financial incentives for farmers to take up beneficial management practices, such as wetland retention and conservation.

First Nations water stewardship also extends to their fisheries. Alongside other First Nations commercial fishers in the northwest region, WSN Chief and Council are seeking Marine Stewardship Council eco certification to add value to the Swan Lake fishery. Whereas some fisheries are managed with a single annual meeting, eco-certification required more: “[for] Swan Lake we’ve been meeting...probably up to 20 meetings over the last three or four years” (Ian, MSD, 2019). Increased monitoring is necessary to maintain certification, and Ian has found this to be an effective means of engaging more locals and First Nations in fisheries management by providing them with training and employment in exchange for valuable data to support certification and monitor the fishery.

4.4.5.3 Rights and Fairness

The province's position that planning does not infringe on Aboriginal and Treaty rights means that Indigenous consultation in planning is not based on these rights. The structure and outcomes of consultations with Indigenous communities are subject to multiple factors, individual and systemic. For example, lacking guidelines or criteria to inform their practices. Planners or watershed district managers who find it difficult to initiate a relationship with an Indigenous community may not follow up or put additional effort in to establishing one:

I think in situations where people either are more aware or have friendships with Indigenous People or for whatever reason have sort of become more in touch with that, I feel like those are the people who are more willing to go the extra mile and make the extra phone call and make the extra drive to the community to see what they can do. But there's still a lot of people who don't see it as important... it really stands in the way. (Suzanne, MSD, 2018)

While watershed planning does not trigger government's duty to consult, subsequent implementation of plan actions might. Suzanne worries that especially during implementation, Indigenous rights may be overlooked: "most people working in government [don't] really even understand what treaty and Aboriginal rights are...I don't think it's something that's top-of-mind" (Suzanne, MSD, 2018).

Having watched farmers illegally drain wetlands, degrade waterways, and eradicate traditional and cultural resources seemingly without penalty, community members I spoke with during interviews and community events interpreted under-enforcement of regulations as an informal sanction, privileging economic value over environmental degradation: "it's hard to get the government at the upper levels to really look what's happening down at the bottom levels because the bottom line is they're all in it to help the economy" (Craig, CM, 2018). Under-enforcement of regulations against settlers is contrasted with stories of race-based over-enforcement and surveillance of community members engaged in practices protected by Aboriginal and Treaty rights.

While they emphasize that the attitudes and approaches to enforcement vary by the individual officer—"there's always that one hardball...trying to catch us with something" (Sheldon, CM, 2019)—they contrast their experiences of heightened scrutiny with the apparent impunity of farmers illegally draining wetlands, converting scarce wildlife habitat to cropland, and damaging fish habitat:

It seems like they're out there to charge us with any kind of fine they could throw at us. They're not there to try to help us...It seems like they're out to get us any way they can.

Where the natural waterways were filtered through the grass ...that's all gone now. It's just running straight in dirt and water right into our rivers and creeks. And their chemicals are running straight into our Swan Lake. They keep such a close eye on us but yet the farmers get to do whatever the hell they want. [Farmers] say it's their land...there should be...some limit to what they can do. (Sheldon, CM, 2019)

With declines in fish populations, it has become difficult for community members to catch fish in their usual and accustomed places. Sheldon's attempts to deal with declining populations, increased effort to fish, and desire to help those who cannot fish brings him under increased scrutiny:

There's people on the reserve that come up to me and say, 'We want to fish,' like the Elders. They can't come out there and fish so I give them fish. Whoever wants fish, I give it to them. I never turn anybody down. And [conservation officers] look at me like "you're full of shit there. You're just here to try to catch this fish so you can sell it with your other fish." (Sheldon, CM, 2019)

4.5 Discussion

4.5.1 Economics of Stewardship

Multiple 'economies' are involved in this context. As with other small First Nations, Wuskwi Sipiik's lack of a dedicated environmental management staff position leaves the community at a disadvantage when it comes to participating in water management and or planning. Our shared experience in applying for federal funding made it clear that a successful application would require someone who has combination of knowledge and experience, time, reliable internet access, and the cooperation of federal employees to submit a successful grant application. Timing matters, as the programs are typically competitive and funds are allocated quickly. These grants can be used to build local capacity, including awareness about how provincial water governance is structured and practiced. While government has allocated resources and developed materials for training watershed planners to better engage with First Nations, watershed districts and watershed planners have no mandate to develop Indigenous or organizational capacity to support engagement (e.g. Suzanne's comment about the *Watershed Districts Act* not being proactive), and there are no publicly announced programs or intentions to develop Indigenous

capacity through training or employment in watershed planning, water management, or water governance.

Decisions considered internal to the provincial government can significantly influence Indigenous-state relationships. Whereas budget and staffing reductions in drainage enforcement led to rampant illegal drainage, reductions in staffing and resources in fisheries constrain the ability of the department to sample fisheries as frequently as needed to keep up with planning for either recreational or commercial fishing. Greater user engagement becomes a necessity for sustainable management, which Ian feels has facilitated relationship-building with First Nations and local fishers, improving the overall quality of Indigenous engagement in fisheries management. There are no equivalent changes in roles for Indigenous Peoples in drainage approvals or policy-making as a result of reduced drainage enforcement on private property.

Corporate decisions also influence government decisions. For the forestry industry, an abundance of beavers and ‘excess water’ puts the economic value of their timber licenses at risk, justifying aggressive harvests regardless of the lack of knowledge about downstream impacts. The regional forester’s comments about water retention, time-series satellite imagery, and community observations support the assertion that beaver dams and woody biomass can significantly regulate how much and how quickly water moves from the mountains into and out of fish-bearing creeks. Avoiding erosion and flooding would require a lesser harvest, but this would impinge on the overall value of extraction. Local flows are neither monitored nor modeled into forest decision-making, and so the argument for restraints on harvesting cannot be rationalized. Indigenous Peoples can protect some wetlands by identifying them as ‘of interest’ in forestry consultations, but must exchange conservation for extraction somewhere else to fill forestry quotas. Unlike in agriculture, there are no government payment schemes for offsetting the ‘costs’ of wetland retention.

Public sentiment and support of payments to producers for conservation indicates widespread awareness of issues associated with wetland loss. A study of Manitoban’s willingness to pay for wetland retention and restoration indicated that at the time of the survey, residents would likely support investing an estimated \$611 million over five years into wetland conservation and restoration, including through payments for ecosystem services (Pattison et al., 2011). The act of balancing drainage and retention is rife with contingencies regarding local context. Larger wetlands are not necessarily of higher conservation value, smaller wetlands are

more likely to be drained than larger ones (Mann et al., 2014). Policy studies suggest targeting conservation of high quality habitat (small wetlands) that is unlikely to be converted (large wetlands) (Rashford et al., 2011), offering conservation programs with enough incentive to ensure public benefits are secured, effectively enforcing regulations, and monitoring outcomes (Cortus et al., 2011). While the various economic impacts of different scenarios have been modelled, these efforts have not included socio-economic impacts of drainage and conservation on First Nations and Indigenous rights in Manitoba.

In addition to the complicating factors that influence which wetlands to save or drain, incentives to retain and restore wetlands must compete with the economics of wetland drainage and cultivation into road allowances. Farmers are seeking to maximize profit by increasing productive land per quarter, seeding earlier, reducing soil saturation, and using larger machines (Breen et al., 2018). Wetlands in fields become ‘nuisance costs’, as farming around them leads to overlap when seeding and applying fertilizers or pesticides (Cortus et al., 2011); quarter sections with more wetland are also valued less than those without, incentivizing drainage (Lawley, 2013). Payment schemes for habitat retention are effective, but the value of cash transfers and program availability are not always enough to prevent drainage (Rashford et al, 2010), especially when other programs—such as crop insurance—may incentivize it (Cortus et al., 2009). While a wetland conservation program has potential to conserve and protect ecosystem services, there would need to be additional emphasis on restoration, naturalization of creeks, and strengthening stream banks with adequate riparian buffering to address the concerns raised by members of WSN. Some of these activities have already been proposed as beneficial practices that should be incorporated in any payment schemes (Climate Change Connection, 2013; Venema et al., 2010).

4.5.2 Misrecognition

Whereas the province’s 2003 Water Strategy states that “Aboriginal rights to water should be defined and respected” in the context of Use and Allocation (p. 7), and whereas the 2014 Surface Water Strategy states that government “must ensure that water governance and planning approaches respect treaty and aboriginal rights” (p. 6), provincial solicitors are still of the opinion that watershed planning does not trigger the duty to consult. There are no mechanisms to define Indigenous water rights in water legislation or policy, nor guidance on how to respect them (i.e. identifying where or when water management might infringe on Aboriginal and Treaty

rights. As delegated decision-making bodies, neither watershed districts nor water planning authorities are empowered to fulfill the government's duty to consult in accordance with Section 35 of *The Constitution Act* (Promislow, 2013; Sossin, 2010). Consultation under the *Watershed Protection Act* is based on the misrecognition of Indigenous Peoples as stakeholders 'plus' rather than as a treaty nation with constitutionally protected rights (von der Porten & de Loë, 2014).

This lack of recognition of rights in planning creates a situation where drainage may be approved case-by-case with reference to the content of a watershed plan, which although it may have mention of Indigenous Peoples, does not articulate their rights or identify at what point drainage may infringe on their Aboriginal and Treaty rights; infringement may occur without consultation, accommodation, or consent. In this way, drainage licensing is an example of administrative action taken by a devolved authority where the duty to consult is not triggered, and cumulative impacts are not considered beyond other drainage projects (Curran, 2019). For the new drainage regulations, projects must be registered but not all are reviewed prior to approval. To be registered, the drainage works must 'align'—but not comply—with goals and actions in the watershed plan, and must not 'impact' fish habitat (MSD, 2019). These two criteria appear as the only opportunities for Indigenous Peoples to oppose drainage projects: by strong participation and advocacy in planning for objectives that explicitly and extensively focus on wetland/water retention and reducing erosion (so that drainage does not 'align' with the plan); or by using existing mechanisms to dispute project approvals and convincing the decision-making body that the project will have significant impacts on aquatic habitat (on a case-by-case basis).

While watershed plans may document some of the experiences and knowledge of Indigenous Peoples, identifying potential infringements on recognized and unrecognized rights in resource management, the sufficiency of this type of inclusion and representation is questionable when it comes to subsequent decisions and their outcomes. Lacking adequate data for comprehensive modelling of cumulative drainage impacts on ecosystems and environmental flows that support Aboriginal and Treaty rights, Indigenous practices and relations with land and water are at risk. Indigenous engagement and recognition of rights becomes contingent on practitioner good will, awareness, professional ethics, or Indigenous initiative, rather than legislative mandate and policy prescriptions, and even then, Indigenous participation may not influence environmental outcomes. The protected right to fish implies incidental rights to

adequate water quality to maintain fish habitat, linking impacts of drainage and forestry on fish habitat to infringement of Aboriginal and Treaty rights (Phare, 2009a).

4.5.3 Channeling Resistance

Where Indigenous environmental objectives privilege the sacredness of water and prioritize its protection, Indigenous rights and title have the potential to challenge and transform existing distributions of power, land, water, and material benefits or risks from development. From the perspective of established industry groups, this radical potential is a risk to the stability and certainty of their industry, and the way of life for those who participate in it. Whereas Indigenous claims and inherent rights may be recognized nationally and internationally, administrative decision-making processes and institutions established by government translate those rights into a form that is legible to existing legal structures, and more palatable to existing political and economic forces. Efforts by Indigenous Peoples to be recognized and included in water governance—and thereby to influence water management outcomes—in accordance with their rights are channeled through administrative decision-making, where ‘fair process’ is used as a means of deflecting or channeling Indigenous resistance to the hegemonic values of settler colonial society. By way of fragmentation and misrecognition, Indigenous rights, responsibilities, and claims are in many ways excluded from consideration in water governance. Fragmentation is evident in the jurisdictional distribution of governing power and authority, and extends through to the ways in which government organizes itself and administers policy and programming. Misrecognition refers to the ways in which the provincial government selectively or inaccurately recognizes the depth of—and relationships between—Indigenous interests, values, knowledge, and rights as they relate to water governance and management. By way of fragmentation and misrecognition, Indigenous rights largely are excluded from consideration in water governance. Fragmentation starts with the jurisdictional separation of powers, and continues to the ways in which government organizes itself and administers policy and programming.

4.5.3.1 Jurisdictional Fragmentation

Fragmentation is another issue that affects Canadian water governance broadly (Bakker & Cook, 2011; Cook, 2014), noted as particularly problematic for Indigenous Peoples whose treaties with the federal government overlap provincial borders (Bakker et al., 2018). Aquatic habitat under

federal jurisdiction, and relevant to Aboriginal and Treaty rights, is being negatively impacted by private, provincial, and corporate decision-making. Federal absence or exclusion from water governance in Manitoba has previously been identified as a structural deficiency (CCME, 2016; Hurlbert & Andrews, 2018; Hurlbert et al., 2015), but new water legislation and policy have not addressed this shortcoming. However, it is unclear whether and how federal involvement in watershed district boards or water planning authorities would influence activities that affect aquatic habitat. Approvals for forestry and drainage occur outside of watershed planning, and often do not include watershed districts. Excusing these impacts by reference to jurisdiction and blaming the lack of federal involvement reframes the province's non-recognition of Indigenous rights as a failure of the federal government's leadership and participation, rather than as a direct outcome of provincial decisions and (in)action

Even though flexibility in the planning process was seen by practitioners as capable of accommodating the specific contexts of local watersheds and the priorities of their residents, in practice it may struggle to support meaningful engagement when Indigenous Peoples have very little control over what can or cannot be discussed in planning, and institutions are not empowered to consult, accommodate, or even define Aboriginal and Treaty rights that may be impacted by subsequent projects and actions. Parliamentary sovereignty, separation of powers between the executive and legislative branches of government, and parliamentary privilege insulate lawmakers from consulting over primary legislation (Brideau, 2019; Keyes, 2019), though secondary legislation (e.g. regulations and orders-in-council) could trigger a duty to consult (Keyes, 2019). Alternatively, governments could avoid litigation and consult over legislation as a matter of policy (Bankes, 2016). Generally, there seems to be a gap between the intention of mutual respect and recognition in decision-making (GM, 2003) and the actual representation of Indigenous Peoples in the "processes and institutions by which decisions that affect water are made" (Lautze et al., 2011, p. 7). Lacking is inclusion in debates over the structures and processes of water governance deployed by planners and managers.

4.5.3.2 Administrative Fragmentation

Fragmentation also impacts the ways in which government structures institutions and organizes itself, often creating 'silos' of expertise and authority that can impede integrated approaches to water management (Mitchell, 2005). Staff in the Swan River branch of Manitoba Sustainable Development are part of an Integrated Resource Management team that meets monthly to share

knowledge, coordinate activities and enforcement. This is especially helpful for fisheries management when water quality issues are linked to land-based activities such as forestry or agriculture. However, there are no regional staff with water quality expertise, and so they rely on staff from Winnipeg to address water pollution. Other issues would require coordination with the watershed district manager, but they are not typically included in these team meetings as they are not part of the Sustainable Development department. While the watershed district manager could share information at such a meeting, they would not be able to enforce regulations on private land in response to issues raised or violations identified by other resource managers, such as fisheries.

Though the new *Watershed Districts Act* enables partnerships with First Nations and their representation on watershed district boards, most of the districts are not empowered to regulate local landscape change in a way that addresses infringement on Aboriginal and Treaty rights. While watershed planning establishes local water management policies for municipalities, actions are non-binding and the implementation of beneficial management practices by farmers is voluntary. Where farmers are permitted to drain, the approval can be disputed by filing an appeal with the Municipal Board, an institution lacking Indigenous representation and legally restricted from considering Aboriginal and Treaty rights as legitimate interests for consideration by the board.

Critiques that conservation districts lacked evaluation criteria in general still apply to watershed districts. There are no publicly accessible provincial criteria or indicators to guide or assess individual and overall Indigenous engagement efforts such as consultation under the *Watershed Protection Act*, and no requirement that administrative decision-makers consider Aboriginal and Treaty rights when assessing the potential impacts of drainage and watershed projects. Manitoba's watershed districts hold some devolved authority in water governance, but significant control is still retained by law makers 'far away' from the lands they govern, and the people affected by their decisions. The fragmentation of regulatory and non-regulatory institutions and government agencies in water governance means that Indigenous communities must participate in multiple, often disconnected processes to meet their responsibilities to water, though beneficial outcomes of this participation are far from secure.

4.5.4 Cumulative Effects

Drawing together the results, cumulative effects are most readily discussed in terms of their past and potential future impacts on fisheries. The snout deformation in pike identified by Sheldon and Craig is possibly pugheadedness, which is “not an unusual deformity” in certain species and likely due to “both environmental and genetic factors” (Lawler, 1966, p. 1807). One potential factor is reduced levels of dissolved oxygen in water. With drought comes reduced water levels and flows, leading to increased water temperature and changes in how it circulates; increased algae production depletes the dissolved oxygen needed by developing fish (Porta & Snow, 2019). While the literature suggests the snout deformations for pike are normal but should be infrequent, climate change may bring significant changes to the watershed.

While currently ‘water-rich’ and thus extensively drained, climate projects “predict an increased frequency in severe rainfall events accompanied by a greater likelihood of drought” in the watershed, “modify[ing] the timing of stream flows, water table levels and the availability of stored water” (MSD, 2014a, p. 25). The potential for future climate-changed induced drought, combined with changes in the water retention capacity for forest and valley wetlands, reduced flow volumes and durations could lead to greater occurrences of pugheadedness, and through reductions in suitable habitat, potentially reduce the overall survival rate of northern pike in the region. These ‘low spawn’ conditions have been experienced before, but not with the additional pressures of drainage, wetland conversion, and salvage logging. There are also issues in other regional fisheries that could soon affect Wapisiw Sakahigen (*Swan Lake*).

Downstream in Lake Winnipeg, government biologists have listed walleye populations as deteriorating, likely due to a decline in numbers of smaller prey fish species that are being negatively affected by warming waters. In the future, low lake levels and warming waters may cause similar declines in Swan Lake as seen in Lake Winnipeg, leading to restrictions on quota and net sizing (Kives, 2019). Translating this to reports from the community, the increased numbers of walleye observed could account for the drop in smaller species through predation. Changes in water quality from climate change, logging, and drainage (as indicated by frequent pugheadedness) could easily reverse this positive trend in walleye population. While the watershed plan acknowledges the potential impacts of climate change, decisions over drainage approvals are not necessarily based on modelling that considers how drainage and wetland loss will affect environmental flows that sustain fisheries.

4.6 Conclusion

Curran (2019) argues that governments, researchers, and practitioners have de-politicizing water governance, and in doing so are reproducing settler colonialism. Where broader policy and legislative decisions are being made without Indigenous representation, and where specific project decisions are being made without consideration of cumulative effects, administrative decisions that assure ‘procedural justice’ are bracketing out the impacts of those decisions on Aboriginal and Treaty rights. Analysis of interviews with resource managers, a variety of documents, and participation in community-based planning reveal that Manitoba’s approach to water governance follows this pattern of de-politicization. Decisions about fish and forests trigger the duty to consult because these resources and the land are claimed by the Crown. Drainage regulations affect Crown water, but the focus of regulation is on activities on private lands, and considers only immediate impacts to adjacent/nearby property owners, or cumulative impacts relative to other drainage control works but not natural streams, creeks, wetlands, or communities.

While members of WSN are clearly frustrated with the fragmented and tense relationship between First Nations and government, it is not uncommon for Indigenous Peoples to be excluded from decision-making fora where they can influence the values and norms that structure and guide provincial water governance. By legislation, First Nations in Manitoba are recognized in water governance as citizens or residents rather than nations, and are expected to participate through public engagement mechanisms instead of in rights-based consultations. Special accommodations are made for Indigenous Peoples to participate in watershed planning, but such participation is no substitute for engagement in water governance. This ‘stakeholder plus’ approach is the clearest indicator that Indigenous Peoples in Manitoba are not yet engaged in water governance at a level commensurate with their rights to self-determination and to benefit from and control development in their traditional territory enshrined in the UN Declaration on the Rights of Indigenous Peoples.

The three prior studies that discuss Indigenous participation in watershed planning in Manitoba reflect a partial spectrum of engagement in water governance (Burt, 2014; Cuvelier & Greenfield, 2017; Huck, 2012): invitations to participate in planning meetings are a minimum; community interviews and community meetings—when communities can and want to participate, a moderate level; and at a higher level, though much less common, Indigenous Peoples lead the

process and their communities are well-represented in the project management teams and throughout public engagement. As this study shows, participation in watershed planning does not facilitate the uptake of Indigenous law and knowledge into water governance and policy, nor does it ensure that Aboriginal and Treaty rights are recognized and respected in water management decisions. Participation in forestry planning processes makes it possible for Indigenous Peoples to protect specific ‘cultural’ objects or places, but does not provide representation in a way that would influence the impacts of timber harvests on water retention and downstream flow. For Wuskwi Sipihk, changes in local management of LP and continued interactions with the company through planning have improved relationships, but exchange-based concessions in forestry planning processes still do not address broader concerns around impacts to water.

Common to watershed, forestry, and fisheries management is that rights-based consultation does not take place until specific actions are considered. Given that specific decisions are approved by reference to strategic decisions made during planning, watershed planning can and does impact water, and may infringe on Indigenous rights. Recognition of rights and appropriate consultations during planning could avoid later conflict and provide an opportunity for Indigenous Peoples to fulfill their inherent responsibilities to water and the land.

In addition to the limitations identified at the beginning of the results section, it is necessary to comment on the issue of gender that arise from limited participation. With respect to community participation in interviews, we did not manage to gain insights from many females. Given that Indigenous women are often noted as responsible for water—as keepers of the water (Latchmore et al, 2018; Anderson, 2010; Anderson, Clow, & Haworth-Brockman, 2013; Bedard, 2008)—their voices were unfortunately not included in study or the analysis. While women arguably should have been front and centre in these interviews and discussions, only two women were on the water committee, and only one woman from the community (Elder Marilyn Stevens) was interviewed. Based on informal discussions and observation in the community, it is likely that a combination of poverty and sexism led to these exclusions, whether systemic, self-selected, or both (Green & Napoleon, 2007). Women in the community were often tasked with childcare and domestic labour while men are employed outside of the house and participated in committees at a higher rate than women. Additional funding and consideration for these barriers to inclusion must be addressed for future research on Indigenous water issues.

4.6.1 Recommendations

Ideally, the provincial government would implement consent-based processes and include Indigenous Peoples, laws, and knowledge in the development of legislation. However, given the need for development of capacity and evolution of policies, practices, and legislation, the following recommendations focus on incremental change:

- Small scale drainage proposals should be assessed for cumulative impacts and approved at the sub-watershed scale. Farm-scale drainage projects that do not qualify as a Class 2 development under *The Environment Act* (CCSM) Classes of Development Regulations (MR 164/88; i.e. are less than 50km²) may still adversely impact Indigenous relations with the land and water (valued ecosystem components) through cumulative effects at a broader scale. Cumulative assessments would implicate drainage of class 1 and 2 wetlands, even though these do not currently qualify as registrable projects (MSD, 2019). Low topographic relief in the watershed will require high resolution elevation data, to support surface flow modelling. Limited availability of water data in tributary creeks will require additional monitoring will also be needed to develop flow models. Ecosystem objectives—including water quality, quantity, and flow timing—used to assess drainage proposals should be established collaboratively with Indigenous Peoples, and be linked to Aboriginal and Treaty rights. If approved drainage works are subsequently found to negatively impact Aboriginal and Treaty rights, a mechanism should be available to revoke or modify the terms of the approval.
- The province and federal governments, in partnership with First Nations, should establish regulatory mechanisms and allocate funding to protect ecosystems that are integral for the realization of Aboriginal and Treaty rights. Key habitats and species will need to be identified, criteria established for their conservation, modelling conducted to establish boundary conditions, and monitoring of water and ecosystems to ensure compliance. The federal government can contribute to this by updating its fish habitat assessments, and jointly developing plans with the province and First Nations to identify and prioritize fish habitat for remediation, protection, and conservation to respect Aboriginal and Treaty rights to fish. Collaborative research with Wuskwi Sipiik, Louisiana Pacific, and the provincial government should be conducted to examine the relationship between upstream logging practices and downstream flow volumes and timings, and to determine potential or actual impacts on fisheries and Aboriginal and Treaty rights.

- The UNDRIP (2007, p. 23) article 32 states that “Indigenous peoples have the right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources.” In response to this, province and First Nations should investigate ways to improve and enhance the recognition and respect of Aboriginal and Water rights in water governance generally, and specifically regarding Indigenous engagement in water governance. The UNDRIP provides a framework for rights-based engagement, and the provinces own *The Path to Reconciliation Act* can guide the development of mechanisms of engagement. Manitoba’s draft policy for consultation procedures for mineral exploration (GM, 2009), and the section on Informational Notification in Schedule ‘C’ of the Mineral Exploration and Development Consultation Protocol (GM, 2019) provide an example of how water management policy could structure their engagement of First Nations to provide notification of, and be provided an opportunity to comment on drainage licensing applications in a manner congruent with their status as rights-holders. Funding and training for watershed district managers should be developed to ensure that they are competent and aware of the needs and protocols of First Nations, and comfortable with engaging them. Funding and training may also be needed for members of First Nations communities to represent their communities through participation in institutions or planning processes. Aboriginal and Treaty rights should be entrenched in administrative decision-making around water and water-related resources. When boards or entities make authoritative decisions that may impact Aboriginal and Treaty rights, the province is still bound by the duty to consult, and where appropriate accommodate. If a board or authority is to be responsible for reviewing disputes related to Aboriginal and Treaty rights, it must be empowered to consult and accommodate. Otherwise, an alternative arrangement must be established, with consultation and through collaboration with Indigenous Peoples.
- Provincial and federal governments, First Nations, and tribal organizations should collaboratively investigate opportunities to improve and enhance Indigenous engagement in water governance beyond participation in watershed planning. Opportunities include training Indigenous Peoples as watershed planners, establishing new or the building capacity of existing Indigenous organizations to function as WPAs, employing Indigenous Peoples to monitor water quality or enforce drainage regulations, and revisiting the structuring of watershed district boards to ensure Indigenous representation, such as in the Northwest

Territories water boards (e.g. *Mackenzie Valley Resource Management Act*, 1998).

Indigenous participation on watershed district boards would, however, be more effective if decision-making authority on drainage licenses was devolved, as in the water boards in the Northwest Territories.

- Tribal councils and First Nations should explore opportunities to network, collaborate, build capacity, and share resources to improve and enhance their engagement in water governance and management. Regional organizations can provide training and technical support for First Nations who need assistance in responding to or disputing drainage permits or approvals, or forestry practices. If so trained and with sufficient experience, such organizations could also assist communities in writing grant proposals and documenting traditional land and water use to inform water-related decisions by provinces or by First Nations.

For Indigenous Peoples, choosing how and when to engage in provincial water governance can be a matter of survival. As shown in this chapter, external factors that are often political can significantly temper whether, and to what degree, Indigenous People's choices about engagement are effective in achieving their objectives. This is especially true when it comes to how government is structured, what policies and practices they adopt, to what extent Aboriginal and Treaty rights are recognized and respected. Internal factors also undeniably influence outcomes, especially when smaller Indigenous communities lack resources to engage fully, or are otherwise focused on other vital aspects of community survival or well-being. The results of this chapter show that even if Indigenous engagement mechanisms are carefully crafted to ensure they are culturally appropriate, outcomes of engagement are contingent on political decision-making. In Manitoba and elsewhere, the engagement of Indigenous Peoples by the state is structured by and embedded within settler colonial laws and institutions; additionally, engagement mechanisms are subject to other political decisions, such as funding, resource allocations, individual ethics, and personal preferences. These realities leave the outcomes of Indigenous engagement in water governance contingent on a wide range of contextual factors, and prove a need for more research into what makes these engagement mechanisms work, for whom, to what degree and end, and in what circumstances.

5 CONCLUSION

Increasingly, practitioners, researchers, and decision-makers are attempting to integrate Indigenous Peoples, knowledge, practices, and concepts into those processes and institutions through a wide range of engagement mechanisms. The relative influence and importance of these mechanisms in achieving equitable outcomes varies, with limited research on which Indigenous engagement strategies or mechanisms are effective, in what circumstances, for whom, and to what end (Jackson, 2018; Robison et al., 2018, N. J. Wilson, 2019). Both national and international rights are meant to provide for the continuity and flourishing of Indigenous communities, but evidence of their efficacy in the context of water governance is nascent. Studies of Indigenous engagement in water governance are unevenly distributed across Canada, with a significant gap of coverage in Manitoba. Despite state-based efforts to improve engagement, conflict over resource management decisions still arise. While scholars have made significant advances in collaborative methods and have supported communities in documenting Indigenous and traditional knowledge and laws, there are still gaps in knowledge about what needs to change in water governance to achieve equitable outcomes from water management.

The purpose of this research is to examine how state-based water management and planning mediate the engagement of Indigenous Peoples in water governance, and to identify impediments to and opportunities for changes to water governance structures, institutions, processes, and practices that would support reconciliation through water governance. The research is guided by three over-arching questions, each of which maps to a specific chapter:

- i. Chapter 2: how is Indigenous engagement characterized in the academic literature on water governance, and what are the relationships between engagement and outcomes of water governance?
- ii. Chapter 3: how does the practice of Indigenous engagement vary within a provincial context, and what are the drivers of that variation?

- iii. Chapter 4: what lessons can be learned from an Indigenous community's perspective on Indigenous engagement in water governance, and how can these lessons inform the practices and policies of state-based water governance?

Overall, the research showed evidence that water governance in Manitoba is structured in a way that neither substantively recognizes Aboriginal and Treaty rights, nor ensures the protection of ecosystems that support those rights.

This dissertation used three different approaches to examine the influence of context on Indigenous engagement in water governance across three scales. This approach provides multiple perspectives on Indigenous engagement, and reveals the ways in which contextual factors vary by scale. Chapter 2 reviewed literature on water governance from four settler colonial nations, and analyzed the ways in which context, engagement mechanisms, and outcomes are related using the concepts of water justice and reconciliation. Chapter 3 focused on the implementation of a water governance regime, analyzing watershed plans to examine how local context shapes engagement in watershed planning. Chapter 4 explored the experiences of engagement from a community-based perspective, and documented both the impacts of water management on Indigenous Peoples, and the challenges they face in protecting their traditional territory and water. In the following subsections, I summarize key research findings, including recommendations for practice and opportunities for future research.

5.1 Summary of Key Findings

5.1.1 Chapter 2: Systematic Narrative Review

Increasingly, Indigenous Peoples in settler colonial states are being included in resource management and planning through a wide range of mechanisms. In addition, Indigenous Peoples continue to maintain their own culturally specific relationships with land and water. The first manuscript sought to examine the narrative of scholarship on Indigenous engagement in water governance. The narrative review characterized and analyzed peer-reviewed literature from 1900 to 2019, focusing on research in a settler colonial context to keep findings relevant to the rest of the dissertation's inquiry. A total of 132 empirical articles and essays were retrieved from SCOPUS and Web of Knowledge databases for the review. Essays were included to inform the analytical framework, and content in empirical articles coded thematically. Codes were sorted

and grouped into four categories: recognition, representation, redistribution, and Indigenous water relations.

The findings indicate that, while progress is occurring and concepts are still maturing, “Indigenous engagement” in water governance remains an under-developed concept, a word often used in relation to participation in or consultation through state-based processes, representation in institutions, and through the recognition of Indigenous knowledge, values, and laws. Few authors define engagement, and their use of qualifiers such as ‘good’ and ‘meaningful’ are rarely defined or explained. Some authors used Arnstein’s (1969) ladder or the IAPP spectrum to describe engagement in terms of ordinal levels, but many instead used the term ‘engagement’ without explanation of what engagement is, and how it is to be measured. In addition, many of the articles reviewed address at least one dimension of water justice when examining Indigenous engagement, but rarely discuss it as a whole. In addition, the review identified a suite of Indigenous water relations that do not involve, but are still influenced by, settler colonial water institutions and laws.

5.1.2 Chapter 3: Document and Spatial Analysis

The second chapter sought to describe variation in the engagement of Indigenous Peoples in water governance by examining evidence of their participation in watershed planning and comparing that evidence to the presence of certain types of land designations that are likely to implicate Indigenous rights. The contents of 22 watershed plans were analyzed for passages related to Indigenous engagement. Text blocks were coded categorically and tallied to determine the frequency and diversity of Indigenous-related content. These values were interpreted as a proxy measure of engagement in water governance more broadly. Measures of the frequency and diversity of engagement were then compared to the spatial extents of specific land use designations and surface water to test for the relationship between territorial rights-based mechanisms and evidence of engagement in water governance.

Plans included content related to Indigenous participation, land, representation, recognition, and implementation. Evidence of Indigenous engagement in the plans is highly variable across each of these themes, but increased in the frequency and diversity over time. Despite acknowledgement in water policy documents and partial recognition in water legislation, Aboriginal and Treaty rights were rarely mentioned, and when they were, often in the context of

other resources management domains such as forestry. For the spatial analysis, no statistical relationship was found between frequency or diversity and land use or surface water extents.

5.1.3 Chapter 4: Case Study

This final research chapter is a case study of one First Nation's experiences with engagement in water governance in Manitoba. Drawing on data from participant observation in a community-based planning process, semi-structured and informal conversations with planners, resource managers, and community members, and reviews of media, government and non-government documents, and grey literature, I trace how decisions about water, land, and the environment outside of watershed planning end up impacting Indigenous water relations.

The findings describe current water-related stressors facing Wuskwi Sipiik First Nation such as a 6-year boil water advisory, declining wildlife and biodiversity populations and extent, and poor water quality in traditionally used waterways. The community's existing efforts to engage in water governance across multiple resource management domains are documented. Participation in watershed, forestry, and fisheries planning is described and compared. Overall, Manitoba's current water governance regime is found to disperse responsibility for water and Indigenous engagement across different departments, processes, and institutions, creating barriers to and inefficiencies for Indigenous People's involvement in water governance.

5.2 Research Significance and Limitations

As I have shown in this dissertation, Indigenous engagement in water governance is a complex, contingent, and contextual undertaking. While the contexts in which these efforts are occurring are unique, there is still value in comparing what works, for whom, to what degree, and to what end both between (Stefanelli et al, 2017; Jackson & Palmer, 2012; Tsatsaros et al., 2018, Fox et al., 2017) and within federal contexts (Hill et al., 2012; Cronin & Ostergren, 2007; Hughey et al., 2017). Regardless of political framework, many contemporary cases of engagement are highly influenced by broader social processes such as globalization, neoliberalism, supra-national organizations, and flows of capital associated with the movement of goods and operations of transnational corporations. While this dissertation did not address these influences directly, they comprise a suite of factors that can be supportive, antagonistic, or neutral towards Indigenous-settler or Indigenous-state relations, and their influence on the design, implementation, and outcomes of engagement should not be ignored by analysts and practitioners. This is where the

water justice framework proves useful in the interrogation of whether, and to what degree, Indigenous engagement influences water governance in terms of both material and social change.

Building on political theorist Nancy Fraser's tripartite justice framework, Jackson (2018) catalogued and described a suite of institutional mechanisms of Indigenous engagement that, to varying degrees, addressed aspects of recognition, representation, and redistribution. Jackson's approach to water justice overlaps with the model proposed by Zwarteveen & Boelens (2014), but lacks their inclusion of socio-natural integrity. A growing body of literature is seeking out ways to resolve systemic marginalization and exclusion of Indigenous Peoples, knowledge, values, and interests from water governance and research (Bakker et al., 2018; Bradford et al., 2018; Castleden, Hart, Harper, et al., 2017; Mascarenhas, 2007; McGregor, 2018; Stefanelli, Castleden, Harper, et al., 2017). It is here that Chapter 2 contributes to the literature most significantly. First, by highlighting the importance of Indigenous ecology to water justice and linking socio-natural integrity to water governance through Indigenous water relations. Second, by reiterating the inter-relatedness of recognition, representation, and redistribution (Fraser, 1995, 2000, 2005): the outcomes Indigenous peoples seek from their engagement in water governance will implicate all three of these dimensions, as well as a fourth: socio-natural integrity, or as described by myself and others, Indigenous water relations (Arsenault et al., 2018; Daigle, 2018; Diver, 2018; McLean et al., 2018).

Although scholarship addressing Indigenous water relations—as Indigenous water law, knowledge, ceremony, protocols, and responsibilities—has been sparse, an increasing number of authors are writing about Indigenous relations with water, whether settler academics surveying the literature (Bradford et al., 2017; Latchmore et al., 2018); collaborating with Indigenous communities (Ayre et al., 2018; Castleden, Hart, et al., 2017); or Indigenous academics themselves providing critical insight into the intersection of colonialism and Indigenous governance (Daigle, 2018) and reporting on Indigenous water knowledge and law (Craft et al., 2014; Anderson et al., 2013). Given the centrality of the environment in Indigenous ways of knowing and being, and to Indigenous practices and responsibilities protected by law (Curran, 2019), socio-natural integrity is a key component for Indigenous water justice. This is evident in the literature discussed in Chapter 2, as well as in the case study in Chapter 4.

Just as Indigenous water relations are integral to water justice, so too is the attainment of adequate levels of each dimension of justice. Chapter 2 identified three levels of engagement that

can be associated with varying degrees of justice in each dimension: for any engagement mechanism to achieve Indigenous water justice, all three dimensions must be addressed in a way that is appropriate to the context. Mutual recognition, collaborative participation, and equitable redistributions of water and environmental impacts are needed to pursue reconciliation as caring, respectful, and equitable relationships (Castleden, Hart, Harper, et al., 2017; Bradford et al., 2018). We can see this in Chapters 3 and 4, where the province of Manitoba's recognition of Aboriginal and Treaty rights in the context of water governance translates to stakeholder-based representation in planning, but lacks adequate redistribution of financial resources to support greater levels of participation or capacity building to lead watershed planning. Instead, as in Chapter 4, Indigenous communities must act within a fragmented system as strategically as possible, using scarce human and financial resources to resist or collaborate with government, and compete or partner with industry to achieve community objectives or fulfill inherent responsibilities.

Drawing on the experiences of tribes in the United States who are co-managing fisheries (Norman, 2014, Woelfle-Erskine, 2017; Lee Rowlands & Wildman, 2018; Cosens et al., 2018), and on the efforts of Australian Indigenous in resource management and development (Hemming et al., 2017; Makey & Awatere, 2018; Escott et al., 2015), Indigenous peoples and First Nations in Manitoba will likely need significant building up of capacity—whether internal or through association with other Indigenous peoples and organizations—in order to assume a greater role in the management of water resources such as through co-management. But this does not necessarily address their engagement in water governance, which is the focus of the dissertation.

Methodologically, this research has demonstrated the need for utilizing multiple types of data and multiple methods to triangulate inquiry into complex and contested phenomena. A single scale or methodology necessarily brackets out information that provides vital context or information about the phenomena. By examining multiple scales through mixed methods, this research provided greater resolution on the practices of Indigenous engagement while also embedding that practice in the broader discourses and narratives of water governance. Additionally, Chapter 2 demonstrates the potential for narrative reviews to synthesize literature that has no common methodological foundation or shared definition of the key topic.

Conceptually, this dissertation has focused on water governance as “the processes and institutions by which decisions that affect water are made,” but not the “practical, technical and

routine management functions such as modelling, forecasting, constructing infrastructure and staffing...[or] water resources outcomes” (Lautze et al., 2011, p. 7). Other definitions seek to include water management outcomes (Bakker & Cook, 2011; Bakker & Morinville, 2013), which would arguably enable empirical evaluation of the efficacy of Indigenous engagement. However, I use Lautze et al.’s definition to bring into focus the differences between governance, management, and planning, and to argue for engagement at a higher level than participation in management and planning. Whereas planning processes and institutions do involve decisions that affect water at a local scale, they often include technical, practical, or routine functions. Decisions are made, with or without statutory Indigenous participation, but they are made within the policy and legal framework already established by governments often developed without Indigenous representation. Arguably, water governance sets the boundaries of the discussions, watershed planning documents the values and balances the interests of participants, and water management involves the actual implementation of values and interests documented in the plan.

Clearly where, institutionally, Indigenous engagement takes place matters greatly for attaining Indigenous water justice through engagement in water governance. Authors have discussed Indigenous engagement in reference to water governance, but often refer to Indigenous participation in water management or planning. The lack of clarity in how engagement in governance differs from engagement in management or planning is a stumbling block for the advancement of our understanding of what counts as good engagement in water governance, and impedes progress for Indigenous peoples seeking improved health and ecological outcomes. Indeed, the ‘ontological’ differences between Indigenous ways of being—in relation to water—and colonial definitions of water as a resource are not necessarily reconcilable through collaboration or engagement in water management or planning.

Instead, Indigenous engagement in water governance must involve Indigenous peoples in law-making and regulation, in a way that includes their knowledge, values, and law a respectful, meaningful way (Macpherson & Ospina, 2017; Curran, 2019; Borrows, 2010). Alongside legal pluralism, Indigenous-led institutions that conduct planning for and manage water and environmental resources show promise for engagement beyond state-based participation (Hemming et al., 2017; Hill et al., 2012). These approaches often involve rescaling and rescoping water governance to match Indigenous values, beliefs, and worldviews (Budds & Hinojosa, 2012; Cohn et al., 2019; Makey & Awatere, 2018; Norman, 2014, 2017; Norman &

Bakker, 2017; Sarna-Wojcicki et al., 2019). More engagement is not necessarily good engagement, nor will it necessarily lead to more just outcomes.

The literature reviewed in Chapter 2 also identifies ongoing inconsistencies in the translation of Indigenous recognition in Canadian policy and law into effective and meaningful participatory practices of engaging Indigenous peoples (von der Porten et al., 2015). These inconsistencies are problematic, as they arguably perpetuate, deepen, or create new instances of dispossession (Daigle, 2018; Porter, 2014), exclusion (Hanrahan, 2017; Bradford et al., 2017), and environmental injustice (Mascarenhas, 2007; Bakker et al., 2018; Moore et al., 2017a). These inconsistencies are brought into the forefront in Chapter 4, where recognition in water governance is shown to be decoupled from broader environmental Aboriginal and Treaty rights, and in Chapter 3, where recognition without redistribution or representation produces uneven participation and ecological outcomes.

If we collectively seek Indigenous water justice through Indigenous engagement in water governance, difficulties remain. Indigenous engagement in water governance as legal pluralism and Indigenous representation in law-making still faces a major structural barrier in Canada's federal system. Within Canada's federal system, federal and provincial governments claim sovereign or sole authority to establish and enforce laws and regulations. Without greater numbers of elected Indigenous political representatives, the ability of Indigenous peoples to influence law-making is constrained by the doctrine of separation of powers between executive and legislative arms of government, and by the principle of parliamentary privilege—which insulates law-makers from interference by the courts (Brideau, 2019). This means that, although Canadian governments have a duty to consult and accommodate for potential infringements on Aboriginal and Treaty rights, the duty is limited to the implementation of existing legislation and does not extend to the development of legislation.

While legislative action is not subject to the duty to consult, the doctrine of parliamentary privilege itself does not explicitly exclude Indigenous peoples from influencing the development of legislation. Governments can make policy decisions to include Indigenous peoples regardless of the duty to consult, and in doing so, arguably maintain the honour of the Crown in their dealings with Indigenous peoples. As evident in New Zealand, constitutional recognition of rights is not required for innovative approaches to co-governance (Makey & Awatere, 2018;

Harmsworth et al., 2016; Memon & Kirk, 2012), including legal pluralism (Macpherson & Ospina, 2017).

If policy can make such a difference, then there is hope for communities such as WSFN. In the Canadian prairie context, Indigenous engagement occurs mostly through participatory mechanisms akin to stakeholder engagement: Indigenous peoples are not formally included in decisions related to water law and regulation. Instead, engagement occurs through Indigenous participation in planning, or sometimes through formal or informal community consultations that vary in protocol, process, and substance. Influence over water law is restricted to the provision of feedback through generic consultative mechanisms, with Indigenous voices alongside those of other ‘citizens’. In the prairies, other significant water-related institutions are river basin boards. Indigenous engagements with institutions such as the International Joint Commission and Prairie Provinces Water Board are nascent, and there are opportunities for these institutions to recognize Indigenous rights and responsibilities, ensure Indigenous representation in decision-making, and to formally evaluate potential decisions in relation to socio-natural integrity. Academics, decision-makers, and practitioners involved in water governance in the prairies have only recently begun to consider their role in achieving Indigenous water justice. Progress must be monitored, and it is my hope that this dissertation has provided not only insight into what barriers and opportunities exist, but also tools to assess that progress.

5.2.1 Limitations

The narrative review in Chapter 2 faces methodological limitations in terms of structure and application. Having a single researcher and a large article set means that the time I spent reading and interpreting each article was limited, and so the findings should not be treated as comprehensive. Inclusion criteria were used to keep the size of the review manageable for a single person, and specific keyword terms were used to locate and analyzing articles; with different criteria and keywords, a different narrative may have resulted. Recently published articles (after April 2019) are not represented in the dataset. The use of the term ‘governance’ may exclude other critical papers that are relevant but excluded due to their use different, more specific terminology such as institutional arrangements, decision-making, or sovereignty and self-determination. The narrative is also highly influenced by my own interests and background in the political and structural aspects of Indigenous-state relations, and so Chapter 2 emphasizes these features and uses a framework that is based on work by political theorists.

The content analysis in Chapter 3 identified themes of representation, recognition, and implementation, which roughly map to the tripartite justice model used by Jackson (2018) and N. J. Wilson (2019), though implementation did not always mean redistribution of water, capital, power, or environmental impacts. The redistributive aspect of implementation identified in the thematic analysis would be complemented by researching additional data sources outside of watershed plans. As argued by others such as Budds & Hinojosa (2012), Norman (2017), Sarna-Wojcicki et al (2019) and Hoogesteger et al (2016), water governance regimes privilege the watershed as a management unit, but this does not mean that it is the ideal unit for determining whether Indigenous Peoples are potentially affected by resource planning and management (Budds & Hinojosa, 2012; Sarna-Wojcicki et al., 2019). Additionally, the use of land designations such as protected areas, forests, parks, and reserve land in Chapter 3 (Baijius & Patrick, 2019b; Hunt, 2012; Wyatt et al., 2011) is a rough approximation of the true extent of Indigenous rights and title (Krasowski, 2019; Usher et al., 1992). Indigenous interests in and relationships to water and the environment are not constrained by administrative boundaries, nor adequately represented by land use designations. Other spatial variables may better represent the geography of Indigenous rights and relationships.

Due to difficulties experienced during interview data collection for the case study, the results and analysis in Chapter 4 are limited in their representation of community knowledge, values, and experiences. Specifically, a lack of representation of women in the interviews and on the committee meant that the lived experiences of women in relation to household water insecurity, and their involvement or practices of water protection more generally were not documented. Though I strove to represent the complexities and details shared with me, there are still more stories to be told.

5.3 Future Research

The analytical model of water justice was applied here to examine a discourse, but the tripartite model can also be applied to examine the practices and outcomes of Indigenous-state water co-governance (N. J. Wilson, 2019). Applying the water justice model to examine Indigenous engagement in other regional contexts across Canada could further articulate how engagement mechanisms in water governance work, for whom, and to what degree. The findings also suggest that mechanisms will vary in their achievement of justice through recognition, representation, and redistribution. What works in one place, for some people, will not work for others,

elsewhere, but it is not deterministic: broader social processes such as globalization, dispossession, and commodification are also influential. Specific to Canadian researchers is a need to direct more attention to the dimensions of representation (participation) and distribution (as environmental risks/benefits) in discussions of Indigenous engagement in water governance. Further research in water governance should continue probing the recognition, representation, and redistribution involved with different mechanisms, and articulate how those mechanisms relate to socio-ecological integrity.

Authors should improve our understanding of Indigenous engagement by differentiating its mechanisms from those of public engagement and developing a way to measure or evaluate it. Principles, criteria, and indicators of engagement would go a long way to helping us assess and monitor progress in achieving the objectives of Indigenous engagement in water governance (LaBoucane-Benson et al., 2012; K. S. Taylor et al., 2019). Additionally, future work should focus on clearly conceptualizing the relationship between mechanisms of engagement, socio-ecological context, and substantive outcomes.

While Indigenous water relations are likely not predicated on the state, the status of those relations and the ability of Indigenous Peoples to maintain them is often mediated by settler colonial laws, policies, global political economic pressures, and the actions of governments, corporations, and private individuals. In this way, and much like concepts such as the hydrosocial cycle (Linton & Budds, 2014) and waterscapes (Orlove & Caton, 2010; Perreault et al., 2012), Indigenous water relations offer an entry point into examining how water governance structures, policies, and practices together affect Indigenous Peoples. Further scholarly exploration of Indigenous water relations could examine how state-based mechanisms mediate, disrupt, or are strengthened those relations.

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APPENDIX A

Table A.1 Frequency of thematic keyword occurrences and content variables by plan

Watershed	Year	Category						
		Participation	Land	Representation	Recognition	Implementation	Total	Diversity
Fisher River	2015	8	6	18	11	17	60	5
Carrot-Saskatchewan	2015	5	10	17	15	11	58	5
Swan Lake	2014	8	5	14	3	4	34	5
Cook's Creek-Devil's Creek	2018	4	3	11	7	3	28	5
Dauphin Lake	2016	1	5	4	2	14	26	5
Westlake / Alonsa	2014	1	3	13	2	0	19	4
Little Saskatchewan River	2011	7	6	0	0	0	13	2
Central Assiniboine	2015	0	4	5	1	3	13	4
Arrow-Oak	2010	9	0	0	0	0	9	1
Netley-Grassmere	2011	1	4	2	0	2	9	4
Assiniboine – Birdtail	2011	7	0	0	0	0	7	1
Shell River	2010	6	0	0	0	0	6	1
Pembina Valley	2011	2	0	2	2	0	6	3

Watershed	Year	Category							
		Participation	Land	Representation	Recognition	Implementation	Total	Diversity	
East Duck Mountain-Sagamace									
Bay	2014	1	4	0	0	0	5	2	
Southwest Interlake	2018	1	0	1	2	1	5	4	
Rat Marsh River	2014	1	2	0	1	0	4	3	
Whitemud	2017	2	2	0	0	0	4	2	
Total no. of plans with keyword occurrences		16	12	10	10	11	17		
Frequency of keyword occurrence		64	54	87	49	51	306		
Average no. of thematic codes per plan		4.0	4.5	8.7	4.9	4.6	18		
Proportion of keyword occurrences		20.9%	17.6%	28.4%	16.0%	16.7%			

Note: Icelandic River – Washow Bay Creek, La Salle, Seine, Westlake, and Willow Creek plans have no Indigenous keyword occurrences, and are not listed. Plans are sorted by total keyword occurrence, theme diversity, and year. TD stands for Thematic Diversity.

Table A.2 Proportion of category and total codes by watershed plan

Watershed	Year	Participation	Land	Representation	Recognition	Implementation	Total
Fisher River	2015	0.13	0.11	0.21	0.24	0.31	0.20
Carrot-Saskatchewan	2015	0.08	0.19	0.20	0.33	0.20	0.19
Swan Lake	2014	0.13	0.09	0.16	0.07	0.07	0.11
Cook's Creek – Devil's Creek	2018	0.06	0.06	0.13	0.15	0.05	0.09
Dauphin Lake	2016	0.02	0.09	0.05	0.04	0.25	0.08
Westlake / Alonsa	2014	0.02	0.06	0.15	0.04	0.00	0.06
Central Assiniboine	2015	0.11	0.11	0.00	0.00	0.00	0.04
Little Saskatchewan River	2011	0.00	0.07	0.06	0.02	0.05	0.04
Netley-Grassmere	2011	0.14	0.00	0.00	0.00	0.00	0.03
Arrow-Oak	2010	0.02	0.07	0.02	0.00	0.04	0.03
Assiniboine-Birdtail	2011	0.11	0.00	0.00	0.00	0.00	0.02
Pembina Valley	2011	0.09	0.00	0.00	0.00	0.00	0.02
Shell River	2010	0.03	0.00	0.02	0.04	0.00	0.02
Southwest Interlake	2018	0.02	0.07	0.00	0.00	0.00	0.02

Watershed	Year	Participation	Land	Representation	Recognition	Implementation	Total
East Duck Mountain-							
Sagamace Bay	2014	0.02	0.00	0.01	0.04	0.02	0.02
Rat Marsh River	2014	0.02	0.04	0.00	0.02	0.00	0.01
Whitemud	2017	0.03	0.04	0.00	0.00	0.00	0.01

Note: Values are calculated as the number of codes in a theme in a plan, divided by the total number of codes in the plan. The Total column calculates the total number of occurrences in a plan as a proportion of total keyword occurrences. Icelandic River - Washow Bay Creek, La Salle, Seine, Westlake, and Willow Creek have no Indigenous keyword occurrences, and are not listed. Due to rounding, columns and rows may not sum to 1 (as 100%).

Table A.3 Watershed extents, with values for Aboriginal tenure and content variables

Name	Year	Surface		Surface water prop. (%)	Reserve extent (ha)	Reserve prop. (%)	No. of parcels	No. of FN	KO	TD
		Watershed extent (ha)	water extent (ha)							
Arrow – Oak	2010	510,750	7,014	1.4%	3,801	0.7%	2	1	9	1
Shell River	2010	299,633	17,529	5.9%	0	0.0%	0	0	6	1
Little Saskatchewan River	2011	414,819	22,811	5.5%	10,921	2.6%	6	2	13	2
Netley – Grassmere	2011	236,612	6,399	2.7%	140	0.1%	4	1	9	4
Assiniboine – Birdtail	2011	480,843	10,262	2.1%	13,691	2.8%	6	5	7	1
Pembina River	2011	488,163	17,219	3.5%	3,609	0.7%	1	1	6	3
West Souris	2012	432,516	13,279	3.1%	1,088	0.3%	2	1	0	0
Swan Lake	2014	713,788	41,913	5.9%	48,152	6.7%	18	2	34	5
Westlake / Alonsa	2014	407,610	21,116	5.2%	14,698	3.6%	3	3	19	4
East Duck Mountain – Sagamace Bay	2014	457,099	4,353	1.0%	8,368	1.8%	1	1	5	2
Rat Marsh River	2014	218,292	482	0.2%	844	0.4%	1	1	4	3
Fisher River	2015	315,321	6,439	2.0%	37,154	11.8%	3	2	60	5
Carrot – Saskatchewan	2015	484,833	74,020	15.3%	9,156	1.9%	20	2	58	5

Name	Year	Surface			Reserve	Reserve	No. of parcels	No. of FN	KO	TD
		Watershed extent (ha)	water extent (ha)	Surface water prop. (%)	extent (ha)	prop. (%)				
Central Assiniboine	2015	736,144	12,809	1.7%	6,245	0.8%	2	1	13	4
Dauphin Lake	2016	869,887	65,180	7.5%	4,738	0.5%	1	1	26	5
Whitemud	2017	741,978	12,885	1.7%	5,239	0.7%	3	3	4	2
Cook's Creek – Devil's Creek	2018	175,831	5,607	3.2%	5,503	3.1%	5	2	28	5
Southwest Interlake	2018	316,702	20,769	6.6%	0	0.0%	0	0	5	4

Note: Icelandic River - Washow Bay Creek, La Salle, Seine River, and Willow Creek have no reserve parcels and no keyword occurrences in the plans, and are excluded from the table to conserve space. Plans are sorted descending by year of publication, and ascending by keyword occurrence, and theme diversity. FN stands for First Nation, KO for keyword occurrences, and TD for thematic diversity.