

Mitigating the Impacts of the First Nation Water Crisis in Ontario Using Indigenous Approaches

by

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of the requirements for the degree of  
Master of Indigenous Relations

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**Abstract:****Purpose:**

The purpose of this study is to speak with First Nation community members across Ontario to assess how they've been impacted by water insecurity and to share their perspectives on potential solutions and recommendations. While several reports and studies have been conducted over the past two decades by both levels of government, Indigenous and non-Indigenous organizations and individuals, little progress has been made toward achieving water security for First Nations. The research question for this thesis is what are Indigenous peoples saying about solutions to their water insecurity challenges?

**Methods:**

To answer this question, First Nation participants were asked questions to determine what the issues were from their perspective as well as inquiring about potential solutions. These questions provided details on the types of water systems being used by First Nations, identified inadequacies, and culminated in recommendations by those who live with water insecurity every single day.

**Results:**

Ten major themes resulted from the thematic analysis on the participant contributions. These themes included a discussion on the types of contamination found in communities, the impacts of water insecurity, the cultural significance of water to First Nations and the challenges caused by outdated water systems. Part of this research involved generating recommendations from the participants and these are as follows: 1) that Indigenous Knowledge (IK) and Indigenous laws be incorporated into potential solutions; 2) that both levels of government work with First Nations to solve the water insecurity challenges; 3) that community Leaders develop and implement community plans, environmental assessments, and impact studies to protect the community from

contamination; and 4) that a “watchdog” organization be established by First Nations to assist communities with holding industry, neighbouring municipalities / towns, and tourists visiting or leasing property in First Nation communities accountable for water contamination. **Conclusion:**

While much of the past research has been focused on the deficits, damages, and impacts to First Nations water security, this research study focuses on the potential for Indigenous led solutions to water security challenges. The research presented within this study demonstrates how an Indigenous research paradigm can inform Indigenous water security research.

**Keywords:** First Nations, water crisis, Indigenous relations, natural law, water policy, BWAs

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## **List of Acronyms (in alphabetical order)**

AFN – Assembly of First Nations  
AIAI – Association of Iroquois and Allied Indians  
AN – Anishinabek Nation  
BWA – Boil Water Advisory  
CESD – Commissioner of the Environment and Sustainable Development  
GCT #3 – Grand Council Treaty #3  
GCDWQ – Guidelines for Canadian Drinking Water Quality  
GUDI – Groundwater Under the Direct Influence (of surface water)  
IFN – Independent First Nations  
IK – Indigenous Knowledge  
IKS – Indigenous Knowledge Systems  
INAC – Indigenous and Northern Affairs Canada  
MMIWG – Missing and Murdered Indigenous Women and Girls  
NAN – Nishnawbe Aski Nation  
OFNEATWG – Ontario First Nations Environmental Assessment Technical Working Group  
O&M – operations and maintenance  
PTO – Political Territorial Organization  
SDWFNA – Safe Drinking Water for First Nations Act  
TEK – Traditional Ecological Knowledge  
TK – Traditional Knowledge  
UNDRIP – United Nations Declaration on the Rights of Indigenous Peoples

## 1.0 Introduction

In the Ojibwe language, Mother Earth is called *Shkagamik-Kwe*. All life on earth is dependent on *Shkagamik-Kwe* for nourishment and, in turn, we must reciprocate by protecting, respecting, and appreciating the gifts that are given to us. Within Indigenous cultures across Canada, it is acknowledged and understood that “water is life” (Anderson, 2010; Assembly of First Nations (AFN), 2014; Kimmerer, 2013). Water is present just before we are born, then we are bathed in water after we are born, and we are bathed in water once again after we die. Water also sustains us throughout our entire life cycle (Chiefs of Ontario (COO), 2008; Anderson, 2010; Longboat, 2016; Walkem, 2007). Indigenous peoples protect *Shkagamik-Kwe* through stewardship and honour the water that she provides through song and story telling. Anderson (2010) describes how Indigenous story telling honours water by stating that “their stories also demonstrated the nuances and variability of water as they understand it, for in their cultural ways, water can be sentient and carry different levels of power and purpose” (p. 31). This Indigenous relationship to water, however, has deteriorated significantly over the past 100 years as extractive development progressed and this has also led to water insecurity in many First Nations throughout Ontario (Notzke, 2004; Klasing, 2016; Barlow, 2016; McGregor, 2016; Murdocca, 2010). The province with the highest number of boil water advisories in First Nations throughout the country is Ontario.

The preliminary ideas for this study began with a focus on the number of short-term and long-term boil water advisories as well as do not consume advisories in First Nations throughout Ontario in 2016. The map below illustrates the 40 First Nation communities that the Ontario provincial government prioritized according to the federal mandate to resolve all boil water advisories in First Nations by 2021:

**Figure 1: 2016 Ontario First Nation Water Advisories**



(Map created in June 2020 by Léo Larivière, Technologist, Department of Geography, Laurentian University – used with permission)

From this map you can see that most of the boil water advisories are scattered across northwestern Ontario with a few advisories scattered along central and southern Ontario. The red tabs mark the three communities which had do not consume advisories in 2016 and this meant that their water

was unfit for consumption even when boiled. What is missing from the map is the number of communities with on-and-off-again boil water advisories, communities reliant on water trucks for water access, and other communities which only have partial access to water. These were some of the most significant gaps that were observed as I began researching water insecurity within First Nations in the province.

While both levels of government are focused on ending long-term drinking water advisories by 2021, there are still many First Nation communities that have continued to fall through the cracks. The prioritized communities do not include communities with aging or decrepit infrastructure, communities with water treatment plants running at maximum capacity, communities reliant on water trucks, communities with internal or external threats to their source water supplies, and it also does not include communities which are functioning with insufficient resources and barely managing to keep up with the operations and maintenance of their water and wastewater treatment systems. In addition, for some of the First Nation communities in the province, their water insecurity challenges began 50 to 100 years ago (Murdocca, 2010). Some of these communities which have had water insecurity for decades will be discussed in the literature review.

Numerous reports and studies have been conducted by both levels of government, various consultants, and numerous Indigenous and non-Indigenous organizations (Dumais-Dubé, 2017; Phare, 2009; McGregor, 2014). These studies and reports have highlighted the issues, established various committees, and implemented various strategies with billions of dollars in investments and resources dedicated to “solving” what has been labelled the First Nation water crisis (Klasing, 2016; Lawless et al., 2016; Phare, 2009). With this understanding, I had hoped to answer the question of how the First Nations water crisis has persisted until 2019, but there is no simple

answer to this question. This question did, however, help me with my research question which is:

**What are Indigenous peoples saying about the solutions to their water insecurity challenges?**

With this question in mind, other questions that I consider in my research study are:

- What water systems are currently being used in communities?
- What are the historical and current impediments to water security in First Nations?
- What ideas and recommendations are First Nation community members bringing forward to mitigate the impacts of the First Nation water crisis?

To answer some of these questions, I looked at how other researchers and Indigenous organizations worked with First Nations on various initiatives. Using two reports conducted by various Indigenous researchers and one Indigenous organization, the Chiefs of Ontario, I developed a study that examined some of the water insecurity challenges from the Indigenous perspective as well as some recommendations and solutions from Indigenous peoples themselves. Existing reports and studies from researchers, organizations, and governments have focused on the First Nations water crisis and overall water insecurity challenges from a “deficit” perspective (Chilisa, 2012; Murdocca, 2010). Many of these reports and studies have highlighted what First Nation communities “do not have” as well as existing limitations, but how many have asked what Indigenous peoples want to see implemented in their communities? First Nation communities need resources, infrastructure, watershed planning, and overall access to water, but do they have a say in how they achieve water security? How has history impacted their water security and what current threats exist? Do they have a say in what kind of infrastructure is built? What ideas do they have about accountability measures and how water security can be achieved in their communities? How are their concerns being addressed if they currently have access to clean water, but it is being threatened by internal or external activities? To develop these ideas, I created a series of five

interview questions to ask potential participants in order to examine how historical impacts have impeded community progress from an Indigenous perspective, how past and current initiatives have largely failed communities, and to develop recommendations based on First Nation community perspectives.

The impacts of the contaminated water do not only affect Indigenous peoples socially and physically, but mentally as well (National Inquiry into Missing and Murdered Indigenous Women and Girls, 2019; Murdocca, 2010; Ontario Ministry of the Solicitor General, 2016; Talaga, 2016). Water is the life force of *Shkagamik-Kwe*, and without water there can be no life. Using Indigenous Knowledge and Indigenous research methodologies to incorporate the findings shared by the participants, I will demonstrate that the critical path to resolving the current First Nation water crisis requires more than academic ingenuity and research: it requires the understanding that First Nations are connected to the land, the waters, the animals, and past, current, and future generations (Anderson, 2010; Borrows, 1997; Kimmerer, 2013; Longboat, 2016. McGregor, 2015; Patrick et al., 2019).

This thesis will discuss the ten thematic themes that emerged from the participant interviews as well as four key recommendations for mitigating the impacts of the First Nation water crisis. In Chapter 4, the participants will lead us into a discussion on their concerns and the barriers and challenges to water security in fourteen different First Nation communities in Ontario. The concerns, challenges, and barriers shared by the participants ranges from well water system maintenance challenges to source water protection and maintaining and operating outdated water treatment systems. The participants will also discuss how a lack of resources and capacity challenges exacerbate water insecurity issues as well as contamination threats from neighbouring municipalities, summer tourism, and a lack of First Nation community planning.

The combined recommendations shared by the participants of this study are: 1) that Indigenous Knowledge (IK) and Indigenous laws be incorporated into potential solutions; 2) that both levels of government work with First Nations to solve the water insecurity challenges; 3) that community Leaders develop and implement community plans, environmental assessments, and impact studies to protect the community from contamination; and 4) that a “watchdog” organization be established by First Nations to assist communities with holding industry, neighbouring municipalities / towns, and tourists visiting or leasing property in First Nation communities accountable for water contamination. Furthermore, the research conducted during this study demonstrates how an Indigenous research paradigm can inform both present and future Indigenous water security research.

### 1.1 Terminology

The most significant words used in the terminology of this thesis project which requires clarification is the distinction between “Indigenous” and “First Nation(s)”. The University of British Columbia created an *Indigenous Peoples Language Guidelines* document in 2018 which accurately describes the differences between both references. “Indigenous” is an all-encompassing reference for the Indigenous peoples located across Canada, the United States, and globally as well. “First Nations” applies to most (but not all) status Indians in Canada affiliated with an Indian band and registered with a federal Indian band registry number (University of British Columbia, 2018). It is important to note, that while the word “Indigenous” applies to all Indigenous groups from First Nations, Metis, Inuit, and international Indigenous tribes such as the Maori in New Zealand, the term “First Nation” only applies to “status Indians” in Canada and not all federally registered status communities in Canada will refer to themselves as First Nations (University of



British Columbia, 2018). As an example, a Metis person may choose to identify as “Indigenous”, but a First Nation person may choose to identify themselves based on their Nation such as Mohawk, Ojibwe, or Cree, or they may choose to identify themselves based on their collective Nations such as Anishinabek or Haudenosaunee which are comprised of several different types of Nations within a region or traditionally occupied territories.

Finally, I have chosen to capitalize “Leader” when I refer to Indigenous Leaders and First Nation Leadership which refers to First Nation Chiefs and Councillors. I do this to signify this as a title of respect – for the same reason I and many Indigenous researchers and technicians choose to capitalize the E when we are referring to Indigenous and First Nation Elders. Capitalizing the E for Elders and the L for Leaders is a part of my Anishinabek teachings and is a fundamental part of my Indigenous perspectives on respect for the teachers, advisors, and Leaders within our Indigenous Nations.

## 1.2 Situating Self

When I first meet a First Nation person, if we want to get to know each other better or talk about anything else of significance, we often start the conversation by talking about where we are from, what lands or waters our families are connected to, or whom we might know in our respective families. The reason introductory discussions usually begin with explaining who you are and where you come from is that relationships to “place” and “other” put you into context; they give you validity, history, and connection. (Phare, 2009, p. 70)

*Nimkii Binishiinwi Kwe dishnakas. Anishinabek kwe n'daw. Wiikwemkoong ndoonjiba, giigoon ndodem.* My name is Thunderbird Water Woman, and I am fish clan from Wiikwemkoong Unceded First Nation on Manitoulin Island (*Mnidoo Mnising*). For the past five years, I have worked for a First Nations political secretariat based out of Toronto called the Chiefs of Ontario

(COO). The COO office acts as an advocacy forum for all 133 First Nations in Ontario as well as assisting these First Nation communities in collective decision-making processes (COO, 2016). Concurrently, I had also worked for the Decolonizing Water Partnerships project based out of the University of British Columbia in Vancouver since December 2016. While working at these places I learned a lot about sustainable water governance and Indigenous laws. The partnership project aimed to create tools which could support Indigenous-led water monitoring programs that would focus on Indigenous legal traditions (Arsenault et al., 2018). With support from the co-authors of *Shifting the Framework of Canadian Water Governance*, I was able to conduct a significant portion of the research that helped shape the literature review. The research for the *Shifting the Framework* article also assisted me with drafting the methodology. Overall, my work experiences helped me shape this thesis study on the impacts of the First Nation water crisis in Ontario communities, discuss the Indigenous relationship to water, and discuss Indigenous perspectives on achieving, protecting, or enhancing their access to clean drinking water.

As an Indigenous woman, I understand and share my perspectives on the Indigenous relationships to land, resources, animals, and past, present, and future generations. The teachings and knowledge that shaped my own personal Indigenous perspectives came from years of listening to Elders, attending ceremonies, and reading Indigenous literature. These understandings are discussed and supported by the Indigenous research conducted for this study. This research also highlights how Indigenous peoples, including myself, are accountable to “all relations” – all relations meaning the aforementioned land, resources, animals, and past, present, and future generations – through an Indigenous concept called “relational accountability” (Chilisa, 2012). In the following sections, I will also discuss “natural law” and “posterity” and how these three

principles shape my work as an Indigenous researcher and why they are critical components to assessing the recommendations provided by the participants in the conclusion of this study.

### 1.3 Research Purpose and Objectives

As an Indigenous researcher, it is my goal to conduct applied research which seeks to improve the conditions and livelihood of the researched peoples and communities. In addition, I strive to balance the power relations between the researcher (myself) and the researched (the participants) with the understanding that “research exists within a system of power” as concluded by Linda Smith (p. 226). I agree with Smith that Indigenous research needs to consider Indigenous cultures and diversity, address power relationships, and “build cultural values and systems” which “contribute research back to communities that is transformative” (Smith, 2012, p. 214). Indigenous research, therefore, must be flexible enough to integrate both western and Indigenous values (Marshall, 2012) while ensuring that the Indigenous participants benefit as well as the researcher (Chilisa, 2012; Smith, 2012). These concepts are critical for Indigenous and non-Indigenous researchers to consider when they want to collaborate or partner with First Nation communities on research projects (Arsenault et al., 2018; Arsenault et al, 2019). Indigenous and non-Indigenous researchers who have worked with Indigenous communities have also determined that providing meaningful recommendations, solutions, and outcomes will only occur when relationships are established with communities based on trust, balanced power structures, and with the researcher possessing in-depth knowledge of Indigenous perspectives, worldviews, and culture (Arsenault et al, 2019; Tobias, 2009; Ontario First Nations Environmental Assessment Technical Working Group (OFNEATWG), 2016; Phare, 2009).

When I began contemplating a master's level research study, I saw the effects of water insecurity in First Nations communities but did not understand why or how this could happen in Canada. As a child growing up in the 90s, you probably heard about water scarcity in other countries, but likely did not think that there were challenges here in Canada. No one really talked about it. The few times water insecurity was in the media, it was briefly mentioned and then gone as if it never happened. My mother and her family lived for decades without running water. Some of my cousins had as well. Even with the knowledge that some of my family members were reliant on water trucks, I still did not think Canada had a problem. I thought plumbing must be hard to implement in remote areas. If water comes out of the tap, then there is no issue with water access or security. In fact, I never thought about water insecurity until 2014. That year I started to see some of the patterns: Six Nations of the Grand River Territory was reliant on water trucks; Shawanaga First Nation was reliant on water trucks; Wiikwemkoong First Nation was reliant on water trucks; and Sandy Lake First Nation was reliant on water and wastewater trucks. Alternatively, when tragedy struck the non-Indigenous community of Walkerton in 2006, their water insecurity challenges were rectified within months (Hipel et al., 2003). That has not been the case within First Nations (Murdocca, 2010).

Shoal Lake #40 First Nation in northwestern Ontario has had water insecurity challenges for decades (Klasing, 2016). Their water insecurity challenges began when Manitoba flooded the communities land in 2019 in order to build an aqueduct for the growing city of Winnipeg (Klasing, 2016). Grassy Narrows, also in northwestern Ontario, has had a drinking water advisory since the 1960s when a pulp and paper mill dumped mercury into their water supply (Science Matters, 2016). With those two communities alone, that's over 100 years of known water insecurity within First Nations in the province. In more recent times, industry and development are still threats to

community source water supplies. Aamjiwnaang in southwestern Ontario is still suffering the effects of contaminated air and water (Klasing, 2016). Six Nations of the Grand River Territory, also located in southern Ontario near Hamilton, is struggling to keep water bottling companies like Nestle from over extracting water from the Grand River, while the community itself has been struggling with water insecurity for years (Perry, 2018). These issues have been highlighted in the media, but the media coverage comes and goes while the water insecurity challenges in First Nations remain.

There have been numerous reports, studies, strategies, committees, plans, and more importantly investments – but the water crisis in First Nations has persisted. Existing literature, however, does provide insights on how and why past efforts have failed. Merrell Ann Phare (2009) assists in this regard by telling us about some of the failures of past investments and strategies. Maude Barlow (2016) also discusses some of these failures as well as well as Indigenous researcher Deborah McGregor. In fact, Indigenous researchers like Vine Deloria have been talking about environmental crises since the 1970s. The parts of the problem that are known and understood are resource and capacity challenges for operations and maintenance (Dumais-Dubé, 2017; Klasing, 2016; Murdocca, 2010), a misrepresentation of government investments (Phare, 2009), and a lack of regulations and accountability measures for both levels of government (Phare, 2009; Assembly of First Nations, 2018; Murdocca, 2010). All of these will be discussed in more detail in the literature review section.

However, I also know from personal experience that there is much more to water insecurity than boil water and do not consume advisories. First Nation community water truck delivery services should never have been considered a long-term solution. For some of my own family members, it has been decades that they have been receiving their water supply in this matter. With

these challenges in mind, we can conclude that there is more to water insecurity in First Nations than the federal government's current focus on ending long-term drinking water advisories. The knowledge and understanding that there are different types of water insecurity challenges which persist in communities across Ontario are what guided me to this area of study.

Indigenous researchers have clearly articulated that Indigenous studies and projects should and must include Indigenous peoples and communities in all phases of a research project if the researcher intends for the community to benefit as well as the researcher (Arsenault et al, 2018; Arsenault et al, 2019; Chilisa, 2012; Smith, 2012; Tobias, 2009). This inclusion means involving Indigenous peoples and communities in the preliminary planning stages, throughout project development, and with any follow up or monitoring activities following the project (Arsenault, 2019; Chilisa, 2012; Smith, 2012). For this thesis, I would have preferred to include Indigenous peoples or communities in the project development, but I was unaware of how to proceed in that manner. As a result, I developed my own series of interview questions which I hoped would uncover the histories of water security or insecurity within participating First Nation communities, discuss what the Indigenous perspectives on what water security looked like, and any ideas or recommendations that Indigenous peoples might want to share that would either be applicable in their own communities or applicable in several First Nation communities. With my understanding of how Indigenous cultures are linked to water, I did not feel that it was necessary to ask about cultural relationships with water as I anticipated these to come out in the discussions regardless if a question was asked about culture or not.

The interview questions will provide an overview of the different types of water and wastewater systems currently in use by First Nations as well as draw out some of the history and challenges behind water insecurity in First Nation communities. Indigenous researchers have been

saying for decades that Indigenous peoples hold the answers to some of their biggest challenges and sometimes all we must do is ask. Additionally, no meaningful solutions or recommendations can be made on behalf of First Nations without their engagement, input, feedback, and overall involvement (Arsenault et al., 2019; Chilisa, 2012; Dumais-Dubé, 2017; Lawless et al., 2016; Longboat, 2016; Von der Porten et al., 2016; Weber-Pillwax, 2004).

This process will include a broad range of research spanning several decades and will include data from First Nation participants of various adult ages and technical backgrounds. It is important to note that while this study included participants from 14 different First Nation communities from across the province, a research sample of one person per community cannot provide adequate information on the unique circumstances and challenges within each community. Therefore, the objective with the participant selection was to create a series of recommendations based on the input shared by the participants, which includes the understanding that the data shared was limited to 14 participants. As a result, the research conducted for this study should be considered exploratory as 14 participants cannot accurately represent the whole story of water insecurity within their individual communities or the province of Ontario as a whole. I recommend that any other individuals interested in undertaking similar studies of Indigenous peoples and water interview a much larger group of participants which will produce much more fulsome results. The research will be described in Chapters 2 and 3 and the participant recruitment process and contributions will be discussed in Chapters 3 and 4.

## Chapter 2: Literature Review

### 2.1 The First Nation Water Crisis

In 2016, *Boiling Point* and *Make It Safe* were published which provided excellent critiques on water governance and the status of water security in Canada (Barlow, 2016; Klasing, 2016). Within Canadian society, there is an assumption that Canada is a water rich country with abundant lakes and mass quantities of water resources (Barlow, 2016). However, Barlow reminds us that Canada's total annual renewable freshwater supply is roughly the size of "Lake Huron" which only makes up "6.5% of the world's total renewable water" (p.3).

In the year 2000, the infamous Walkerton water crisis became national news when an E-coli outbreak emerged in the small town of about 5,000 people (Hipel et al, 2003). This was the first and only time in the last two decades of provincial history that water insecurity outside of First Nations sparked a public call for action. The E-coli contamination in their water supply infected about 2300 people and killed 7 people in May of 2000. This E-coli outbreak was resolved within six months and included a full public inquiry which was conducted immediately after the incident (Hipel et al, 2003). While many Canadians have heard of the Walkerton water crisis, many have not heard about the First Nation water crisis which has been impacting First Nations across Canada for decades. Most of the affected First Nations communities are located within Ontario, the same province as Walkerton (Klasing, 2016).

There are several documents which construct an accurate timeline of water insecurity in First Nations within recent years. Human Rights Watch stated in *Make It Safe* that the federal government had created the Guidelines for Canadian Drinking Water Quality (GCDWQ) in 1968 and has been working to update them on an as needed basis since that time (Klasing, 2016). The



purpose of these guidelines was to “set out maximum acceptable concentrations of microbial, chemical, and radiological contaminants” as well as providing “technical guidance on treatment” (Klasing, 2016, p. 57). Human Rights Watch claimed that while these guidelines created effective standards, they were not adhered to in First Nation communities. Within their findings they also noted that several water treatment systems had design flaws which did not adequately treat drinking water as a result (Klasing, 2016). They explained that Indian and Northern Affairs Canada (INAC)<sup>1</sup> supported the construction of ineffective and substandard drinking water systems until the 1990s. This water insecurity issue finally surfaced in a 2011 water assessment study funded by INAC (Klasing, 2016).

Indigenous researcher Deborah McGregor also conducted studies on existing government reports. She created a timeline of key developments in Canadian water policies and legislation on First Nations drinking water quality as an appendix to her article on Traditional Knowledge and water governance in 2014. In this article, entitled the *Ethic of Responsibility*, McGregor states that the federal department of INAC began documenting water system assessments in First Nation communities in 2003 with their *National Assessment of Water and Wastewater Systems*. They found that out of the 740 water systems that they had assessed, 218 (29%) posed potential high risks to water quality, 337 (46%) posed medium risks to water quality, and only 24% of the water systems assessed were classified in the low or no risk categories (McGregor, 2014). McGregor also determined that the 2003 First Nation Water Management Strategy that resulted from the

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<sup>1</sup> The federal department working with Indigenous peoples in Canada was called Indian and Northern Affairs Canada (INAC) until 2011. In 2011, Prime Minister Harper changed it to Aboriginal Affairs and Northern Development Canada (AANDC). Minister Bennett changed the name again in 2015 to Indigenous and Northern Affairs Canada (INAC). For the purposes of this study clarifying the name changes of INAC was necessary as it refers to all three names which were applied to the same federal department over the past decade.

assessment was a failure despite the 600-million-dollar budget attached to it and many critical water issues remained in communities (McGregor, 2014).

In 2009, Merell Ann Phare released a report on how Canada had failed to provide water security for First Nations. In her 2009 book *Denying the Source*, Phare claimed that “almost 15 percent of drinking water advisories [had] been in place since 2002” (p. 9). Phare (2009) also discussed the 2005 finding by the Commissioner of the Environment and Sustainable Development (CESD) that despite millions of dollars in investments, the government had failed to supply First Nations with clean drinking water on reserve. She added that the CESD attributed this to a lack of drinking water quality protection on reserves. Within her concluding arguments, she stated that two of the most prominent issues affecting water insecurity in First Nations was a lack of safe drinking water legislation for water on reserves and a “misrepresentation” of government investments in drinking water quality on reserves (Phare, 2009). She stipulated that she had gathered the information on the misrepresentation of funds from the Assembly of First Nations (AFN) 2004 reports. The AFN reports reviewed by Phare stated that only 67% of the funds invested for water security were transferred to First Nations and that the rest of the funding went to other First Nation groups and government administrative costs and services (Phare, 2009). The AFN also reported that the capital funding First Nations receive is less than half of what municipalities receive (Phare, 2009). Additionally, First Nations could not keep up with the operation and maintenance costs of water treatment plants (Dumais-Dubé, 2017; Klasing, 2016; McGregor, 2014; Phare, 2009). The costs of maintaining and operating water treatment plants are also significantly higher in northern Ontario where many First Nations communities within the province are located (Klasing, 2016; Lawless et al, 2016; Phare, 2009).

By 2006, INAC began ramping up their efforts to provide clean drinking water for First Nations and announced an *Action Plan for Drinking Water in First Nation communities* (McGregor, 2014). This *Action Plan* included protocols for safe drinking water systems in First Nation communities as well as a commitment to establish an Expert Panel to Advise on a Regulatory Framework in attempts to secure safe drinking water for First Nation communities (McGregor, 2014; Klasing, 2016). The same year, this Expert Panel released a final report which outlined three options for a regulatory framework: 1) the creation of new regulations which referenced existing legislation; 2) the establishment of federal standards and requirements; and 3) allowing First Nations to develop their own laws which could be built into existing regulations (McGregor, 2014). Human Rights Watch also assessed these findings and added, “[T]hese recommendations of the Expert Panel... recognize the need for enforceable regulations, but only if sufficient investment is made to remedy existing problems in the water management systems” (Klasing, 2016, p. 63). Human Rights Watch recognized that a critical piece was missing within those findings. If there were no resources and investments attached to safe drinking water for First Nations legislation, then water insecurity in First Nations would continue.

In 2007, the United Nations Human Rights Commission also acknowledged both the Indigenous as well as the human right to safe drinking water when they released their *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) (UNDRIP, 2007). Within this *Declaration*, there are five articles which are pertinent to Indigenous needs and Indigenous rights to resources, but two of these articles are specific to water. Article 25 reads:

Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, water and coastal seas and other resources and to uphold their responsibilities to future generations in this regard (UNDRIP, 2007, Article 25).

Furthermore, Article 32 of UNDRIP (2) states:

States shall consult and cooperate in good faith with the Indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of minerals, water or other resources (UNDRIP, 2007, Article 32 (2)).

The United Nations acknowledged that Indigenous peoples have a cultural and spiritual right to conserve and protect the waters for present and future generations. They also acknowledge that governments have a duty to consult and engage with Indigenous peoples when they exercise these rights, which includes a right to say “no” to activities that threaten their shared waters. Canada, which was operating under a conservative federal government at the time the *Declaration* was written, refused to sign on or implement the UNDRIP in 2007.

As Merell Ann Phare noted, the First Nation water crisis persisted in 2008 despite \$120 million in investments to implement the 2003 First Nations Water Strategy. While the total investments since 2003 exceeded \$600 million, the water issues impacting First Nation communities across Canada remained critical (Phare, 2009). By 2008, the federal government announced a two-year action plan for First Nations water and wastewater systems. This action plan included updating previous water and wastewater assessments in First Nation communities as well as conducting First Nation consultations to establish a national framework for water systems on reserves (McGregor, 2014). The goal of these First Nation consultations and assessments was to create a national legislative framework for drinking water for First Nations (McGregor, 2014).

By 2010, the federal government introduced Bill S-31, an *Act Respecting the Safety of Drinking Water* which was instantly rejected by First Nations (McGregor, 2014). A year later, in 2011, INAC conducted another assessment which found that “approximately 20 percent of water

systems and approximately 25 percent of wastewater systems were operating at or above capacity” (Klasing, 2016, p. 53). In addition, the study also found that out of the 133 First Nations in Ontario, 23 were using surface water which did not meet the Canadian drinking water standards in place because of inefficient or substandard water infrastructure (Klasing, 2016). Human Rights Watch added:

Eight of these communities also failed to meet [the Guidelines for Canadian Drinking Water Quality] GCDWQ Maximum Acceptable Concentration (MAC) guidelines for bacteria in 2011. Systems in 18 of these 23 communities were built after the 1987 regulations, and 13 were built in 1996 or later... [and] seven were built in 1999 or later (Klasing, 2016, p. 58).

This statement indicates that First Nation were still having inefficient and substandard systems installed in their communities up until 1999.

Furthermore, Human Rights Watch reported that Canadian investments would need to increase by “\$4.7 billion” to bring infrastructure in First Nations up to Canadian standards as well as enabling communities to keep up with their growing populations (Klasing, 2016, p. 69). The estimated costs for operations and maintenance in First Nations was \$419 million according to Human Rights Watch sources (Klasing, 2016). Human Rights Watch also found that the government only funds 80% of operations and maintenance costs for First Nation water systems and that First Nations are required to come up with the remaining 20% out of their own budgets. In reports INAC conducted in 2011, they found that 20-25% of water and wastewater systems in First Nations were operating at capacity or beyond (Klasing, 2016). This 2011 report also indicated that INAC had found “more than 10 million in unaddressed operations and maintenance repairs” which were related to the lack of full water infrastructure coverage by INAC (Klasing, 2016, p. 72). Additionally, the report stated that only 69% of households in First Nation communities had

access to piped water while the remaining 31% percent relied on individual wells, trucked water supplies, or had no water service at all (Klasing, 2016).

By 2013, the federal government made two failed attempts at creating drinking water legislation for First Nations starting with the creation of *Bill S-8*. While *Bill S-8* was instantly rejected, a piece of government legislation for drinking water in First Nations was finally passed with the 2013 *Safe Drinking Water for First Nations Act* (SDWFNA) (McGregor, 2014). This *Act* lists 11 regulatory components which includes source water protection, delivery, and training and treatment standards, but it fails to list any details on resources and who is responsible for paying to implement these standards (INAC, 2013; Klasing, 2016). Human Rights Watch discussed many of the challenges with SDWFNA in their 2016 report:

[First Nations] assert that in passing the law, the government ignored recommendations, including by the Expert Panel on Safe Drinking Water for First Nations, that regulatory efforts should go hand in hand with significant federal government investments to ensure First Nations had the resources to comply with the legislation and regulations. They also assert that the government did not appropriately consult with First Nations... the proposed regulations allow the government to pass financial or even criminal liability for failing systems to First Nations. The government mismanaged the failed systems and then passed those problems onto communities without any kind of resources or funding attached to this responsibility (Klasing, 2016, p. 63).

From her book *Boiling Point* released in 2016, Maude Barlow adds:

A clause within this Act appears to weaken indigenous and treaty rights if it is necessary to ensure the safety of water on First Nations lands. The Act contains an immunity clause against the federal government for any lawsuits for injury caused by poor-quality water and outlaws' payments to satisfy claims against [the government]. (Barlow, 2016, p. 62)

The federal government stated that their intention with both *Acts* was to ensure that drinking water and wastewater standards in First Nations would be the same as the standards already in place for the rest of Canada (AFN, 2017; Association of Iroquois and Allied Indians (AIAI), 2018).

However, the result was that the responsibility was now placed on First Nations to establish those standards in their communities without adequate funding being included in the legislation to enable First Nations to meet these requirements (AFN, 2017; McGregor, 2014; Barlow, 2016). The *Act* is also problematic for three reasons: 1) there was a lack of First Nation consultation and engagement on the establishment of the *Act*; 2) the government had effectively absolved itself of any responsibility in providing safe drinking water to First Nations within the *Act*; and 3) First Nations were concerned about impacts that this *Act* would have to their treaty rights (Barlow, 2016; AFN, 2017; AFN, 2018; McGregor, 2014). The AFN, Maude Barlow, Human Rights Watch and Deborah McGregor all state that First Nations are concerned about how this *Act* would place even more burdens on communities and discuss the injustice of this transfer of responsibility without any kind of resources attached to it.

By 2015 the situation was even more dire. At this time, 18 of the water systems that had failed to meet the Guidelines for Canadian Drinking Water Quality standards back in the 2011 INAC assessment report were under drinking water advisories (Klasing, 2016). That same year, Human Rights Watch reported that the Senate committee found that First Nations minor capital funding was insufficient to address their capital needs which meant that many First Nations were forced to find creative ways to operate with insufficient funding and resources (Klasing, 2016). Minor capital funding in First Nations includes infrastructure such as “housing, transportation, rehabilitation, septic and water systems, school additions, access roads, upgrades, restoration and new construction, electrification, and waste management” (Klasing, 2016, p. 67-68). Funding is also allocated to communities depending on geographic locations and takes remoteness and isolation into consideration (Klasing, 2016). Human Rights Watch added:

[A] report on the [First Nations Water and Wastewater Action Plan] found that infrastructure was not meeting its life expectancy cycle due to poor design, operating over capacity, or insufficient investments in maintenance... Between 1996 and 2015, INAC was limited to a two percent cap on base funding despite population growth, inflation, or need (Klasing, 2016, p. 70).

First Nations were not only left with the challenge of trying to make up for the 20% gap they needed to cover for their often poorly designed and implemented water systems, but they were also limited by a 2% maximum increase for their water and wastewater funding regardless of their community needs (Klasing, 2016). Additionally, this meant that inflation and population growth were not taken into consideration which would impede growth within First Nation communities.

As of January 2016, Human Rights reported that there was a total of 134 water systems under boil water advisories in First Nations throughout Canada, with 90 of those water systems under drinking water advisories located in Ontario. Human Rights Watch stated that these drinking advisories demonstrated that a “broader systemic crisis” was impacting First Nations rights to clean water for drinking and sanitation (p. 4). Phare and Human Rights Watch indicated that the water crisis was due, in part, to a misunderstanding of how funding and investments are allocated to First Nations drinking water. Phare claimed that First Nation communities only received 67% of the funding and investments allocated to them for rectifying their water challenges while the remaining 33% went to funding governments and Indigenous and non-Indigenous organizations to assist communities with implementing solutions (Phare, 2009). Human Rights Watch added that communities also struggle with the high costs associated with building, maintaining and operating water treatment plants throughout Ontario. They determined that these operations and maintenance issues were often exacerbated by the fact that the funding provided to First Nations communities is typically (and often significantly) less than what municipalities receive (Klasing, 2016). Human



Rights Watch also determined that existing Canadian regulations only protected Canadians living off reserve: meaning those Canadians not living in a First Nation community.

2016 was also the year that the *Verdict of the Coroner's Jury* was released regarding the inquest into the deaths of seven First Nations youth in the city of Thunder Bay from October 2015 to June 2016 (Ontario Ministry of the Solicitor General, 2016). This inquest was launched when the families of the youth and the public demanded answers for the deaths of seven First Nation youth in Thunder Bay which were unsolved or undetermined from 2000 to 2011. Within the Jury's verdict, in section 34, was a pronouncement that water assessments in First Nation communities take place as this significantly impacted the living conditions and health issues of the Indigenous peoples living on reserve. The Jury determined that the mental and social health of the youth from First Nation communities near Thunder Bay Ontario were directly impacted by a lack of clean and potable drinking water available in these communities. They determined that the following were required to protect Indigenous youth on reserve:

- ii. To review the current water treatment systems in individual communities and identify the need for any upgrades to ensure that NAN First Nation community members have access to safe, healthy, potable water, immediately and in the future. Funding for the projected improvements to the water treatment systems should be provided by Indigenous and Northern Affairs Canada (INAC) (Ontario Ministry of the Solicitor General, 2016, Section 34 (ii))

The Jury also indicated that it was necessary

[T]o review the wastewater systems in individual communities and identify the need for any upgrades to ensure that NAN First Nation community members have access to safe, healthy sewage disposal systems in the future that will not compromise the First Nation's drinking water supply. Funding for the projected improvements to the wastewater systems should be provided by INAC. (Ontario Ministry of the Solicitor General, 2016, Section 34 (iii))

The findings by the Solicitor general were the first to connect Indigenous people's vulnerabilities with the lack of safe drinking water in communities. The National Inquest into Missing and Murdered Indigenous Women and Girls (MMIWG) would be the second.

The National Inquiry into MMIWG had similar findings in their Final Report entitled *Reclaiming Power and Place*. The fourth section on *Human Security* stated:

We call upon all governments to recognize Indigenous Peoples' right to self-determination in the pursuit of economic social development. All governments must support and resource economic and social progress and development on an equitable basis, as these measures are required to uphold the human dignity, life, liberty, and security of Indigenous women, girls, and 2SLGBTQQIA people. All governments must support and resource community-based supports and solutions designed to improve social and economic security, led by Indigenous women, girls, and 2SLGBTQQIA people. This support must come with long-term, sustainable funding designed to meet the needs and objectives as defined by Indigenous peoples and communities. (National Inquiry into MMIWG, 2019, Section 4.1).

Therefore, reports can be found dating back to 2016 where provincial and national groups had noticed the linkages between water security and health, education, social, housing, and justice issues in First Nation communities. The National Inquiry's Final Report stated the same obligation as Human Rights Watch that Indigenous peoples must receive sustainable and long-term funding to meet their needs and one of the most fundamental and basic human needs is potable drinking water.

The impacts of the First Nation water crisis vary across the province in terms of severity, but there are several communities that have been on boil water advisories for decades, as explained in previous sections. Some communities, such as the Ojibway communities of Grassy Narrows and White Dog, have endured long-term drinking water advisories due to mercury contaminated water since the late 1960s (Notzke, 1994). In 1994, Claudia Notzke observed that

These communities have not yet recovered from the devastating physical and social impact of this incident. Less known is the fact that, prior to the mercury pollution, these two communities along with other native groups in the region had also experienced the negative effects of hydro dam construction. These effects ranged from the flooding of graveyards over a loss of fur production to enforced relocation of 15 Ojibway families from the settlement of One Man Lake to the White Dog reserve. (Notzke, 1994, p. 17)

The “incident” that Notzke is referring to is the mercury spill that contaminated the English-Wabigoon River system in 1960 by a paper mill operating there at that time (Klasing, 2016). Grassy Narrows is one of the communities on a do not consume advisory as high concentrations of uranium were detected in their well systems as well as the cancer-causing by-product of water disinfection, trihalomethanes, which were found in other communities across the province and discussed by some of the participants in Chapter 4.

Another community which has been severely impacted by the First Nation water crisis is Shoal Lake #40 in northwestern Ontario close to the Manitoba border. Shoal Lake #40 was made into a man-made island by the Canadian government in 1919 when they created an aqueduct to provide water to the city of Winnipeg (Barlow, 2016; Troian, 2019). The flooding for the aqueduct resulted in clean water access for the city of Winnipeg, but the side of the lake the community was forced to draw from became contaminated over the decades that followed (Klasing, 2016). For the 76 years from 1919 to 1995, the community had no water treatment system in the community. While the first community water system was installed in 1995, it was poorly designed and the community was officially placed on a boil water advisory by 1997 (Barlow, 2016; Klasing, 2016; Troian, 2019). Winnipeg stipulated that Shoal Lake had been adequately compensated by the province of Manitoba, but Shoal Lake suffered hazardous travelling conditions when travelling to and from the mainland for food supplies and other essentials (Lorraine, 2016; Troian, 2019). This isolation also prevented the community from maintaining and building basic community

infrastructure such as their water treatment plant and their plans for a new high school. Building and maintaining these types of infrastructure were not possible because Shoal Lake #40 had no road access to the Trans-Canada highway (Barlow, 2016; Klasing, 2016; Troian, 2019). After 100 years of isolation and the challenges that came with it, the community finally received road access to the Trans-Canada highway in June 2019 (Troian, 2019).

In addition to the First Nation communities facing long-term drinking water advisories, another challenge that communities are facing is their ability to keep newly built water treatment systems maintained. Serpent River First Nation, which is located near Massey Ontario, had received a brand-new water treatment plant in 2015, but the community was forced to issue a “do not consume” advisory shortly after it was installed due to a high number of trihalomethanes found in their treated water (McClearn, 2017). As discussed for Grassy Narrows, trihalomethanes are a by-product of water disinfection chemicals reacting with naturally occurring chemicals found in water sources. The community quickly established a project team to determine what went wrong with their water system and develop a solution. The project team found that a pilot project, which had taken place over a two-month timeframe, had not been adequate and did not capture that natural changes in water over the seasons (McClearn, 2017). The purpose of this pilot project was to determine which type of treatment system would work best in the community and this project had failed because the acidity and density of the water varied throughout the year (McClearn, 2017). The project team proposed “new membranes” as a solution because they were significantly more effective at treating the community’s water, but they came at a much higher expense and had to be shipped in from another country which would take several months to arrive in the community (McClearn, 2017). On the Indigenous Services Canada (ISC) website for tracking communities with long-term drinking water advisories, Serpent River was listed as “completed” as of November

2017 (ISC, 2019). On Serpent River's website, however, they indicate that they are still suffering from water insecurity in their community (Serpent River, 2020).

Located just a few hours northwest from Serpent River First Nation is the First Nation community of Batchewana. This community, which is nestled in between both Lake Huron and Lake Superior, has partial access to the neighbouring municipal water system while the remaining parts of the community are dependent on individual water and wastewater systems (Klasing, 2016). Within their agreement for municipal water use, Batchewana was given a finite number of homes which be connected to the municipal system. As a result, the community had reached full occupancy of all homes which could be connected to the municipal system by 2015 (Klasing, 2016). Human Rights Watch reported that Batchewana would need to renegotiate their contract to get more homes connected to the municipal system and that the community also required more funding for their infrastructure needs from INAC. According to an interview Human Rights conducted with the Batchewana Housing Director, the costs associated with building individual water and wastewater systems were significantly more expensive and there were no resources to assist communities with individual systems:

The housing Director for Batchewana stated that the First Nation spends an estimated \$18,000 to service a new house lot for private (individual) water and septic systems. However, 'there is no budget within the operation and maintenance to deal with individual water and wastewater challenges.' (Klasing, 2016, p. 53)

This means that INAC did not assist community members with building these systems and did not assist individual homeowners or the community administration with servicing and maintaining these water systems. Human Rights Watch added

INAC funds community water and wastewater systems on reserves that serve five or more households. Smaller systems, often servicing only one household, fall outside of the operation and maintenance funding provided by INAC. Yet public water and wastewater

systems... do not reach many households on First Nation reserves in Ontario. (Klasing, 2016, p. 75)

According to Human Rights Watch, INAC does not fund water systems that support less than five households. This leaves First Nation community band councils, many of whom are already operating with limited and insufficient funding, with the difficult choice of assisting their community members with their well systems or leaving community members to fend for themselves.

The 2016 Human Rights Watch report also claims that First Nations who have been forced to live with drinking water advisories for five years or more are at an increased risk of exposure to contaminants. This is due to their frustration and fatigue with daily water treatments which makes them far more likely to drink the water without boiling it. In addition, skin infections and afflictions are common in many First Nation communities with water contamination (Klasing, 2016; Murdocca, 2010). Human Rights Watch also reported that most First Nation communities in Ontario rely on private wells for drinking water and more than half of First Nations rely on individual septic systems (Klasing, 2016). The maintenance costs on these systems are often much more than communities can afford and the costs for repairing systems that have fallen into disrepair are insurmountable (Phare, 2009; Klasing, 2016; McClearn, 2017).

The AFN, which is a national First Nations political advocacy body for all 634 First Nation communities in Canada, is currently working with all the First Nation Political Territorial Organizations (PTOs) in Canada on repealing the *Safe Drinking Water for First Nations Act* (SDWFNA) legislation (AFN, 2017; AFN, 2018). Based on two of their resolutions from 2017 and 2018, the AFN's goal was to work with communities on repealing the *Act* prior to the 2019 federal election. However, it is clear from the lack of a repeal on this legislation that this goal was

unattainable (AFN, 2017; AFN, 2018). What is currently unclear is how far along AFN has progressed with this initiative, but this is understandable given the complexity of the issue. After the liberal government was elected in November 2015, they pledged to end all long-term drinking water advisories (LTDWA) by 2021 (ISC, 2019). Prior to the election in October 2019, no further commitments were made by the liberal government. As of July 2019, they reported that 86 long-term drinking water advisories have been lifted since November 2015 and that 57 long-term drinking water advisories remain (ISC, 2019). This list does not include communities who are on short-term drinking water advisories or communities affected by other water security issues such as a reliance on water trucks, community wells, and a lack of community planning for water protection.

The review of existing government initiatives and legislation is critical to understanding some of the reasons why First Nation communities continue to experience water insecurity today (Lawless et al., 2016). Chilisa refers to government actions as “dominant research paradigms” which result in initiatives, and in this case legislation, which is “irrelevant to the needs of the people” (Chilisa, 2012, p. 35). I agree with Chilisa as it was clear that in many of these cases First Nation communities affected by water insecurity were not engaged or consulted by previous governments and only long-term drinking water advisories are being prioritized now (Lawless et al, 2016; Murdocca, 2010). Research has shown us that water insecurity in First Nations extends beyond long-term drinking water advisories.

## 2.2 Understanding Indigenous Water Governance

This section provides an overview of existing values, priorities and goals which were developed by First Nation researchers, First Nation organizations, and First Nation communities. In October 2008, the COO released the *Water Declaration* of the First Nations in Ontario. This document clearly articulates the Indigenous relationships to water shared by many, if not all, of the 133 First Nation communities in Ontario. Despite the numerous cultural, geographic, and linguistic differences for each of these First Nation communities, there is a shared relationship to water, a shared commitment to protect water for current and future generations, and a shared right to water, self determination, and treaties (COO, 2008). Article 37 of the Water Declaration reads, “First Nations in Ontario have authority and responsibility as given to us by the Creator. We are going to assert our authority. We have legal rights recognized by the laws given to us by the Creator, the Constitution of Canada and international law” (COO, 2008, p. 4). This tells us that First Nations were given authority and responsibility for water from the Creator and that this authority will be exercised as they see fit. This also tells us that First Nations prioritize their own laws first and existing Canadian law and international law second.

The AFN followed suit in 2013 with the drafting of a national *Water Declaration* which they finalized in 2014 (AFN, 2014). While these two documents form the basis of the principles, values, and goals which First Nations peoples adhere to in terms of water governance and conservancy, there have been other national research projects conducted on Indigenous Water governance. One of these research projects, in which I have been involved, is the Sustainable Water Governance and Indigenous Law Partnership Project (also referred to as the Decolonizing Water Partnership Project) (Arsenault et al, 2018). This project was originally based out of the University



of British Columbia and is an eight-year community-based research initiative aimed at (i) disseminating information on the challenges First Nation communities are experience in terms of water insecurity, (ii) demonstrating how progress has been made or can be made toward achieving water security for First Nations, and (iii) creating technical tools and prototypes to support Indigenous-led water monitoring programs which focus on Indigenous laws (Arsenault et al, 2018).

Indigenous researchers such as Vine Deloria (1970) and John Borrows (1997), have been writing about the benefits of including traditional knowledge (also referred to as traditional ecological knowledge (TEK)) in environmental protection planning and other decision-making processes for several decades (Deloria, 1970; Borrows, 1997). Traditional Knowledge (TK) explains the relationships that Indigenous peoples have with their environments and resources as well as the “relational accountability” that they have to their environments, resources, animals, and past, current, and future generations (Van der Porten et al, 2016).

A more recent example of how Traditional Knowledge (TK) has been incorporated into government policies is the 2018 *Watershed Planning in Ontario* draft document. This document was intended to provide support on watershed planning within Ontario and the implementation of the four provincial land uses but was never finalized by the provincial government. While this document included a whole section on “Indigenous community partnership”, it also outlined different options for community outreach and discusses Indigenous Ecological Knowledge:

Respectful consideration of traditional ecological knowledge in watershed planning undertakings, as appropriate, can contribute to positive environmental management outcomes and relationship building. Effective engagement with Indigenous communities may include the consideration of traditional ecological knowledge as part of watershed delineation and characterization. This knowledge can... help determine historical water levels, historical and cultural land uses, significant cultural sites, ecologically sensitive areas and important times of the year for a variety of species. Traditional ecological

knowledge may help to define research questions and data collection for any monitoring programs. Municipalities should discuss with the appropriate Indigenous knowledge holders how traditional ecological knowledge may be shared and how it may be used (Province of Ontario, 2018, p. 31)

With this statement, the government acknowledges that Indigenous peoples have traditional knowledge and traditional ecological knowledge that can benefit environmental sustainability efforts as well as strengthening watershed planning. This is a good example of how some governments are trying to incorporate traditional knowledge into their environmental policies. While this Draft Watershed Planning Guidance document provides some useful information on engaging with Indigenous communities in watershed planning and the significance of incorporating TK into decision making processes, a topic on which there is not a lot of information available at this time, this document was a work in progress and was never finalized. It is also unclear how far along the province was with Indigenous engagement and input on this draft document.

There have been attempts made to include Indigenous Traditional Knowledge into government environmental policies to date, but the language comes off more as more suggestive as opposed to a requirement (Province of Ontario, 2018; Arsenault et al, 2019). The inclusion of Indigenous laws and Traditional Knowledge was highlighted throughout the research for the literature review as well as clearly articulated by most of the participants. Therefore, including Indigenous laws and Indigenous Knowledge Systems into solutions is not merely a suggestion by Indigenous peoples, but an actual requirement. This will be discussed further in section 4 and will be included within the conclusion and recommendations section.

The research principles of posterity and including traditional knowledge in decision making processes are linked to First Nations rights to water (UNDRIP, 2007; McGregor, 2014;

Arsenault et al., 2018). In 1982, the Canadian Constitution was amended to affirm that First Nations in Canada have treaty rights and the right to self-government (Phare, 2009). However, despite the government's fiduciary responsibility to First Nations in Canada and despite their "special legal and political obligations to act in Indigenous People's best interests", they have not made any justifiable attempts to resolve the First Nation water crisis (Phare, 2009, p. 34). Additionally, the government of Canada has not acknowledged any First Nation right to water and used conjecture that water was ceded as well as land in the treaties to substantiate their lack of action on resolving the water crisis prior to the election of the liberal government in 2015 (AFN, 2017; AFN, 2018; AIAI, 2018). In *Make it Safe* (2016), the Human Rights Watch concluded that "the governments own audits show a pattern of overpromising and underperforming, without sufficient monitoring of whether money that is invested results in a positive outcome" (Klasing, 2016, p. 14). This has severely impacted the ability of First Nations to adhere to their values, principles, and protocols and has also negatively impacted Indigenous rights.

Within this thesis, I wanted to ensure that my research targeted what Chilisa calls "local phenomenon" (Chilisa, 2012). By not focusing on the same things that the government was focusing on, which is long-term drinking water advisories, I was able to discern early on that drinking water advisories were only one part of the overall issue water insecurity. Focusing on boil water advisories would only eliminate a part of the overall water crisis challenges but would not address the circumstances and threats that led to water insecurity in the first place. Focusing solely on boil water advisories would also ignore the threats to community source water supplies, infrastructure capacity, and operation and maintenance challenges. With my thesis research, I wanted to ensure that the questions were flexible enough for the participants to have adequate space to discuss all of their challenges and ideas for achieving water security.

Some of my past research projects assisted me with understanding Indigenous water governance and why this is so critical for creating and implementing water security solutions for First Nations. In January 2018, the Indigenous Research Methods working group of the Decolonizing Water Partnership project published an article entitled *Shifting the Framework of Canadian Water Governance through Indigenous Research Methods: Acknowledging the Past with an Eye on the Future* in the MDPI open access *Water Journal* (Arsenault et al, 2018). In this article, my colleagues and I discussed some of the impacts of the First Nation Water Crisis on First Nation communities in Canada. We also discussed the Indigenous relationships to water and explained how Indigenous Research Methodologies can be applied to Indigenous Water Governance problems (Arsenault et al, 2018). By examining research conducted by Indigenous researchers such as Linda Tuhiwai-Smith, John Borrows, Aimee Craft, and Deborah McGregor, we explained how gaps can be addressed in our understanding by applying decolonizing research approaches to water governance. We stated that these approaches must include “critical applications of Indigenous research methodologies” based on Indigenous knowledge (Arsenault et al, 2018). Some of the literature reviewed for that project has also been used in this thesis.

The research conducted by Arsenault et al and the information provided by the *Water Declaration* were successful in terms of documenting collaborative projects with Indigenous peoples, illustrating some best practices such as including First Nations and Indigenous peoples in research and training, and providing guidance on the values and principles that Indigenous peoples adhere to with any decision-making processes. These two documents also discuss fortuitous implementations of research projects and initiatives and provide guidance on the inclusion of TK in policy direction and governance and how it can be successfully integrated into frameworks and policies. Many of the values, priorities, and goals discussed in the *Water Declaration* and the

article by Arsenault et al help us understand why some of the recommendations were made by the participants in this study such as including TK into policies and frameworks for water governance. However, the limitations of this past research project were that it did not include the voices of Indigenous peoples living with and experiencing water insecurity in their daily lives. It is important to understand that previous research initiatives assisted me with understanding what Indigenous water governance looked like from a research perspective, whereas this study focuses on government investments, policies, legislation, and failures when it comes to First Nations water security. More importantly, this thesis provides Indigenous perspectives and the rationale for Indigenous peoples holding the solutions to some of their water insecurity challenges.

## Chapter 3: Research Design and Methodologies

### 3.1 Indigenous Research Paradigm

Indigenous researcher Bagele Chilisa (2012) states that western research tends to be “deficit” centered and “pain focused” which does not benefit Indigenous communities. With this knowledge in mind, I endeavored to research methodologies discussed by prominent Indigenous researchers such as John Borrows from Canada, Linda Smith from New Zealand, and Bagele Chilisa from Africa. Although each of these researchers comes from a different part of the world, they all have similar ideas of what research means for Indigenous researchers and Indigenous communities. Indigenous research is grounded in both Indigenous and western frameworks. Each of these previously mentioned researchers discusses four main concepts that I will consider throughout my research:

- 1) Posterity: ensuring that present and future generations are taken into consideration.
- 2) Relational Accountability: Indigenous researchers understand and acknowledge that they are accountable to all their “relations” with their research. This means that they are accountable to the Nations and / or Tribes that they come from, the Nations and / or Tribes that they are working with, and they are also accountable to the generations that came before them, present generations, and future generations. In many cases, Indigenous peoples are also accountable to all “life” on earth which includes the animals, the plants, and water. Indigenous peoples have a responsibility to protect the gifts that have been given to us in the form of air, land, and resources. Borrows and Smith also discuss water as having a life of its own and a right to live as a being with a life force.

- 3) Reciprocity: researchers conducting research with Indigenous peoples have a responsibility to ensure that their research benefits the researched as well as the researchers. There is a fundamental understanding within Indigenous research that knowledge is an exchange which should be used to build and strengthen relationships (Kimmerer, 2013). The researcher has a responsibility to ensure that the Indigenous knowledge shared by Indigenous peoples is understood from their “frames of reference” as well as ensuring that the same emphasis is placed on Indigenous knowledge as western knowledge (Chilisa, 2012). Borrows also discusses how, in many cases, Indigenous knowledge systems can strengthen and enhance existing western knowledges, policies, and legislation (Borrows, 1997).
- 4) Creating “transformative” research: Indigenous research must be flexible, adaptable, and transformative. This means that research must consider the uniqueness of Indigenous cultures, geographic areas, and social and political backgrounds to provide recommendations and solutions which can be adapted and tailored to specific community needs. This includes creating research which can contend with colonial and capitalist centered intellectualism while promoting the necessity and strengths of Indigenous intellectualism.

While each Indigenous researcher acknowledges that these four concepts are fundamental to Indigenous research methodologies, they also have their own distinct and unique interpretations which is characteristic of Indigenous research methods.

### 3.2 Indigenous Research Methodology

In *Living between Water and Rocks*, John Borrows discussed a concept that he calls (re)placing knowledge:

Placing Indigenous traditions in an inter-societal context, through a culturally appropriate methodology that allows access to oral tradition and community knowledge, illustrates how traditional legal knowledge could enhance democracy and facilitate sustainability. Placing Indigenous accounts of law within and beside “western” interpretations of contemporary customary law encourage more inclusive democratic conversations, neither separate from nor entirely included within more formal rule-based discourses. (Borrows, 1997, p. 429)

Borrows utilizes “Indigenous law” as the foundation for his (re)placing knowledge concept. He describes Indigenous law as:

[Originating] in the political, economic, spiritual and social values expressed through the teachings and behaviour of knowledgeable and respected individuals and elders. These principles are discovered in the rich stories, ceremonies and traditions within First Nations. These stories contain the law in First Nations communities as they represent the accumulated wisdom and experience of First Nations conflict resolution. Some of these narratives pre-date the common law, have enjoyed their effectiveness for millennia, and have yet to be overruled or distinguished out of existence. These laws relative to environmental protection are strong and contain legal principles that could be integrated into US and Canadian institutions (Borrows, 1997, p. 454)

There are several phases involved with “(re)placing knowledge”. Borrows stipulates that research would produce more beneficial results if was more flexible and multifaceted instead of being categorized in one main research area. He uses the example of TEK and its application within Indigenous cultures. TEK can fit into several areas of study such geography, environmental studies, politics, sociology, anthropology, law, and health, but it effectively incorporates all of them at once. The same can be said for the effects of water insecurity on Indigenous peoples. Water insecurity affects Indigenous people’s physical health, but due to their cultural and spiritual responsibilities, it also affects their mental and spiritual wellbeing. In addition, creating meaningful



recommendations and solutions around water insecurity requires political advocacy, knowledge of geographical limitations and an understanding of Indigenous laws and culture.

(Re)placing knowledge is the first type of methodology that I will be incorporating into my thesis. While western studies on water usually fall within the realm of geography and research initiatives with Indigenous peoples typically falls within the realm of Indigenous studies, discussing water governance with Indigenous peoples and water insecurity within Indigenous communities is much more complex than geography and Indigenous studies. Indigenous water governance requires an understanding of geography, law, political science, and sociology and how each of these study areas relates to Indigenous perspectives on water. Similarly, understanding what water security and water insecurity mean to Indigenous peoples also requires an understanding of geography, law, political science, and sociology but it also requires an understanding of history and colonization among other areas of study. In order to understand Indigenous water governance and how this can lead to achieving water security in Indigenous communities, researchers must (re)place the western idea of “areas of study” and the concept of knowledge existing in silos, because this hinders a researcher’s ability to understand the Indigenous relationships to water.

Linda Smith (2012) also had some insightful methodological concepts that I wanted to include in my own research. One of these concepts which I have centered my research on is the “discovering the beauty of our knowledge” concept (Smith, 2012, p. 161). Smith states that this concept is an understanding and acknowledgement that Indigenous Knowledge Systems can enhance and strengthen research by, with, and on Indigenous peoples. Smith argues that this will allow Indigenous peoples and researchers to “rediscover” existing Indigenous knowledges which have been suppressed or ignored as well as enabling Indigenous and non-Indigenous to

“decolonize” their methodologies as well as their minds. As both an Indigenous researcher and an Indigenous researcher working with Indigenous peoples, I want to ensure that my research findings incorporate both western and Indigenous perspectives while producing results which will benefit the participants as well as myself as a researcher.

An example of this in practice is “two-eyed seeing” where research combines Indigenous knowledge with western science to draw on the strengths of both knowledge systems simultaneously (Marshall, 2012). Two-eyed seeing is a practice which is I have attempted to adhere to throughout the literature review, interviewing process, and finalizing the written draft of this thesis. While I understood that western knowledge requirements had to met with this project, I also understood that I had to balance this with Indigenous ways of knowing and being. A significant part of what grounded me throughout the research and participant interviews was ceremony and speaking with Indigenous Elders. I also ensured that literature reviewed for my thesis included Indigenous authors and researchers as well as non-Indigenous authors and researchers. Those are two examples of how I attempted to balance and accommodate both systems of knowledge.

The third methodological approach used within this thesis was developed by Chilisa where she states “resistance” research can be created in order to counter “methodological imperialism” (Chilisa, 2012, p. 160). Methodological imperialism focuses on “deficit-driven and damage-centered research and literature, which chronical only the pain and hopelessness of the colonized” (Chilisa, 2012, p. 160). When I began researching how to discuss water insecurity with Indigenous peoples, I did not want to create another study that highlighted the seeming hopelessness of the First Nation water crisis. While I do ask the participants how the past and present impacts them, I also wanted to ensure they had space to talk about their own ideas for improved access to water,

how to mitigate threats to their current water security and any ideas they had on maintaining and enhancing water security overall.

Finally, I want to discuss the tremendous contributions made by some of the non-Indigenous allies whose work has also guided my methods. Researchers such as Merell-Ann Phare, Maude Barlow, and Amanda Klasing. In *Denying the Source*, Phare acknowledges the significance of including Indigenous law in decision making processes and supports Borrows' claims that Indigenous laws can "form the basis of a system to govern their water and work in partnership with other Canadian laws" (Phare, 2009, p. 79). On the implementation of First Nation water rights, she states:

First Nations who work to implement water rights find themselves working simultaneously in two systems that are odds with each other. The first system is the First Nation system of laws, which were conveyed through oral histories and which existed and governed First Nation societies long before settlers arrived. Elders, Indigenous scholars, traditional peoples and others in Indigenous nations know, hold, share and teach these laws. The second is the current system of laws, which purports to give legal recognition to First Nation rights. The courts... have agreed that both systems exist. The challenge lies in determining where and to what extent they exist. (Phare, 2009, p. 69)

With this statement, Phare describes one of the most fundamental challenges to Indigenous water governance. While it is acknowledged that Indigenous peoples have their own laws and ways of knowing that have merit and which are often validated by the court systems, how far do these laws extend and to what extent are they enforceable - that is if that are enforceable at all.

Posterity, relational accountability, reciprocity, and transformative research are common themes throughout this study. I have also sought to (re)place traditional western concepts of knowledge with the rediscovered beauty of Indigenous knowledge systems in an attempt to create a more balanced research approach which will hopefully produce more resistant and transformative research findings.

### 3.3 Method

The research from the literature review assisted me with determining my approach and which types of questions I should be asking the participants. Given that the research for this thesis was conducted while working full time, the research should be considered exploratory as there are many other questions and concerns by Indigenous peoples which were not addressed due to the smaller number of participants. While the sampling process and target population will be discussed in the next section, the only criteria for the target population were that they were Indigenous and had lived in their First Nation for an extended period. The sampling frame (Bhattacharjee, 2012) for my thesis was dependent on assistance from the Political Territorial Organizations (PTOs) as well as suggestions from the participants themselves. As a result, the systematic sampling was ordered according to PTOs in chapter 4. The two main types of sampling used for selecting the participants was convenience sampling and snowball sampling (Bhattacharjee, 2012).

I completed all analysis and research using interpretative research methods which Battacherjee (2012) states is characterized by realistic inquiries, informative reasoning, and the study of an event or a series of events over time. This process includes discussions on past and current events as well as legislation and challenges affecting current and historic water security. The goal of these discussions is to share ideas on how some of these water security issues and challenges may finally begin being rectified starting with the establishment of strong relationships, collaboration, and hearing insights from those individuals which are most affected: Indigenous peoples.

When I began this journey as a master's student, I simply wanted to know why this had happened, why this continues to happen, and why nothing seemed to be working. These questions

continued to grow as I read through the reports conducted by both Indigenous and non-Indigenous researchers as well as reports from First Nations and not-for-profit organizations. I knew from the start of my research endeavours that the answers to these questions would not have simple answers. As stated in the introduction, my thesis research question evolved into: *what are Indigenous peoples saying about solutions to their water security challenges?* My interview questions, which can be found in Appendix 6.4, were created to assist the participants with answering this question.

After the literature review was completed, it became clear that different water systems (or a lack thereof) would mean different water security or insecurity experiences for First Nation community members. If they were reliant on well water, did they have challenges with maintenance on their systems? If their homes had plumbing, did that mean they were connected to a community water supply or were they reliant on water trucks? And what kind of wastewater systems were communities using? If they were using lagoons, were they properly maintained, and did they meet Canadian standards? If they relied on trucks for water, did they also rely on trucks for septic system removal? This was the rationale behind asking the participants question number one:

1. Do you know which type of water / wastewater system is currently being used to treat water in your community?

While it is possible that some participants may not know which types of water systems their communities use, it would be easier to see and assess the commonalities within First Nation communities with this knowledge. For the purposes of this study, it was also critical to discuss how the lack of supports for individual wells and septic systems impacts First Nations and how water treatment plants and the use of water trucks impedes growth in First Nation communities.

Determining whether it was well systems, treatment plants, or water trucks assisted me with the data analysis in this thesis as well as assisting with formulating the participant recommendations.

By starting the participant interviews off with this question and following it up with the remaining questions, it was my intention to establish what Chilisa calls a “transformative paradigm” (Chilisa, 2012). Chilisa states that this is linked to history and needs to remain flexible for communities to adapt socially, politically, and culturally when required (Chilisa, 2012). With my current knowledge, experience, and understanding, the only way to accomplish a research paradigm which is transformative for water security in First Nations is to discuss First Nation values, priorities, and goals with actual First Nations members. This includes discussing their recommendations on how water security can be achieved within their own community and potentially other communities operating under similar conditions.

Another critical piece of information that would support the building of strong recommendations for water security is determining how the past and present are affecting First Nation communities so that they can begin to build up their resilience and move towards achieving water security. According to Smith (2012), “imperialism still hurts, still destroys and is reforming itself constantly” (p. 20). For this reason, when I began developing this research study, I understood that I would need to research the history behind the First Nation water crisis as well as discuss the historical impacts on water security from the participants’ perspectives. The second and third questions were developed to help draw this information from the participants:

2. What are some of the challenges / issues that you faced with access to water in your community?
3. In your opinion what are the biggest challenges around obtaining clean water in your community?

From the literature review, we saw that many of the historical impacts on water security in First Nations communities are still affecting communities today. The impacts from relocation, environmental degradation, and colonization in general are still affecting First Nation communities (Murdocca, 2010). I also anticipated that these two questions about the history of water insecurity and present threats in their communities would prepare the participants for the final question I would ask them.

The fourth question was intended to assist me with drafting a set of useful and meaningful recommendations that would be applicable to many, if not all, First Nation communities. Chilisa tells us that one of the reasons that studies and projects intended to benefit Indigenous communities will not do so when they are created unilaterally and without engaging Indigenous peoples throughout the entire process (Chilisa, 2012). Based on the literature examined in the literature review, I understand this to be true. The 2013 SDWFNA failed because of the lack of engagement, consultation, and overall inclusion of the First Nations it was intended to serve according to the AFN (AFN, 2017; AFN, 2018). Therefore, I understood that a critical part of mitigating the impacts of the First Nations water crisis on communities would mean discussing potential solutions with Indigenous peoples living on reserve and reflecting on their concepts of what water security should look like (e.g. Dumais-Dubé, 2017; Longboat, 2016). With question number four, I hoped to assist the participants with conceiving their own recommendations or solutions. I asked them:

4. Do you have any recommendations / feedback on initiatives that can be done to provide your community with access to clean water?

I wanted to provide the participants with an opportunity to share their own ideas and recommendations. It was my overall goal to find supporting literature for their histories and to

explain what has not worked for them so that they could tell us in their own words what they think should be resourced and implemented in their communities.

The final question provided the participants with an opportunity to add anything else they thought was relevant to water security to the discussion. The final question was:

5. Do you have any other comments that you would like to make?

I wanted to ensure that they had an opportunity to bring up anything that they thought was significant to water security which may not have been addressed with the previous four questions.

The data was collected from the participants from June 2018 until November 2018. For my interviews, I used a semi-structured interview process (Bhattacharjee, 2012; Chilisa, 2012). I provided the participants with the questions in advance and while I read each question out loud, I did not probe them unless further clarity was requested for the question being asked. I wanted to provide them with as much flexibility and openness as possible and as a result I had several participants answer most of the questions after the first one was asked.

Originally, I had wanted to conduct sharing circles as part of the interview process. I had hoped to secure a small amount of funding to organize one small sharing circle in Thunder Bay and one small sharing circle in or around the North Bay Anishinabek Nation office for the participants from Grand Council Treaty #3, Nishnawbe Aski Nation, and the Anishinabek Nation. This was not possible for three reasons: 1) I was not able to secure the funding required for my travel and accommodations; 2) the Nishnawbe Aski Nation and the Anishinabek Nation did not have the time or the capacity to assist me with organizing these sharing circles for interested participants from their member communities and I was also unable to connect with anyone from the Grand Council Treaty #3 office for support either; and 3) it was difficult organizing a date and



time for each participant to complete individual interviews and organizing multiple interviews at the same time would have been extremely difficult. I did, however, clearly state in my ethics application that wherever sharing circles were not possible, participants would be given the option to do individual interviews, which is what each participant chose to do either in person or over the phone.

Following the interviews, I provided the participants with a copy of the draft thesis so that they could participate in processes which Chilisa calls “member checks” and the “reiterative process” (Chilisa, 2012). These are processes where the participants are provided with the opportunity to verify the patterns, themes, analysis, and conclusions which resulted from the data collected from them. While each participant was given a draft copy of the thesis and their transcripts a month before it was finalized, I did not hear anything back from them to negate the themes, patterns, analysis, or conclusions that I created from their data. I therefore understand the information contained in this thesis to be verified and true by them.

Each of the participants were informed of the research purpose and any potential benefits. The purpose of my research was to discuss what water security looks like for First Nations and to enable the participants to create a set of recommendations which could be used to mitigate the impacts of the First Nations water crisis. The potential benefits of this research are explaining what water security looks like from Indigenous perspectives and discussing some of the ways that it can be achieved. This could also potentially benefit the participants by providing them with a report based on their input which is supported by existing literature. The ways in which it can potentially negatively impact participants are that it can be ignored, it can make communities seem ungrateful for the access to water that they do have, and it can be forgotten after completion which has happened with other water reports. As a result, I feel that it is my responsibility to keep the

momentum going with this research and share this information whenever and wherever possible in the near and distant future.

Finally, with this research I wanted to ensure that I captured the “Indigeneity” in what was shared by the Indigenous participants – that is their worldviews, pedagogies, spirituality, and culture (Chilisa, 2012; Cote-Meek, 2014). While I must explain the research findings through a western lens, I must also ensure that I capture the priorities, values, and insights from the standpoint of my participants (Chilisa, 2012). These goals are what helped me shape the findings shared by the participants.

### 3.4 Data Collection and Rigor

To find potentially interested participants, I contacted the four Political Territorial Organizations (PTOs) first as this method of contacting communities has been used for the past two decades by the provincial government and Indigenous organizations (COO, 2016; McGregor, 2017). As a first point of contact, I attempted to approach each PTO through in person discussions on which individuals and communities they thought should be contacted for potential participation. Once I received this information at the PTO level, I followed up by email or telephone once I knew where and to whom to direct the information to. I also asked the PTOs for their advice on best practices with their member communities given that this thesis study was exploratory. The Grand Chiefs or environment technicians from the Association of Iroquois and Allied Indians (AIAD), the Anishinabek Nation (AN), and the Nishnawbi Aski Nation (NAN) were all approached in person and they redirected me to staff to speak with from their respective regions. When emails were sent to PTOs, I included the letter explaining the project as well as the poster and questions as

attachments (see Appendix 6.2 and 6.4). This method of outreach was the same method that I stated would be used in my ethics submission to the Laurentian University Research Ethics Board.

While attending various meetings and conferences throughout the country, I observed that the methods used by many First Nation organizations to obtain First Nation input and feedback on their initiatives included 1) First Nation Elders and / or First Nation Knowledge Keepers; 2) First Nation technicians (who are employees that work in various capacities for First Nation communities); 3) First Nation Leadership which includes First Nation Chiefs and Councillors; and 4) First Nation youth who are considered critical First Nation community advisors as voices for children, other youth and the future generations (COO, 2016; McGregor, 2017). Planning a study with this range of First Nation community participants will help ensure 1) that the historical impacts on communities can be heard as well as ensuring that Indigenous sacred protocols are included in discussions; 2) that those who know past and present community challenges and how a community may be impacted by particular research studies are included in the discussions; 3) that the community Leaders are involved in the research study so that they can share information within the community members on the research being conducted on their lands; including Leadership participants will also ensure that they have the opportunity to discuss how the community has been affected and impacted by the ongoing challenges and / or issues from a different perspective; and 4) to ensure that the Indigenous principle of posterity is included and adhered to within the research as First Nations peoples are always thinking about the next seven generations that will follow them (COO, 2016; McGregor, 2017; Tobias, 2009). It is important to note that due to the nature of their jobs and work experiences, some First Nation technicians work for multiple communities simultaneously and therefore can speak to both the diverse challenges

and the commonalities found within the communities that they serve (COO, 2016; McGregor, 2017).

For this thesis, I tried to balance the number of female and male participants. I targeted 16 participants overall and aimed to include participation from First Nation communities across the province using these four categories as population targets: 1) four Elders or Knowledge Keepers, 2) four First Nation technicians, 3) four First Nation Leaders, and 4) four First Nation youth ages 18-29. In the Anishinabek culture, the number four is a special number because all the nations around the world fit into four diverse groups, there are four directions, there are four seasons, there are four stages to human development, and there are four stages to mental and spiritual development (Lane et al., 1984). This knowledge helped shape the number of participants that I targeted from each category.

I think it is critical to include both Elders and Knowledge Keepers in research because I know they can speak to the impacts of water on cultural protocols, sacred medicines, and lands as well as teach us about the historical impacts of water security challenges in First Nation communities (McGregor, 2017). The rationale for including technicians and Leadership in a research study on water security challenges in First Nation communities is the same as the rationale for including them in any research study: their knowledge is based on their work experiences within communities and this is an asset to any research study; additionally, First Nation Leadership should always be informed of any research being conducted within their community, on their traditional territory, or, in the case of the Grand Chiefs, within the multiple communities they serve (COO, 2016). The age range for the youth participants was selected based on the legal age to consent to being part of a research study which is 18 years old. The age limit of 29 years for youth

to be considered “youth” was selected based on the criteria provided by governments to not-for-profit and other organizations: “youth” is considered 29 and under (Government of Canada, 2014).

To further balance the study, I also tried to organize the participation by regions based on the number of communities within each region. In Ontario, First Nation communities have organized themselves into regions based on their cultures, languages, priorities, values, and in some cases treaty areas. Some regions have more communities as members than others, therefore different numbers were targeted for each region based on their member sizes. In terms of exclusions, I did not target any First Nation individuals who had never lived in their First Nation as they would not be able to provide any insight on what had happened or was happening in their community and urban and municipal water security is a separate issue from this research study. The Nishnawbe Aski Nation (NAN) has 49 affiliated communities (NAN, 2019), the Anishinabek Nation (AN) has 40 affiliated communities (AN, 2019), the Grand Council Treaty #3 (GCT #3) has 28 affiliated communities (GCT #3, 2019), the Association of Iroquois and Allied Indians (AIAI) has 7 affiliated communities (AIAI, 2019), and there are 9 independent First Nations (IFN) or otherwise unaffiliated First Nation communities. Based on these numbers, my goal was to have equal participation from both females and males with five NAN community members, four AN community members, three GCT #3 community members, two AIAI community members and two unaffiliated or independent community members participating. As NAN, AN, and GCT #3 have the highest numbers of member communities and AIAI and the unaffiliated communities have the least, I created a rough estimate of participants to target from each region based on the number of First Nation community affiliations with each PTO.

Each participant was provided with a consent form and a letter (see Appendix 6.3) describing what the study was for, how their data would be protected, and how they would be

provided with a draft copy of the thesis for their review and approval before the thesis was finalized and published. Each participant was given two weeks to review their contributions and provide comments, feedback, and concerns. Only one participant responded and requested that I make a minor revision to the translation of an Indigenous phrase that they used.

In terms of validity, I looked to other Indigenous researchers for support on this practice. Smith and Chilisa have similar concepts of what validity means and that mainly has to do with who the research is for, who benefits from the research, and how it “talks back to” western research paradigms (Chilisa, 2012; Smith, 2012). From the onset of my thesis, I hoped that Indigenous peoples would potentially benefit from my research. I saw that water studies had been conducted and that water studies had failed, and I wanted to help assess “why” this had occurred. I understood that speaking directly with First Nation community members who lived on reserve might help uncover some of the research gaps and barriers and this motivated me to conduct this research.

As a researcher, I also had to consider any threats to my credibility as well as potential biases. I attempted to improve my credibility by reading about global research models from Indigenous researchers in Canada, the United States, Africa, and New Zealand. I found that the diversity of the researchers did not detract from their messaging: much of the global Indigenous research, belief systems, perspectives, and guidance was the same. They all clearly articulated the following:

- Indigenous research with / on Indigenous peoples and / or their territories must benefit Indigenous peoples as well as the researcher (Chilisa, 2012, Smith, 2012; Arsenault et al., 2018)

- Indigenous peoples must be included as full research partners in research initiatives intended to benefit them for the research outcomes to be relevant to them (Chilisa, 2012, Smith, 2012; Arsenault et al., 2018)
- Indigenous research must adequately capture the Indigenous perspectives shared by the participants including their cultural beliefs, spirituality, and values for the research outcomes to be relevant to them (Chilisa, 2012; Smith, 2012; Arsenault et al., 2018)

According to Indigenous researchers, I would only achieve credibility if my research was inclusive, reflective of my participants' perspectives, and adaptive and flexible to accommodate regional and cultural diversity. Indigenous researchers Chilisa and Smith call this "transformative research". The scaling methods (Bhattacharjee, 2012) that I used were categorizing the data according to the participant's region (PTO) for the Results section and according to their communities for the discussion and recommendations sections.

### 3.5 Participant Selection

As indicated in the previous section, I used a recruitment process that was already being utilized by Indigenous organizations within the province of Ontario. In a 2016 report by the Chiefs of Ontario, they indicated that they interact with communities through their PTOs wherever possible, either through interaction with the Grand Chiefs of PTOs or through First Nation technicians working at the political territorial level (Chiefs of Ontario, 2016). For First Nation communities that are independent of PTOs or otherwise unaffiliated, the Chiefs of Ontario contacts those communities directly (Chiefs of Ontario, 2016). An Indigenous researcher that frequently works with the organization utilized the same process for an Elders and youth gathering on climate

change in 2017 (McGregor, 2017). In this report, McGregor organized her main findings by PTOs with the independent and unaffiliated community participants grouped together (McGregor, 2017). As this organization and researcher had several years experience working with First Nation communities, I decided to use the same process to recruit my own participants for this study. I also used the same process as McGregor to organize the thematic themes which resulted from data collection.

In the preceding sections, I discussed why four subgroups of the Indigenous population was targeted. A few PTO technicians provided me with suggestions based on my study objectives, and some of the individuals who chose to participate also provided me with suggestions for additional participants. The NAN provided me with one person to contact based on their understanding of the objectives of my study, the AIAI provided me with the names of two individuals to contact, and the AN provided me with one individual to contact as well. The remaining 10 participants joined the study either through word of mouth or through the snowballing technique whereby participants would suggest potential participants and these suggested participants would further suggest participants (and so forth). This process was outlined in my ethics application and adhered to throughout the interview process (See Appendix 6.1).

### 3.6 Community Selection

As many communities with access to clean drinking water may also be threatened by water insecurity or have had issues historically, I understood it necessary to include any Indigenous participant from any Indigenous community in Ontario that wanted to participate. There are community members which participated which currently have access to clean drinking water, but their source water is threatened by tourists and industry. There were also participants that currently



have access to clean drinking water, but there is a history of contaminated water sources in previous decades. For this reason, I stand by my decision to be inclusive of any First Nations members from any communities in the province and I would also suggest that any others researching water security do the same.

### 3.7 Consent

Each participant who contributed to this thesis was provided with information on what this project was requesting in terms of data, what would be done with their data, and information which outlined their rights as participants. They understood that they had a right to be informed, that they had the right to change their mind at any time, that they had a right to review the thesis draft before finalization, and that they had a right to remove their consent and their data from the thesis at any time. They were each provided with a written consent form that explained how their data would be protected and they all signed and dated the forms prior to the interviews. The participants were provided with three options:

- 1) They could participate in an in-person interview where I would ask them the five questions outlined in previous sections and record their responses in real time without the use of a recorder.
- 2) They could participate in an interview over the phone where I would ask them the five questions outlined in the previous section and record their responses in real time without the use of a recorder.
- 3) They could fill out the questionnaire on their own and send it back to me when they felt that it was ready to be sent back.

During the interview process, one participant decided not to participate, and one participant provided inconclusive data. The participant that provided inconclusive data was the only participant who chose not to do a phone or in-person interview and chose to fill out the questionnaire on their own. This participant responded to the questionnaire using one-word answers, which did not provide any of the level of detail that I needed about water insecurity in their region. Allowing participants to fill out the questionnaire on their own was intended to provide an alternative option for those individuals that were not comfortable speaking one on one. If I ever conduct future studies, I will ensure that I am more explicit on what I am requesting for participant input, as I believe that providing participants with the option of filling the questionnaire on their own is a good practice. As discussed previously, each participant was provided with the option to review the thesis as well as their transcripts a minimum of four weeks before it was finalized and sent to the external for review.

### 3.8 Ethics

There are several widely accepted research practices and protocols that can address the issues surrounding ethical conduct involving research *with* and *for* First Nation communities (Edwards et al, 2008). Each First Nation in Canada has their own unique set of values, cultural protocols, and ecological and traditional knowledges (Borrows, 1997). Indigenous peoples practice and adhere to varying types of traditional knowledge depending on their culture, language, and geographical location (Edwards et al, 2018). The practices and processes discussed in previous sections and the approved ethics application for this thesis were strongly adhered to throughout the entire research process.

### 3.9 Methods of Analysis

In the methodology section, I discussed the significance of integrating the Indigenous worldviews and perspectives shared by the participants with western knowledge to create resistant, flexible, and relevant results and recommendations for Indigenous peoples (Chilisa, 2012; Cote-Meek, 2014). I also discussed “relational accountability”, which Chilisa (2012) describes as the inter-related part of the research process where Indigenous researchers acknowledge and understand that they are accountable to “all relations” (Chilisa, 2012, p. 22) For many Indigenous peoples in Canada, being accountable to “all relations” means that they are accountable to the land, resources, air, animals, and both present and future generations stemming from a sacred responsibility given to them as gifts they have received from the Creator (Borrows, 1997; COO, 2008; Craft, 2013; McGregor, 2014; Arsenault et al, 2018). Therefore, many Indigenous peoples feel an inherent responsibility to protect the land and resources and to ensure that they are preserved and maintained for future generations.

Chilisa also discusses how all research is “appropriation” and must be conducted in a way that is beneficial to the researched communities as well as the researcher (Chilisa, 2012). Chilisa claims that Indigenous researchers and data collectors must “describe [them]selves, [their] values, [their] ideological biases, [their] relationship to the participants, and [their] closeness to the research topic” so that trust, compatibility, and what she calls “authentic communication patterns” adequately capture what is shared by the participants (Chilisa, 2012, p. 34). Additionally, Indigenous methodological approaches seek to “decolonize and indigenize dominant research methodologies” (Chilisa, 2012, p. 34). In *Indigenous Research Methodologies*, Chilisa writes

There is also recognition that integrating indigenous perspectives in dominant research paradigms may not be the most effective strategy to legitimize the histories, worldviews, ways of knowing, and the experiences of the colonized and historically oppressed... you

will have a responsibility to critically assess the research process and procedures to see if they allow the researched to communicate their experiences from their frames of reference. (Chilisa, 2012, p.34)

This acknowledgement by Chilisa is why I have chosen to organize my data according to the PTOs that the participant's communities are affiliated with in Chapter 4. It is my belief, based on the community affiliation, that categorizing them in this manner will enable me to better capture their perspectives from their own frames of references as suggested by Chilisa (2012).

With the information provided by the participants, the findings were that there are different types of water insecurity impacting First Nation communities across the province, but there are also some similarities such as similar threats to community water supplies and similar government interventions such as water trucks. While there has been an increase in government support and efforts to end long-term drinking water advisories for First Nation communities across Canada since 2015, water security challenges persist for many First Nation communities throughout the country. In the literature review section, I discussed the historical and current impacts of the First Nation water crisis on communities, how government legislation on safe drinking water for First Nations has failed, and the fundamental Indigenous principles and values which must be applied to any mitigation efforts or proposed solutions to end the water crisis. These principles include but are not limited to “relational accountability”, “natural law”, and posterity, which are discussed throughout the study and will be revisited in the concluding chapters.

I analyzed all my data using qualitative interpretative methods and thematic analysis (Bhattacharjee, 2012; Chilisa, 2012). The ten themes which emerged from the thematic analysis will be discussed in the next chapter. In terms of qualitative methods, Chilisa states that these are one of the few western research practices which can incorporate oral histories, beliefs, and “spiritual and earth connections” as legitimate knowledge (Chilisa, 2012, p. 33). With this

knowledge in mind, my research questions were open-ended, descriptive, and non-directional (Chilisa, 2012).

Bhattacharjee states that it is the role of the researcher to be prepared, to find and confirm participants, to motivate the participants, and to clarify confusion and concerns as well as ensuring that the responses are useable and factual (Bhattacharjee, 2012). The first part of this process was already explained and confirming participants was done either in person, through email, or over the phone. In terms of participant motivation, I did not feel that this was necessary given that the questions were intended to flush out the responses that I was seeking from the questionnaire. The only parts of the interview process where some participants sought clarity was with the questions in the questionnaire. Occasionally, a participant required me to rephrase the questions to ensure that the participant understood what was being asked of them. Very few of the participants requested clarification and none of them had concerns with how their information was being used as it was all explained to them prior to the interview.

By including First Nation participants in this study, I wanted to help add Indigenous voices and Indigenous perspectives to the literature on the First Nation water crisis and share Indigenous ideas on how water security can be achieved in communities. Based on their participation and feedback, I created recommendations that they could use if they choose to advocate for capacity, increased resources, or other supports for access to clean water and wastewater systems in their communities. This is how I attempted to interpret the subjective meanings from the participants' social and historic contexts (Bhattacharjee, 2012). Bhattacharjee suggests using this technique to emphasize how some of the literature and the data come together to create an increased understanding of the topic discussed from the context in which it is situated (Bhattacharjee, 2012).

## Chapter 4: Results

Earth is said to be a woman. In this way it is understood that woman preceded man on the Earth. She is called Mother Earth because from her come all living things. Water is her lifeblood. It flows through her, nourishes her, and purifies her. On the surface of the Earth, all is given Four Sacred Directions – North, South, East, and West. Each of these directions contributes a vital part of the wholeness of the Earth. (OFNEATWG, 2016, p. 7)

As discussed in the first chapter, it is critical to situate yourself in your work and for the *Anishinabek*, we like to begin with creation stories as a way of setting the tone. This opening quote was taken from the Ojibwe Creation Story shared by the OFNEATWG in 2016. I wanted to share this creation story to explain the origins of the Indigenous relationship to water.

In this chapter, the participants discuss their spiritual and physical connection to water as well as the numerous observed and perceived threats to water in their communities. By ensuring that Elders and Knowledge Keepers were included in this research, I anticipated that they would discuss Traditional Knowledge as community Elders and Knowledge Keepers hold this knowledge for communities. Including Indigenous Elders and Knowledge Keepers in research initiatives can also assist with facilitating mentorship for other Indigenous peoples. With the inclusion of Indigenous Elders and Knowledge Keepers, researchers are also demonstrating that Indigenous cultural beliefs and practices are important to their research with Indigenous peoples which can nurture future relationships and collaboration. Alternatively, including the youth would ensure that some of the participants were speaking on behalf of present and future generations which would bring a more balanced approach to the discussions. The technicians and community Leaders would bring their experiences and expertise to the discussion.

In the methodologies section, I discussed Chilisa's observation on "imperialism and deficit-driven and damage-centered research" as research that I did not want to perpetuate within

my own thesis (p. 160). Rather than focusing only on the past contamination and other water insecurity, I anticipated that the participants would discuss how their communities became more resilient to past challenges and current threats as well as learning some of their ideas on how to improve and strengthen water security within their communities.

Alternatively, as this was an exploratory masters research study there were some western concepts which were adhered to within this research project as well. The first of these western concepts which I used throughout my project is the four Rs: “responsibility, reciprocity, and the rights and regulations of the researched” (Chilisa, 2012, p. 7). The total number of participants and sampling frame (Bhattacharjee, 2012) for this study was 14 participants. Nine males participated (with one male providing inconclusive data) and nine females were invited to participate with only 6 females choosing to participate in the thesis. This was the first of a few random errors (Bhattacharjee, 2012). One of the nine females invited to participate initially said yes but changed her mind in the weeks that followed. She stopped responding to emails that I sent her, and I took this as a sign that she had changed her mind. The other two females that were invited refused to respond to my emails and they were each sent two emails each before I stopped emailing them.

For the AN, the Lands and Resources staff were asked in person which First Nation communities and technicians should be consulted. While the AN office did not provide information on which communities should be contacted, they did provide the names of several technicians to contact as well as technicians in other regions which should be contacted. The AN participant provided advice on a technician to contact for the NAN and GCT #3. The participants for the AN region were a combination of Elders, Knowledge Keepers, youth, and First Nation community technicians affiliated with Curve Lake First Nation, Serpent River First Nation,

Wahnapiatae First Nation, Wiikwemkoong First Nation and the Anishinabek Nation regional office located in Nipissing First Nation.

The participants from the AIAI were direct suggestions from the AIAI technicians who were approached in person along with the Grand Chief Gordon Peters. The Grand Chief Gordon Peters refused to participate, but the technicians were helpful with providing names and contact information for two of the three AIAI participants. The third AIAI participant was suggested as a potential person of interest from a participant in another region. The participants from AIAI were First Nations Leaders (Chief or Council), youth, and First Nation community technicians.

There were three participants that were invited to participate from GCT #3, but only one of the participants provided useable data. One participant chose to answer the questionnaire individually instead of going through the interview process and answered the questionnaire using one-word responses, which provided inconclusive data. They responded to the questionnaire using “yes” or “no” answers with no details provided for any of the sections. This was the second random error within the thesis study. The third participant that was contacted responded to my first email and requested more information but did not respond to my last two emails. All three participants were suggested as potential participants by participants from other regions as the GCT #3 office did not respond to email or telephone inquiries on which First Nations in their region might be interested in participating in my thesis. I made two phone calls to their regional office and contacted the individuals responsible for water management and resources with no responses received over the span of two weeks. If I had not received assistance from other regions, including GCT #3 in this study would have been difficult. I was fortunate to get useable data from the one GCT #3 participant.



For the NAN, I reached out to the Grand Chief of the NAN in person (since initial contact, a new Grand Chief was elected). The former Grand Chief of NAN provided me with the name of a NAN First Nation technician that they knew would participate. The first NAN participant did not have the time to assist with me with contacting interested community members but listed several communities that might be interested during the interview. Based on their information, the Attawapiskat participant was contacted and agreed to participate, but the information they were able to provide was limited because they had lived outside of the community for several years. The third NAN participant was suggested from a participant in another region. Another participant was contacted and initially agreed to participate but stopped responding to emails after a few weeks. As it stands, I had three participants from this region, but only two provided sufficient data. The participant from Attawapiskat was able to confirm that water insecurity was an issue in the community but was not able to provide any details on the types of water systems used there or the history. The participants from this region were Elders, technicians, and youth.

Participants for the Independent First Nations (IFN) were suggested by other participants as these communities are independent and unaffiliated with PTOs. The participants from these communities were youth and one was also a First Nation community Councillor (Leader).

With all the information shared by the participants, I conducted a thematic analysis of their data which demonstrated that the following ten themes can be found in First Nation communities from multiple regions throughout the province:

***Theme 1: concerns over well water contamination***

This was a common theme as well water systems were discussed by the participants from Wahnapitae First Nation, Hiawatha First Nation, Batchewana First Nation, Six Nations of the

Grand River Territory, and the technician from the NAN. The participant from Six Nations stated the following about their well water systems:

We can't drink the water from our wells and we only use them to wash. If we use them for cooking, then we boil it first. With the condition of the wells and the condition of the water plant, we also didn't have funding to get our operators trained and educated. Now the wells are still an issue, but we had a new water treatment system built in 2014. (Six Nations participant, 2018)

***Theme 2: concerns over the disappearance of aquatic species and lowering water levels***

Three different communities from two different regions discussed concerns over the disappearance of certain aquatic species, a loss of animal habitats, and concerns over water quantity levels. The participant from the Munsee Delaware Nation discussed all these as concerns and shared the following:

Some seasons we can't get any fish or hardly any fish at all. There's lots of pollution from chemical runoff from agricultural uses. The chemical runoff contaminates fish and water and the fish have sores. They get growths on them from the runoff and the pollution. (Munsee Delaware Nation participant, 2018)

***Theme 3: a lack of community planning and accountability measures***

Three communities from the AN region expressed this as an issue with one community discussing this as a reason that a community beach could no longer be used for swimming. The participant from Wiikwemkoong said that Wiky Beach was no longer used for swimming because it was near the community dump and one of the community graveyards. The participant stated, "when people used to swim there, they would get sores and be itchy" (Wiikwemkoong First Nation participant, 2018). The other two participants who discussed this topic were concerned that a lack of community planning was a threat to their source and ground water supplies and also did not address other water security needs within the community.

***Theme 4: water contamination from summer tourists, industry and extractive development within the community or located nearby the community***

Threats to source water and ground water from tourists was a common theme in some of the communities from southern, central, and northern Ontario. However, some communities were equally concerned about past and present threats by industry and extractive development. The participant from Hiawatha had this to say about a settlement upstream from the community:

When there was a settlement upstream from us, they dumped all kinds of hazardous stuff in the water. You can put a magnet in the lake and metal shavings will stick to it. Rice lake is the most fished lake, but it is full of mercury, PCBs, etc... but that's one water source that we can't use or it's very expensive to treat. Our groundwater has high nitrates and that's because of the agricultural cattle farm on the one side and chickens on the other – big industrial ones. (Hiawatha First Nation participant, 2018)

***Theme 5: water trucks, water treatment plant capacity and other inhibitors of community growth***

This was another theme which emerged and impacted community members from most regions across Ontario. In fact, the only region which did not discuss this was the participant from GCT #3. The two communities that participated from the Independent and unaffiliated First Nations both discussed this as an issue impeding growth within their communities. The participant from the Anishinabek Nation shared the following:

Some communities have GUDI [groundwater under the direct influence of surface water] wells – which is both, but the ground water would be treated as surface water. The access to water for some [communities] is trucking from water treatment plants to homes and some communities, such as Zhiibaahaasing First Nation, are always on BWAs. Near Manitoulin, another issue is that systems are at full capacity, so if a community wants to grow, they can't because they don't have enough pressure in their system to provide for their [new] homes. The infrastructure system is at the max. Another issue, in Dokis First Nation for example, is that they're having a hard time finding another ground water source and they are at the max. They would need a new water treatment plant if they wanted to grow. (Anishinabek Nation participant, 2018)

Additionally, the participant from the NAN had this to add:

With the [current] funding you could only hire one operator. In most cases you need at least two operators. Those [funding] levels need to be increased. With the initiatives that are going on, the current government made a promise to eliminate BWAs and we're not addressing the distribution system. Not for new development. A lot of our homes are truck haul and they're not hooked up to water and sewer. Only 50% of homes are connected to water systems and the rest are truck haul. (NAN participant, 2018)

***Theme 6: lack of community capacity, training, and resources to achieve or maintain water security***

Several participants from three different regions mentioned capacity, training, and a lack of resources as impediments for achieving water security. The participant from the AN stated:

When the communities get their money from INAC to operate the plants, the communities are always in the shortfall, so they to upfront the costs – there is a lack of financial capacity. Right now, INAC is only focusing on BWAs and it's not looking at the ones that are on off and on again BWAs. (AN participant, 2018)

***Theme 7: the continuing effects of historical water contamination on communities***

Participants from four different regions discussed the ongoing effects of historical water contamination in their communities. The participant from GCT #3 discussed the impacts of drainage basin damming on Lake Superior in 1906:

This flooded large swaths in our community. We lost not only what went underwater, but this also turned a lot of what we had left into swamp. We chose to have our community there because of the presence of wild rice, but the dam erased the wild rice and we lost where our food source came from. (Couchiching First Nation participant, 2018)

### ***Theme 8: the cultural significance of water to First Nations***

Although this information was not specifically requested during the interviews, several participants from three regions discussed the cultural significance of water to First Nations. The participant from GCT #3 stated that “we relied on the waterways for everything. It’s ingrained in our identity and it’s used in every aspect of life and disruption of those waterways has impacted us immensely” (Couchiching First Nation participant, 2018).

### ***Theme 9: water treatment plants are not the only solutions to water insecurity***

Participants from two regions discussed this theme. The participants from Couchiching First Nation in the GCT #3 region and the participant from Hiawatha First Nation in the AIAI region.

The participant from Couchiching said:

Getting a [water treatment] plant is relatively easy, but maintaining it is harder and semi trained people can stress equipment and raise attrition rates... The costs for those services are extremely high. (Couchiching First Nation participant, 2018)

### ***Theme 10: outdated water systems***

This finding only resulted from two participants but was included as a separate theme because the AN technician works with 39 communities in Ontario and the NAN technician works with 49 communities in Ontario. They stated that outdated water systems was an issue in several communities from both regions across the province. They both discussed issues with water systems built in the 1990s, issues with sand filtration systems, and issues with parts which are not being manufactured anymore. The participant from the NAN stated the following:

There are sand filtration systems and a few [communities] are using the UV water treatment systems now which are more complex than the ones they are used to using. Most plants

were built in the 90s. When the infrastructure was built, it was in the early 90s and the sand filtration system was used in many communities. In a couple of communities, that was the issue there. They would build those systems and they couldn't treat the source. We're finding with some of the original water treatment systems that they are unable to maintain those systems because the parts are outdated or not manufactured anymore. (NAN participant, 2018)

The total number of participants for this study was 14 and the details on the participant statistics can be found in the figure below.

**Figure 2: Participants**

<b>Participants</b>	
<b>Male Participants: 9 males participated</b> with one male providing inconclusive data.	<b>Female Participants: 6 females participated</b> , 2 females were invited to participate and chose not to respond, and 1 female agreed to participate but responded after the data collection period had expired.
<b>Anishinabek Nation (AN) Participants: 5</b> community members and technicians participated, and 5 community members and technicians were contacted. <b>Total contacted: 5</b>	<b>Participants' Communities:</b> Curve Lake First Nation, Serpent River First Nation, Wahnapiatae First Nation, Wiikwemkoong First Nation and the Anishinabek Nation Regional Office
<b>Association of Iroquois and Allied Indians (AIAI) Participants: 3</b> community members were contacted, and 3 community members participated. <b>Total contacted: 3</b>	<b>Participants' Communities:</b> Batchewana First Nation, Hiawatha First Nation, and the Munsee Delaware Nation
<b>Grand Council Treaty #3 (GCT3) Participants: 1</b> community member participated, 1 community members did not respond to the invitation to participate, 1 participant responded with yes and no responses (inconclusive), and one responded after the data collection period had expired by the LU REB. <b>Total contacted: 4</b>	<b>Participants' Communities:</b> Couchiching First Nation, and the other community members contacted were from Northwest Angle #33, Onigaming First Nation, and the third will not be mentioned to protect their identity.
<b>Independent First Nation and Unaffiliated Communities: 2</b> community members were contacted, and both participated. <b>Total contacted: 2</b>	<b>Participants' Communities:</b> Whitesand First Nation and Six Nations of the Grand River Territory
<b>Nishnawbe Aski Nation (NAN) Participants: 3</b> community members and technicians participated, and one First Nation Leader from the region chose not to participate after initially agreeing. <b>Total contacted: 4</b>	<b>Participants' Communities:</b> Attawapiskat First Nation, Sandy Lake First Nation and the Nishnawbe Aski Nation Regional Office.

	To protect the identity of the individual who chose not to participate, their community will not be listed.
<b>Elders and Knowledge Keepers:</b> 3 Elders and 1 Knowledge Keeper participated	
<b>First Nation Community Leaders:</b> 1 First Nation Chief and 2 First Nation Community Councillors participated	
<b>First Nation Technicians:</b> 6 technicians participated <b>Note:</b> Some participants from other categories served multiple functions within the community and brought this total up to 6; only 4 were interviewed as technicians.	
<b>First Nation Youth:</b> 6 youth participated <b>Note:</b> some youth were also considered in the technicians' category and brought this total up to 6, but only 4 youth were interviewed in the "youth" category.	

The participants in this thesis had the freedom to share their values and priorities with me depending on their comfort levels, their beliefs, and their concepts on what was important and should be included in a study on water. This helped ensure that they were more empowered by their participation in the research.

Throughout this research project, I have described Traditional Knowledge (TK), Indigenous Knowledge (IK), Traditional Ecological Knowledge (TEK), and Traditional Knowledge Systems (TKS) as explained by Indigenous researchers and scholars (Borrows, 1997; Deloria, 1970; Craft, 2013; Tuck et al, 2015; McGregor, 2014; Arsenault et al, 2018). The point in discussing the different types of Indigenous Knowledges is that there is diversity and each of these knowledge systems has a slightly different meaning and understanding for the individual discussing them. Because I wanted to work with many First Nations peoples in a diverse region such as Ontario, I knew I would need to gain an understanding of many different types of Indigenous knowledges to strengthen my data analysis. I also knew early on in the research that I would need the participants to reflect on the past to build recommendations for the present and future. To assist with this, I used a postcolonial theory because I understood that I would need to know what water security meant to our ancestors to have a better understanding of what water

security means for our youth and future generations. I also need to understand the circumstances which led to water insecurity to assess what my participants are saying they need to overcome it. In all cases, the causes for water insecurity stem from colonialism (Deloria, 1970; Smith, 2012; Arsenault et al., 2018).

#### **4.1 Political Territorial Organization Findings**

The first part of the results section focused on the commonalities found in the data shared by the participants followed by an organization of the data into the participants' regions (PTOs). The two participants from the independent and unaffiliated communities were grouped together for sharing that commonality. Some commonalities identified from participants from diverse regions in Ontario were the impacts from the mining and energy sectors, impacts from tourism and "outsiders" staying on the reserve, a lack of accountability measures to protect communities, and a lack of community planning with services such as waste sites and sewage which cause numerous risks to community water sources. Several participants also discussed the cultural uses and significance of water and how the First Nation water crisis has impacted them in that regard. Each participant discussed some of the history behind their water challenges and how things changed over time from government, energy, agricultural and industrial development, and climate change. The participants discussed some of the contaminants found in in their communities throughout the years and some of these were uranium found in Serpent River and Batchewana water sources, mercury found in Hiawatha water sources, chloroform found in Batchewana water sources, Escherichia coli (E.coli) bacteria found in Hiawatha and Batchewana water sources, and the highly toxic polychlorinated biphenyls (PCBS) which are caused from manufacturing by-products and were found in Curve Lake and Hiawatha First Nations water sources.



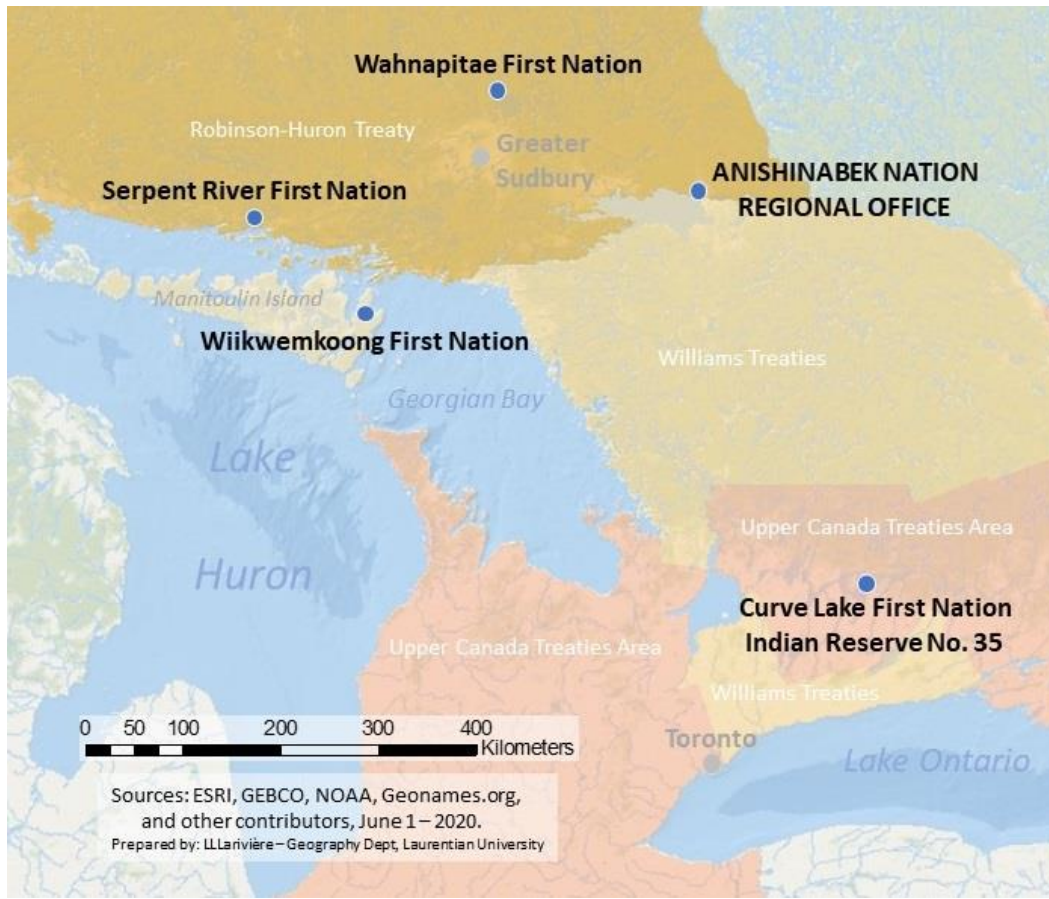
In addition, participants from two communities within the same political territorial affiliation noted the absence of government support and funding for their existing well water infrastructure which will be discussed in further detail in the AIAI subsection. The last commonality observed within the data was a reliance by many communities on water trucks to supply communities with clean drinking water as well as the use of wastewater collection trucks for removing sewage from homes. These findings indicate that most communities with functioning water treatment plants are operating at capacity to supply their community members with clean drinking water, that some of participating communities' wastewater services are also operating at capacity, and that water trucks are a common practice for supplying clean water to First Nation communities.

As each communities' PTOs were described throughout this project, the data collected has been organized into subsections in alphabetical order by the participants' community affiliation, with the independent and the unaffiliated communities combined into one sub-section. As noted in the preceding sections, obtaining data from one participant from each community is insufficient for explaining all the unique challenges and barriers which exist within each community. However, including a diverse range of adult First Nation participants from all ages and from all over north, south, east, and western Ontario will highlight some of the common challenges that communities are facing as well as the unique circumstances of the rural, remote, and northern communities versus southern communities. In addition, collecting data from First Nation participants from diverse cultural backgrounds such as the Ojibwe, Odawa, Potawatomi, Delaware, Cree, and the Haundenosaunee will also highlight some of the cultural differences and commonalities with respect to water shared by First Nations from across the province. As each participant had relevant and critical information to share, I made every effort to include quotes from each of them which

coincided with information shared in the literature review and commonalities shared by multiple participants.

#### 4.11 the Anishinabek Nation

**Figure 3: The Anishinabek Nation**



(Map created in June 2020 by Léo Larivière, Technologist, Department of Geography, Laurentian University – used with permission)

There were five participants for this section and nine out the ten themes which emerged from the thematic analysis are found within this region. The nine themes which were discussed are:

- Theme 1: concerns over well water contamination
- Theme 2: concerns over the disappearance of aquatic species and lowering water levels
- Theme 3: a lack of community planning and accountability measures
- Theme 4: water contamination from summer tourists, industry and extractive development within the community or located nearby the community
- Theme 5: water trucks, water treatment plant capacity and other inhibitors of community growth
- Theme 6: lack of community capacity, training, and resources to achieve or maintain water security
- Theme 7: ongoing effects of historical water contamination on communities
- Theme 8: the cultural significance of water to First Nations
- Theme 10: outdated water systems

The participant from Wahnapiatae First Nation expressed concern over the lack of monitoring and oversight for four campgrounds situated on the First Nation. The participant said “there are no regulations or policies which regulate businesses...on reserve” (Wahnapiatae participant, 2018). These campgrounds increase the community population size from the 80 community members who reside in the community year-round to 1000 in the spring, summer, and fall months with incoming tourists.

The first campground had opened in the Wahnapiatae First Nation in 1971. The participant from this community claimed that ownership of this campground had changed in recent years with no environmental assessments taking place with the transaction. The participant also noted that “there is no [environmental] monitoring on these campgrounds” and “these campgrounds bring in almost 1000 people in the summer and this fills up our landfill as well” (Wahnapiatae participant, 2018). Additionally, the community members drawing their water from the lake had noticed pollution in the lake from the septic systems used at the campground. The participant stated “I’m concerned about the water quality, not only for the people here, but from the septic tanks and the drainage flow to Lake Wahnapiatae”. This water flows into Coniston, a small town outside of Sudbury Ontario, and then further south into Lake Huron.

The Wahnapiatae participant claimed that community planning was nonexistent for well locations and septic field beds and that their own well was near their neighbour’s septic field bed. With most of the soil on the participant’s property containing clay, this participant was less concerned about potential surface water contamination. The final concerns expressed by the Wahnapiatae participant were that the First Nation had no plans to have a water treatment plant implemented and that the community’s capital planning does not take septic systems and water treatment into consideration.

The participant from Curve Lake also expressed numerous concerns over campers and summer tourism into their First Nation community. According to the Curve Lake participant, this community is suffering from the effects of algae blooms, problems with boaters, challenges to the First Nation hunting and fishing rights, and threats to their wild rice harvesting as the “cottagers hate the wild rice”. The Kawarthas are a part of their traditional territory and the participant stipulated that “this is definitely cottage country”. The participant was also concerned about the

runoff from the manicured lawns from neighboring houses and the impacts this would have on the shoreline.

Another concern expressed by the Curve Lake participant was that Curve Lake had been on a boil water advisory for 25 years. They claimed that this was shocking given that the community was situated between two lakes and near the city of Toronto. The participant stated:

[T]he community had to deal with Parks Canada after the islands were flooded to create the Trent Severn waterway. After the flooding, the traditional waterways were severely altered. There used to be species in the waterway such as American eel and salmon coming up from Lake Ontario. That species doesn't exist there anymore. (Curve Lake participant, 2018)

The participant also claimed that the eel used to be a staple part of the First Nation diet before it vanished. They expressed additional concerns over an “educational boardwalk” that had been created in a wetland, concerns over Peterborough being active in the handling of nuclear materials from General Electric, and concerns that PCBs had been found in the Peterborough watershed.

Several kilometers northwest of Curve Lake is the community of Wiikwemkoong. The participant from this community shared some common concerns with the Wahnapiatae First Nation participant in that their lack of community land use planning had contaminated at least one of their beaches. The Wiikwemkoong participant noted that this beach, called Wiky Beach, was no longer used for recreational use because it was downstream from both the community dump site and the community graveyard. The participant stated, “when people used to swim there, they would get sores and be itchy”. The participant claimed that their household used to be supplied by creek water in the winter months and spring water in the summer months as the creeks would dry up in the summer. The water from these two sources used to be clean enough to consume without treatment but were no longer trusted water sources. The participant noted that one of the threats to

Wiikwemkoongs' water sources were "uncapped areas" where developers had been searching for natural gas. The participant claimed that the community was in the process of checking these locations and mapping them. This community has a water treatment plant for many of their residents, but outlying communities such as Kaboni are reliant on water trucks for access to clean water.

A few kilometers further west from Wiikwemkoong is the community of Serpent River First Nation. The participant from this community claimed that they had issues with their water pressure, but that they had been lifted off their boil water advisory in 2017. However, as mentioned in the literature review section, their brand-new water treatment plant was only weeks old when they were first placed on a boil water advisory in 2015. The participant from Serpent River stated that the community had a history of uranium mining on their traditional territory and that their water was heavily polluted with radionuclides as a result. This heavy metal remained in their watershed after the Elliot Lake mining town had been active in the 1960s.

Some dams broke and contaminated the water including Serpent River. Where our water treatment plant is located is in Aird Bay. At one point it was a huge port for a mill and the same bay on the other side had a sulfuric acid refinery plant that was used. It was leaching uranium from the mines in Elliot Lake. (Serpent River participant, 2018)

The participant added that it had been decommissioned after the incident and that the debris had been "cleaned up", but the contaminants had already leached into the ground. They added

There are boulder holes that go into the ground and test the levels of heavy minerals. In the bay where it was located, there were traces of contaminants. Because sediment is under there, it's considered dormant, but our water intake is coming from there. There is contaminant coming from beneath there, beneath the sediment. The contaminants leaked, seeped into the ground and there is part of the bay that you wouldn't use. No fishing or swimming. We still have the tailings pond located by Elliot Lake with huge dams that are dormant. (Serpent River Participant, 2018)

The participant believes that an environmental company called Denison is monitoring that, but they are not sure if the community has access to the water monitoring data. They are deeply concerned by rumours that there is interest in reopening the mines for uranium.

Participants from the AN region also expressed concerns over the commitment by the federal government to end all long-term drinking water advisories by 2021. The Serpent River participant added that the newer technology of their water treatment plant was challenging for the community as the filters had to be made from a special manufacturer and were hard to come by. The participant even claimed that the designer would need to come to the community to have the parts made, but they were either busy or had a difficult time making the journey. A water technician from the Anishinabek Nation region explained that various water and wastewater facilities were used across the region from UV light systems, chlorine systems and even sand filtration systems. The Anishinabek Nation technical participant also stated that:

Some communities have GUDI [groundwater under the direct influence of surface water] wells – which is both, but the ground water would be treated as surface water. The access to water for some [communities] is trucking from water treatment plants to homes and some communities, such as Zhiibaahaasing First Nation, are always on BWAs. Near Manitoulin, another issue is that systems are at full capacity, so if a community wants to grow, they can't because they don't have enough pressure in their system to provide for their [new] homes. The infrastructure system is at the max. Another issue, in Dokis First Nation for example, is that they're having a hard time finding another ground water source and they are at the max. They would need a new water treatment plant if they wanted to grow. When the communities get their money from INAC to operate the plants, the communities are always in the shortfall, so they to upfront the costs – there is a lack of financial capacity. Right now, INAC is only focusing on BWAs and it's not looking at the ones that are on off and on again BWAs. (AN Technician, 2018)

The participant from the AN also expressed concerns over Bill S-11: *The Safe Drinking Water for First Nations Act* (2013). Ontario has the highest number of First Nation communities in Canada, and the First Nation technician participants understand that it will be a challenge for Ontario First

Nation communities to bring themselves up to provincial standards, especially given that INAC does not assist communities with “quick fixes”. The Anishinabek region technician added:

It will be a challenge for our communities to bring themselves up to Canadian standards. From our site assessments, we’ve looked at conforming to provincial standards and some are quick fixes, but INAC is choosing not to assist. Conforming to provincial standards is going to be touchy for some communities. Within that Bill, the federal and provincial government can impose their standards and communities might have a hard time.

It is also unclear as to whether communities can be penalized if they fail to come up with the resources and / or the capacity to provide their communities with safe drinking water. Many of these concerns within the AN region were echoed by technicians and participants from the NAN region (*see Subsection 5: the Nishnawbe Aski Nation*).

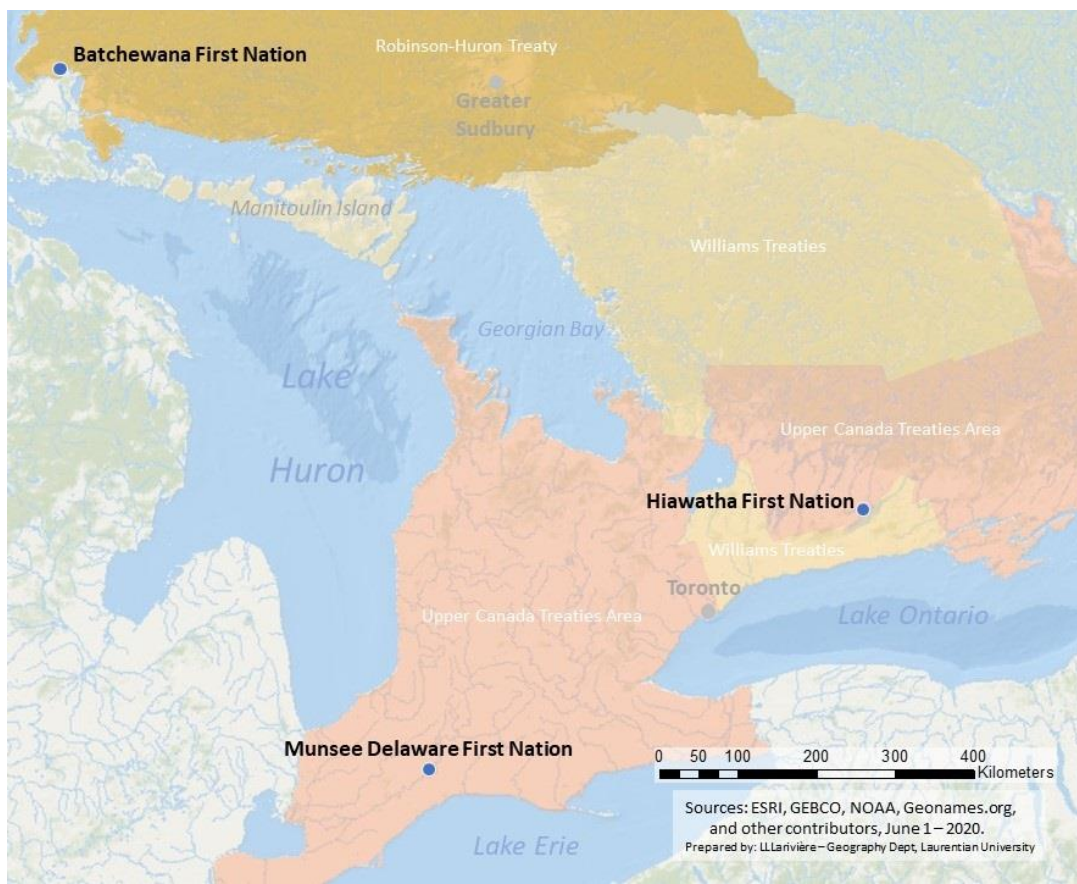
Almost all of the participants from the Anishinabek Nation discussed the cultural significance and importance of water. One participant stressed the significance of youth being out on the land and raising First Nation children to be in harmony with nature as they believe “we will eliminate ourselves otherwise” (Curve Lake participant, 2018). Another participant discussed the spiritual history of Manitoulin Island and the “water spirit” that lived there. The participant said the name of the water spirit was “*Mi-shii-pi-zhoo*” and that it resided in Lake Huron (Wiikwemkoong participant, 2018). The Wiikwemkoong participant also explained how Manitoulin Island was mispronounced by settlers and that the original name, *Mnidoo Mnissing*, means “island of the Great Spirit.” The participant continued the discussion on the spiritual beliefs of Manitoulin Island by explaining some of the stories and legends about mermaids on the island, which the First Nations there call *Binaabe-kwe*, meaning “the one that’s looking at us”. Water is more than a commodity to First Nations, which was a commonality shared by each participant of this research project.



The recommendations provided by the participants in the AN region were combined with the recommendations from the other PTOs in the recommendations section (*see Subsection 4.2: Participant Recommendations*).

#### 4.12 The Association of Iroquois and Allied Indians

**Figure 4: The Association of Iroquois and Allied Indians**



(Map created in June 2020 by Léo Larivière, Technologist, Department of Geography, Laurentian University – used with permission)

Although the AIAI only have seven affiliated First Nation communities, all seven of them are impacted by water security challenges (AIAI, 2018). Out of the ten themes which emerged from the thematic analysis, the AIAI participants discussed:

- Theme 1: concerns over well water contamination
- Theme 2: concerns over the disappearance of aquatic species and lowering water levels
- Theme 5: water trucks, water treatment plants and other inhibitors of community growth
- Theme 6: lack of community capacity, training, and resources to achieve or maintain water security
- Theme 7: ongoing effects of historical water contamination on communities

The participant from the Munsee Delaware Nation shared a brief history of their community and the shift from being a commercial fishing community to a water scarce community. The Munsee Delaware Nation is a small community with a population size estimated at 600. This community is rural and surrounded by farmland. The community estimated that they have 20 years left with their current water supply before they will have to be connected to the neighbouring municipality water system, and they are concerned about the costs to the community members for water access after that time. This also had a severe impact on the community's subsistence fishing practices as the fish populations has declined significantly since the Munsee Delaware Nation had settled in the area 210-215 years ago. The participant claimed that community members used to catch lots of fish to support their families several years ago. However, the impacts from dams implemented by the energy sector and the impacts from climate change had diverted the flow of the fish and many of those fish that remained became sick. The participant stated:

Some seasons we can't get any fish or hardly any fish at all. There's lots of pollution from chemical runoff from agricultural uses. The chemical runoff contaminates fish and water and the fish have sores. They get growths on them from the runoff and the pollution. (Munsee Delaware Nation participant, 2018)

The participant also discussed an incident that took place in the community involving the deaths of two water operators:

[O]ur operators haven't been given the right equipment and there's been exposure. We lost two operators and there was nothing confirmed, but there was talk that they died from exposure (Munsee Delaware participant, 2018).

This participant was one of the few participants to discuss threats to water treatment plant operators from exposure and a lack of training, but it was also mentioned briefly by the regional technician participants from the AN and the NAN.

The second participant from this region was from Hiawatha First Nation, located southeast of Peterborough on the Rice Lake watershed. The participant from Hiawatha First Nation reiterated what the Curve Lake participant said about the impacts from nearby settlements. The participant claimed that

When there was a settlement upstream from us, they dumped all kinds of hazardous stuff in the water. You can put a magnet in the lake and metal shavings will stick to it. Rice lake is the most fished lake, but it is full of mercury, PCBs, etc... but that's one water source that we can't use or it's very expensive to treat. Our groundwater has high nitrates and that's because of the agricultural cattle farm on the one side and chickens on the other – big industrial ones. (Hiawatha First Nation participant, 2018)

The same participant claimed that the community suffered from high rates of cancer, which had impacted their own family. The participants father and father's family members all died before the age of 70.

The challenges raised by the Batchewana participant were equally complex. This participant described the three different communities that make up the Batchewana First Nation community: the Rankin community, the Goulais community, and the Obadjiwon community. They explained that each community had distinctive and unique challenges despite being part of the same First Nation community agglomerate. In the Rankin community, they have access to city water and wastewater infrastructure, which is piped into the community. In the Goulais community, they are reliant on individual wells in each home. In Goulais, depending on the home and the filtration system, the well is situated in the water line when it comes into a home from outside and the filtration system is located within the taps. For this type of filtration system, the homeowner must change the filter every six months and these filters are supplied by the community. The Obadjiwon community uses the same individual well systems as the Goulais community. The participant also claimed that there were parts of the old Garden River Rankin community section that was not connected to the city water and sewer systems. The communities not connected to the city wastewater system have individual septic systems, with the Old Rankin community using septic beds.

The Goulais, Old Rankin, and Batchewana community as a whole face numerous challenges with water quality. Community members living on the Old Garden River Road have had issues with E. coli in their water systems and often complain of a putrid smell coming from their water which they notice when they are doing laundry and washing dishes. The community members using these contaminated systems cannot drink their water for these reasons. As a result, bottled water and water dispensers are supplied to the Goulais, Old Rankin, and Batchewana communities for eating and drinking, but community members suffering these conditions are still reliant on their well water for bathing and washing their cloths. The Goulais community, however,

is facing far more severe water access challenges than the other communities. For over two decades, they have had uranium in their water. Another contaminant found in Batchewana water systems is coliform.

To further exacerbate the existing water quality challenges in Batchewana, there is no commitment from the Canadian government to assist them with this crisis. Batchewana had proposed a potential solution where the Goulais community could be fitted with water pipelines in every home with the intake coming from Lake Superior. This plan would have equipped the Obadjiwon community with full time water treatment plant operators, maintained the water system for the Goulais community as well, and would have ensured clean water in every home that was connected to the system. However, when the community pitched this idea to the Canadian government, the government said they wanted to maintain the existing well systems in Obadjiwon and incorporate treatment systems adjacent to each well while supplying each facility with equipment to filter the water. The community reluctantly agreed to this “solution” for Obadjiwon because it was the only solution that the government was willing to fund. The participant stated that the community proposed plan was rejected because “the population [size] for the project didn’t warrant the investment that we required” (Batchewana First Nation participant, 2018). The government stated that they could not and would not invest in a cumulative water system for the community. However, the Batchewana participant acknowledged that this solution would only have solved the water security challenges for the Goulais and Obadjiwon communities. The proposed plan did not include the Old Garden River Road community members within the infrastructure provisions.

The Batchewana participant stipulated that the water security challenges in Batchewana were a compromise for the equitable supply of quality drinking water in Canada:

Part of the challenge with Canada and their reconciliation is the timelines. We're in year four and we still have not seen the promise come to fruition with removal of the boil water advisories. We're in line with obtaining the funding from Canada totalling seven million for the Obadjiwon and Goulais and that's been three years. Again, where is the announcement that we need to see happen with regards to the water systems in Batchewana? I'm losing my optimism in Canada for being able to fulfill their obligations and I'm not sure what the remedy might be... There are challenges with access to water in our communities, particularly with the Obadjiwon community... From the human rights perspective and their obligation to us, these are in complete opposition to the way that they operate with the rest of Canada. As Indigenous people... we have to live in squalor and... unfairly have to compromise and wrestle with our neighbours just to get closer to that quality of life even though we're still living with substandard conditions. (Batchewana First Nation participant, 2018)

The participant from Hiawatha also found faults with the government's boil water advisory terminology and solutions in terms of water treatment plants being the main option that the governments will fund:

[T]he terminology is too crude because it's about data and the correlation... Managing human behaviour is hard. Walking away from water treatment plants [as the main option] is part of the [governments'] problem (Hiawatha First Nation participant, 2018).

The participant from Hiawatha claimed that the operations and maintenance (O&M) of water treatment plants was historically underfunded. Hiawatha First Nation struggled to move their communities' proposed solution to start a First Nation led and run well-drilling company forward. The Hiawatha participant claimed that starting this company, which would offer both First Nation and non-First Nation rates, would allow the O&M costs for the community to "pay for itself". The participant stated that the community was working with INAC on the terms of reference for this project, but it was challenging because INAC was "pushing water treatment plants for nothing" (Hiawatha First Nation participant, 2018). The participant added that it had "been years just trying to get [this] project set up" and that they had just received the resources to start it in the fall of 2017 (Hiawatha First Nation participant, 2018). They claimed that other challenges were limited

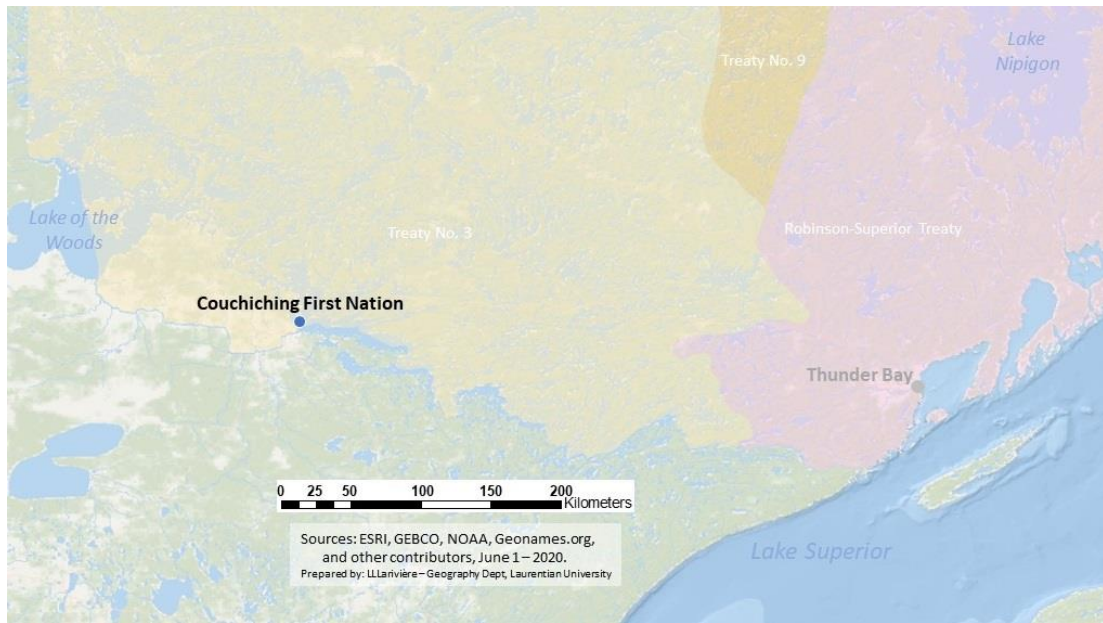
funding, restrictive program requirements, and INAC wanting “shovel ready projects” without a definition of what this entailed.

The participant from Hiawatha had a bleak outlook on the preference for water treatment plants as solutions, which were frequently proposed by INAC:

They’re just kind of floundering. It’s no wonder it takes forever to for a First Nation to get a water treatment plant, and then it ends up not serving as many as they thought it would serve and there’s not enough funding [for maintenance]. And when you get the water treatment plant, in comparison to the next town over..., we’re expected to pay operators 20-30% less than [municipal] operators. We’ve gotten so far away from Indigenous cultures and we’re trying to keep up while the intent for [the governments’] progress is keeping the federal budget balanced off the backs of natives. (Hiawatha First Nation participant, 2018)

#### 4.13 Grand Council Treaty # 3

**Figure 5: Grand Council Treaty #3**



(Map created in June 2020 by Léo Larivière, Technologist, Department of Geography, Laurentian University – used with permission)

This subsection only contains data from one participant from this region, which services 29 communities. The thematic analysis themes which were discussed by this participant included:

- Theme 4: water contamination from summer tourists, industry and extractive development within the community or located nearby the community
- Theme 7: ongoing effects from historical water contamination impacting communities
- Theme 8: the cultural significance of water to First Nations
- Theme 9: water treatment plants are not the only solutions to water insecurity

Three participants from this region had originally agreed to participate, but one of the three participants chose not to answer the interview questions with more than one or two-word answers and another participant had severely limited availability, which did not permit them to participate during the data collection timeframe provided by the Laurentian University Research Ethics Board. Therefore, this should be taken into consideration while reviewing the data presented in this subsection. The sole participant for this subsection is from Couchiching First Nation in northwestern Ontario.

This participant had a lot to say about the cultural significance of water to their community as well as the history of the previous water security challenges that the community had faced:

We relied on the waterways for everything. It's ingrained in our identity and it's used in every aspect of life, and disruption of those waterways has impacted us immensely. (Couchiching First Nation participant, 2018)

The community of Couchiching is located right on the Canadian-United States border, so the waterways in that area are shared between the two countries and governed by the International



Joint Commission. The participant claimed that the community, which is located at the drainage basin of Lake Superior, was impacted by the damming of the lake in 1906:

This flooded large swaths in our community. We lost not only what went underwater, but this also turned a lot of what we had left into swamp. We chose to have our community there because of the presence of wild rice, but the dam erased the wild rice and we lost where our food source came from. (Couchiching First Nation participant, 2018)

The participant was also aware of some of the issues impacting the other parts of the GCT # 3 region:

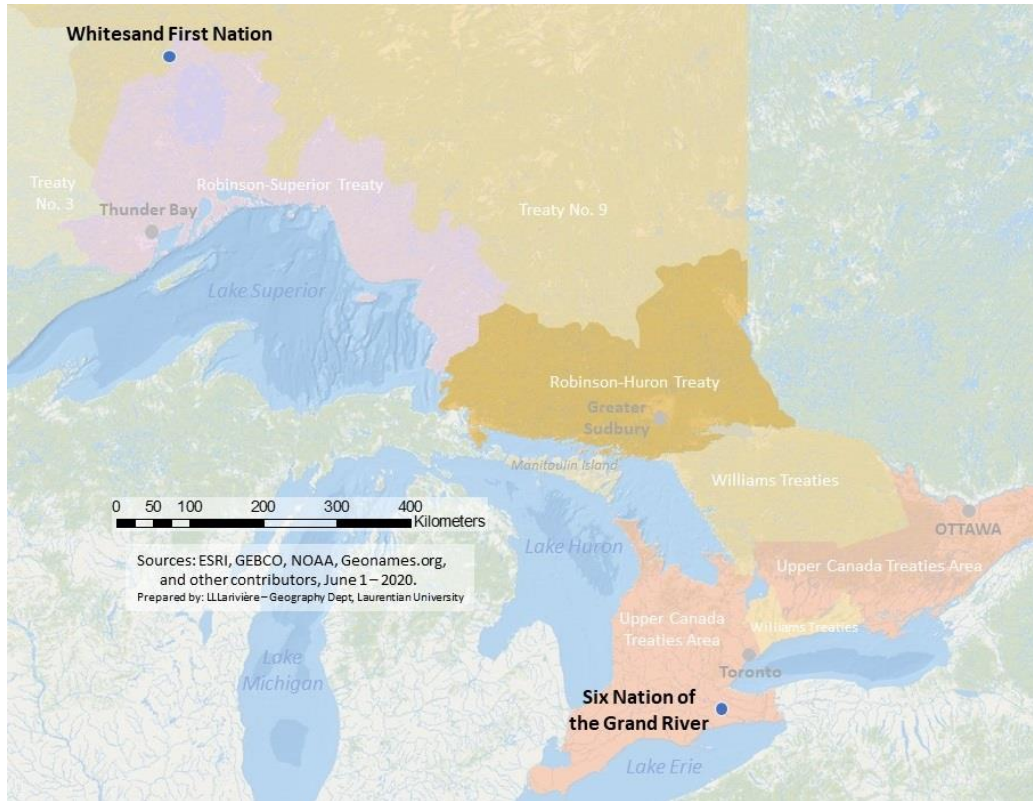
The other problem is pollution, which is a problem in many other areas of Treaty 3, but not in all of them. With the increasing of the population over time, we get stresses on our water systems. With impacts from tourism, flooding, and historical grievances, what happens to the lake, happens to us. (Couchiching First Nation participant, 2018)

The participant stated that most of the homes in Couchiching First Nation had been hooked up to the Fort Frances water system. The houses hooked up to the Fort Frances system have more modern water and sewage treatment, while the outlying houses along the lake draw their water from wells or directly from the lake. The participant added that “you could drink the water from the lake, but it’s not advised” (Couchiching First Nation participant, 2018). The participant was concerned about the community houses which dumped their sewage directly into the lake, but was equally wary about a water treatment plant being the solution:

Getting a [water treatment] plant is relatively easy, but maintaining it is harder and semi trained people can stress equipment and raise attrition rates... The costs for those services are extremely high. (Couchiching First Nation participant, 2018)

#### 4.14 The Independent and Unaffiliated Communities

**Figure 6: The Independent and Unaffiliated Communities**



(Map created in June 2020 by Léo Larivière, Technologist, Department of Geography, Laurentian University – used with permission)

This subsection combines data for one independent and one unaffiliated community: these are the Whitesand First Nation and the Six Nations of the Grand River Territory. The themes from the thematic analysis which were discussed by these participants were:

- Theme 1: concerns over well water contamination
- Theme 5: water trucks, water treatment plant capacity and other inhibitors of community growth

- Theme 8: the cultural significance of water to First Nations

The Whitesand First Nation participant shared their childhood experiences of hauling spring water “from the bush” while the Six Nations participant shared their experiences as a new homeowner who is forced to buy bottled water. The First Nation community of Whitesand is located at the tip of Lake Nipigon and less than two kilometers away from the nearest town, which is Armstrong, Ontario. The participant from Whitesand explained their family’s historical access to water as well as explaining their connection to Armstrong’s water source, Lake Nipigon:

When I was younger, we used to haul water from the bush. I don’t think anyone does that anymore. There’s a lot of development occurring from different industries and it’s worrisome... We have to bring water in. We can shower with it and cook with it, but there’s a dependency on bringing it in. People have to buy water from Thunder Bay and we’re reliant on water trucks. (Whitesand First Nation participant, 2018)

The participant expressed concern about their lack of knowledge of Armstrong’s water quality and their lack of knowledge on Lake Nipigon’s water quality overall.

The Six Nations of the Grand River Territory is a southern First Nation community located near Hamilton, Ontario. The main source of water for this community is wells. The participant claimed that the community did a study in the early 2000s and determined that 87% of their wells were contaminated:

We can’t drink the water from our wells and we only use them to wash. If we use them for cooking, then we boil it first. With the condition of the wells and the condition of the water plant, we also didn’t have funding to get our operators trained and educated. Now the wells are still an issue, but we had a new water treatment system built in 2014. (Six Nations participant, 2018)

The participant stated that this water treatment plant was a \$41 million-dollar project for the community water and wastewater treatment, but that their schools and about 1200 houses were

not connected to the new system. The community has been struggling to find funding to hook up the remaining homes and schools to the water system ever since. The participant added:

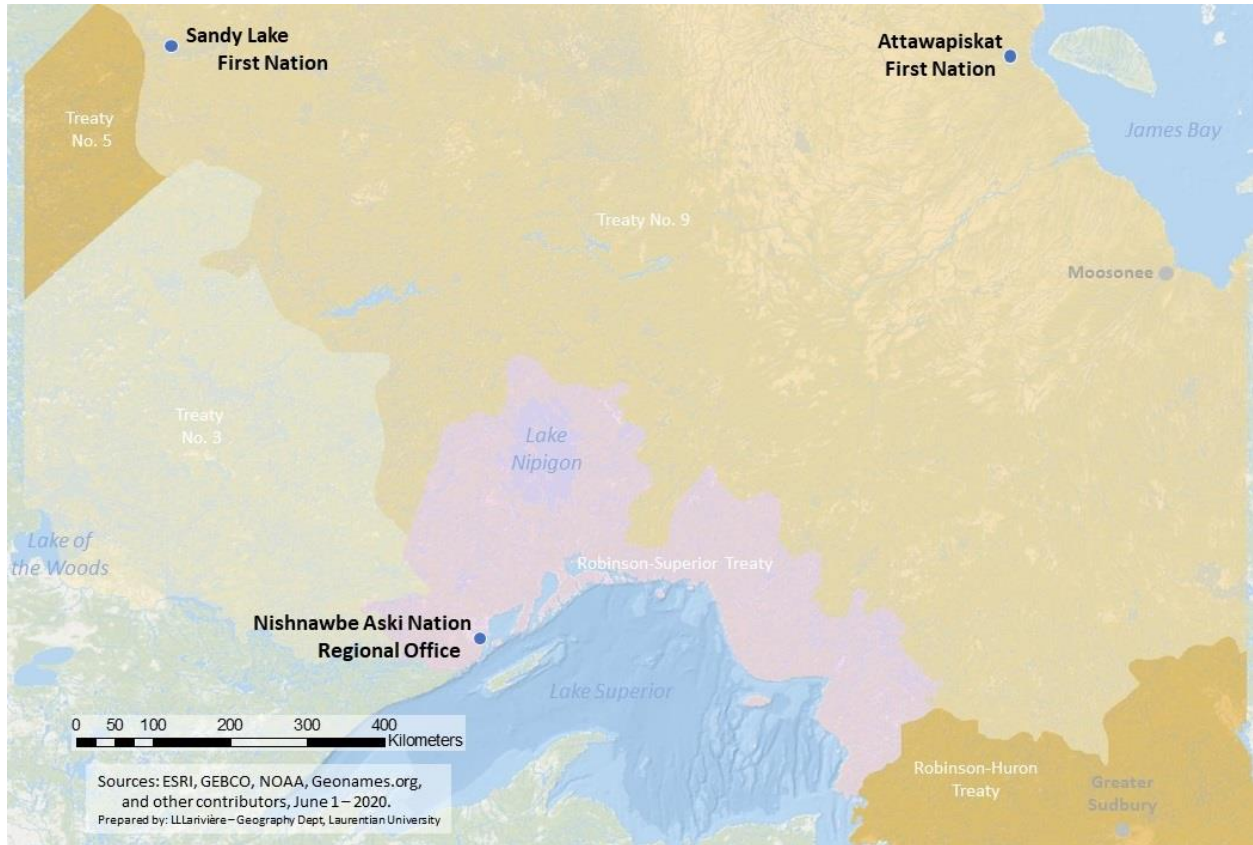
For the newer homes they have switched to cistern-based systems, but it only holds so much, and they have to buy water. I use the cistern system and I have to get my water trucked in and I don't drink my tap water. (Six Nations participant, 2018)

This participant had just had their home built in 2015. The Independent First Nation and the unaffiliated First Nation participants both stated that their communities were reliant on water trucks to fully supply their communities with clean water even though both communities were located near surface water.

Six Nations has received a lot of media attention for their protests against Nestle's Aberfoyle plant, which bottles 3.6 million litres of water daily from Six Nations territory (Perry, 2018). The community criticized the Canadian governments for permitting Nestle to draw all this water daily without having conducted proper environmental impact studies. They were also criticized for allowing the company to draw significant amounts of water from a territory which is suffering from water quality and water security challenges (Perry, 2018). The Six Nations participant did not discuss Nestle during the interview, but this is a highly contentious issue within the community.

4.15 the Nishnawbe Aski Nation

**Figure 7: The Nishnawbe Aski Nation**



(Map created in June 2020 by Léo Larivière, Technologist, Department of Geography, Laurentian University – used with permission)

Most of the data shared in this section was shared by the Sandy Lake First Nation participant and a First Nation technician from the region. The participant from Attawapiskat First Nation had little information to share as they had been living outside of their community for decades and could not recall all the challenges they and their family had faced before they moved from the community into an urban centre. The themes which were discussed for this region from the thematic analysis were:

- Theme 1: concerns over well water contamination
- Theme 5: water trucks, water treatment plant capacity and other inhibitors of community growth
- Theme 6: lack of community capacity, training, and resources to achieve or maintain water security
- Theme 10: outdated water systems

The Sandy Lake First Nation participant discussed similar experiences and some of the same challenges as Six Nations. Like Six Nations, Sandy Lake First Nation has a water treatment plant, but the plants are operating at maximum capacity and the community is reliant on water trucks to service the community water and wastewater needs. Their challenges with water trucks differs from Six Nations because they are a remote community located in the far north of Ontario which creates greater challenges with water truck usage especially in the winter months. The participant claimed that most homes in Sandy Lake have built in water tanks which are dependent on water trucks for service. The participant stated that the trucks supplying homes with water are not supplying them with sufficiently treated or clean water and residents are forced to use boiled lake water or buy their water. For their wastewater services, they are reliant on sewage trucks to remove the waste from their homes to a manmade “sewage lagoon”. In the winter, the water and sewage trucks often “get stuck” and cannot get rid of the wastewater properly.

Another area where Sandy Lake differs from Six Nations is that the schools in Sandy Lake are connected to their water treatment plant. However, the Sandy Lake participant explained that this is not always helpful for the community because any issues with their water treatment plant will cause the schools to shut down: “sometimes when the water treatment plant needs repairs or there’s a busted line, the water pressure goes really low and the schools shut down” (Sandy Lake

participant, 2018). When the Sandy Lake participant responded to the final question during the interview, which was “do you have any other comments that you would like to make?”, they indicated that climate change was exacerbating all the communities’ water service problems. The Sandy Lake participant was one of the few participants to draw comparisons between worsening water security challenges and climate change.

A water technician for NAN also participated in the study. The technician claimed that there is a mixture of sand filtration type infrastructure and UV water treatment systems, which are primarily used throughout the NAN communities, with most of the water treatment plants having been built in the 1990s. These sand filtration systems which were built back in the 1990s are causing problems for some of the NAN communities today. Technicians in NAN found that these types of sand filtration systems failed to treat source water and that many of the older systems like the sand filtration systems could not be maintained because the parts were outdated or not being manufactured anymore. Water treatment plant maintenance was one of the issues discussed for the NAN region as well as the training and certification of water treatment plant operators. Issues with water treatment plant maintenance and operator training were also discussed by all participants except for the Grand Council Treaty #3 participant and the participants from the Independent and unaffiliated communities.

Some water treatment plant operators require a ‘Class 3 licence’, and it is a long process to get people trained at that level. It is the law in Ontario to get certified as an operator in training and it takes a minimum of one year of experience to reach a Class 1. The class range increases for Class 2 and Class 3 according to the number of years that the operators are obtaining hands on experience in their field (Province of Ontario, 2012). The technical participant explained that many

of the existing water treatment plant operators did not have the skills to achieve a Class 3 and communities would get placed on an advisory as a result:

[T]here was discussion to get them to modify the training and maybe doing a practical exam instead of a written one such as going through the water treatment plant and trying to get them certified in that way. It is difficult to get those operators to achieve the proper certification and it takes a lot of time. (NAN participant, 2018)

The NAN participant also stressed the importance of the “sustainability of water treatment plants and operation and maintenance funding levels” (NAN participant, 2019). The participant explained that another challenge with water security in First Nations was that funding levels have not increased over the years with inflation to sustain their water treatment plants. The participant stated:

With the [current] funding you could only hire one operator. In most cases you need at least two operators. Those [funding] levels need to be increased. With the initiatives that are going on, the current government made a promise to eliminate BWAs and we’re not addressing the distribution system. Not for new development. A lot of our homes are truck haul and they’re not hooked up to water and sewer. Only 50% of homes are connected to water systems and the rest are truck haul. (NAN participant, 2018)

The participant was also concerned that the water coming out of the taps was not clean:

The water treatment system is making clean water, but is the tap water clean? The scope is narrow and needs to be expanded. There are some well systems... some communities and arenas, and they never produced clean drinking water. They [the government] just included those systems [on BWAs] a year ago. (NAN participant, 2018)

The inclusion of the well systems into the federal governments’ commitment to end long term drinking water advisories by 2021 might relieve some of the water security challenges for the NAN, but as we draw closer to that 2021 deadline only time will tell how much water security will be improved in First Nations across Ontario.



## 4.2 Participant Recommendations

The fourth question provided to the participants of this study asked them if they had any recommendations on mitigating the impacts of the First Nation water crisis in Ontario. Most participants had ideas to share on the successes and challenges in their own communities and some participants had ideas to share on initiatives that they would like to see implemented. The recommendations in this section are organized into two themes: 4.21) community initiatives, and 4.22) recommendations for water security.

This section was created to provide an overview of all the recommendations made by the participants in the study who chose to answer the recommendation question during the interview or on the questionnaire that they were provided. These recommendations will be summarized in the conclusion and added to the overall recommendations in the final section.

### 4.21 Community Initiatives

The Curve Lake participant discussed their communities' *Sacred Water Circle* initiative, which was based in Peterborough. The *Sacred Water Circle* created a live stream webcast to provide dialogue sessions on the importance of water and were involved with organizing a water walk in Toronto in 2016. The Curve Lake participant also discussed the potential of collaboration between the community and the Indigenous Environmental Studies program at the neighbouring Trent University on the communities' water issues. In addition, the participant from Curve Lake stressed the significance of First Nations going back to traditional Indigenous water governance structures:

The... natural water laws should be adhered to... and I truly believe that we have to gain control of our own destiny and our own resources and that includes water. We have to be treated on a nation-to-nation basis. I believe that we don't need to study this. We don't need an inquiry or a commission, even though that's probably what we'll get. They're

underfunding us and we've been studied to death. What does traditional governance look like? I don't know what it looks like, but... everybody should have the right to clean water. (Curve Lake Participant, 2018)

The Curve Lake participant also discussed what the community might have done after they had received part of the William's Treaties settlement. The participant disagreed with the community Leaders decision to pay out the band members as part of the settlement and suggested that the money could have been put into a community trust instead to help with issues such as boil water advisories.

The AIAI participant from Hiawatha First Nation discussed their community's plan to assess the individual wells and all water systems in the community and make recommendations based on their assessments. This approach will focus on individual needs and how these needs impact the community so that potential solutions benefit all community members, and no one is left out. The proposed water treatment plant approach, by what is now called Indigenous Services Canada, did not align with Hiawatha First Nations' approach. The Hiawatha participant also discussed the necessity for communities to work out their plans for longevity by determining who will maintain the infrastructure and other required equipment over time. The Hiawatha participant voiced the same concerns and recommendations as the participant from Curve Lake:

[At] a water conference at McMaster... I got up and said we wanted to start a female company with women as water keepers. The solutions they're churning out for third world countries, they aren't doing the same for Canada. If you want First Nations to thrive, they need more management capacity. (Hiawatha First Nation participant, 2018).

The Hiawatha participant stated that in many cases, it was "just a lack of capacity" preventing First Nations from supporting their community needs.

#### 4.22 Recommendations for Water Security

The participant from Curve Lake First Nation criticized Canada's ability to provide financial aid to foreign countries while being unable to fund or fix many of the educational, health and social challenges and gaps within First Nation communities. They suggested that going back to the clan system and listening to women as community advisors might help improve solutions and outcomes for First Nation communities (Curve Lake participant, 2018).

The participant from Serpent River suggested that the Ministry of Environment, Conservation and Parks establish and operate a hotline or service centre for First Nations to voice their concerns or violation complaints. The Serpent River participant also suggested that First Nation groups and / or organizations develop a "Watch Group" to monitor industry and follow up on community concerns within the timelines set by industries. Within their territory, the participant found that it was often the industries who were conducting the monitoring and the participant proposed that communities conduct their own analysis to ensure that it aligns with the findings from the industry collected data. This would increase community capacity by enabling community members to monitor their own water, provide community members with training and employment, and would also provide the community with the "peace of mind" that it was not only the polluters who were monitoring their water. The participant from Wiikwemkoong First Nation agreed with the Serpent River participant that having and keeping community members trained and informed was critical to mitigating the impacts of the water crisis in First Nation communities.

The AN technical representative suggested that communities investigate potential investments and create budgets for their infrastructure needs. The participant also indicated that communities were often short falling themselves on what their actual infrastructure needs were

which could potentially be rectified if they created budgets for these needs as the participant suggests.

The participant from Batchewana discussed a water study that looked at what their territory required to bring their water up to Canadian standards. The participant claimed that this study would look at various options for the community and would provide a recommendation on water systems that would be in the best interests of both the Canadian government and First Nations in that area. The funding supplied to Batchewana for this study was preliminary at the time of the interview and was also nowhere near enough for the community to cover their water security needs. The Batchewana participant believes that it will be at least five years before the First Nation has solutions for their Obadjiwon and Goulais communities. The Batchewana participant stated:

As I look at the plight of First Nation communities across the province, there's a real disparity between the north and south, and for us, we have strategies, and we engage consultants and compel the Crown to invest in water systems in our community. I don't believe that's the case for the rest of Ontario and its unfortunate. As I look at the way Canada operates, political lobbying seems to have better effects, but if communities do not have that ability, then they are outside looking in. There needs to be more equitable resource distribution. Regarding the long-term advisory in our Goulais community, we did a video on water quality through Human Rights Watch and we went to the UN in Switzerland. (Batchewana First Nation participant, 2018)

The Batchewana participant was the only participant to discuss raising their community's water issues at the international level.

The participant from GCT #3 suggested that communities themselves could come establish their own water regulations including regulations for water consumption. The participant also suggested that their community, Couchiching, should control the "outflow" from individual homes as numerous homes in the community dumped their untreated sewage directly into the lake, which supplies the community with drinking water. The last suggestion made by the GCT #3 participant

was to shift some of the focus away from the capital costs of water treatment and to focus on the training and retention required by the community to maintain water treatment plants as well. The participant stated:

There's very little funding for that most of the time. I was in a community last year that had a decent system, but they only had one operator and he could never take a vacation and he was only making \$30,000 annually. (Couchiching First Nation participant, 2018)

The participant from Six Nations agreed that more funding was required for all the water security challenges in First Nation communities and suggested that this could be accomplished by applying pressure to both the provincial and federal governments to make clean and safe drinking water for First Nations a priority. The Whitesand First Nation participant added that funding was only part of the equation and that they would like to see more awareness in their community on the cultural and ceremonial significance of water to First Nations. The Whitesand First Nation community participant also discussed the importance of employment and training for First Nations water security:

I would say that we need education first because there are a lot of people in my community that don't speak English. There are a lot of Elders that don't speak English. I think a water treatment plant would be best as well as providing employment and education to community members. There's not a lot of awareness of water and spring water and... I would love to see guest speakers coming in and talking about water [in our community]. (Whitesand First Nation participant, 2018)

The last of the participant contributions to the recommendation came from the NAN participants. The two participants from this region discussed a lot of the issues that set the NAN apart in terms of the severity of their water security challenges as many communities in this region are more likely to be rural, remote, or isolated. Sandy Lake First Nation is designated as a remote and isolated fly-in community in northwestern Ontario. Community members who travel to and

from the community can expect a minimum of a three-hour indirect flight to get to the nearest city, which is Thunder Bay, Ontario. The participant from Sandy Lake First Nation claimed that the community could benefit from emergency preparedness for their water line breaks and bursting pipes during the winter months:

For massive pipes bursting, how are they going to be able to work with the cold and the water freezing? My reserve is one of the biggest reserves in NAN territory, so that would create a huge problem. It's difficult to conduct emergency repairs in such a rural and remote environment. Sometimes technicians have to come here and that takes time because they have to be flown in. That goes with the power [technicians] too. (Sandy Lake First Nation participant, 2018)

To mitigate these challenges, the Sandy Lake participant suggested training the young people in communities to assist in times of crisis as well as training people in the community to help maintain the community's water supply. The participant stated "we need people from our community to be trained so that we're not waiting a few days for a specialist" whenever the community has urgent problems (Sandy Lake First Nation participant, 2018). The participant from the region suggested modifications to existing training that is already being conducted in the region. The NAN regional office participant suggested that water technicians be given a practical exam instead of a written one so that technicians learn through experience in the water treatment plant and get certified that way instead.

## **Chapter 5: Discussion**

These so-called Indigenous or tribal peoples of the world ‘are the repositories of vast accumulations of traditional knowledge and experience that links humanity with its ancient origins... these groups’ own institutions to regulate rights and obligations are crucial for maintaining the harmony with nature and the environmental awareness characteristic of the traditional way of life. Hence the recognition of traditional rights must go hand in hand with measures to protect local institutions that enforce responsibility in resource use. And this recognition must also give communities a decisive voice in the decisions about resource use in their area. (Borrows, 1997, p. 423)

With this quote, John Borrows is explaining the significance of Indigenous traditional knowledge, where it comes from, and why it has been and continues to be the reason why Indigenous peoples are always at the forefront of environmental protection and environmental advocacy efforts. For many Indigenous researchers, myself included, the earth, air, animals, and resources are precious gifts which were given to us by the Creator, and with these gifts comes a set of responsibilities to protect, preserve, and ensure that these gifts continue for generations long after we have passed on (Borrows, 1997; Craft, 2013; Arsenault et al, 2018). Multiple participants in this study have drawn the same conclusions. They told us that water and culture for Indigenous peoples are interconnected, and some participants even discussed the need to revert to Indigenous ways of knowing, thinking, and acting to follow the Indigenous laws that some communities and nations abide by over all others. This discussion by the participants led to the development of thematic theme eight, the cultural significance of water for First Nations followed by thematic theme two, how the Indigenous relationship to water has been affected by changes in water quality, quantity, and the loss of aquatic species.

This study was intended to be exploratory with the intention of drawing upon a small sample size of participants. Interviewing 14 participants from different communities highlighted some of the unique issues within each community and uncovered some similarities but was

inadequate for assessing all the impacts that each of these communities might be facing as well as inadequate for illustrating all of the capacity challenges within the community subgroups. It is also acknowledged and understood that one person cannot provide all the background and challenges that may be impacting a community, which is why I wanted to clearly state that this research was exploratory. For more fulsome studies of water security in any region, a larger sample size of participants is recommended. I would recommend targeting at least one knowledge keeper, one technician, one community Leader, and one youth per community as a minimum standard as that will bring a more balanced perspective of how each community is affected by water security challenges. Additionally, my decision to use a content analysis method for this thesis resulted in the research lacking the standardized procedures which allow it to be duplicated by other researchers (Bhattacharjee, 2012).

One of the first limitations within this study was the lack of participation from GCT #3. GCT #3 has many communities which are impacted by the First Nation water crisis, but I was unable to interview more than two participants from this region due to interest, capacity, or a willingness from some to participate. I would suggest that other researchers looking to discuss with GCT #3 participants try contacting Tribal Councils in that region if they have difficulties getting a response from the regional office. This was an opportunity that I thought of long after the interviews were completed. I was grateful, however, for the unanticipated interest from the AIAI communities, interest from First Nations youth, and a willingness to participate from First Nation Elders, Leaders, and technicians despite numerous capacity and scheduling challenges. The interviews for this research project were all conducted during the permissible timeframes provided by the Laurentian Board of Ethics from June to November in 2018.



There were also some limitations within my methods and data collection. For example, if I were to conduct a similar study with the same type of research participants targeted in the future, I would develop slightly different questions for each category of participants. For the youth I would focus on how their lives have been impacted as young people living in their communities by the issue being discussed as well as their suggestions and ideas on improvements or solutions. For the Elders and Knowledge Keepers, I would tailor the questions to determine the history of the community, the spiritual and cultural significance of their lands and resources, and what would need to be included in policy direction, governance, and what would need to be built into legislation. For the First Nation community Leaders, I would ask them how they could be better supported in their roles as community leaders. I also would have asked the community technicians what the gaps and barriers are as they are the ones working in the field each day. Finally, another potential limitation is that many of the participants involved in this study answered the questions according to this layout based on their own interpretations of what data they wanted to share with me as a researcher. However, I believe if I had used the individualized question format discussed previously, most of the participants would have been motivated to speak on those areas and I would use this process if I conducted future research endeavours with Indigenous participants.

Many of the participants indicated that they had been studied time and time again with no results. Reports had been made highlighting the challenges and then sat on shelves collecting dust. The participants also indicated that the establishment of committees and commissions had not worked in the past. Most of the participants knew their community water supply history and understood the community water security challenges. As a result, they suggested that education, training, and adequate funding would all have to be part of the solutions as discussed in thematic theme six. Many of the participants also suggested the establishment of a government funded water

monitoring agency to assist First Nation communities with current issues and potential risks. Most of the research findings indicated that while First Nations were among the first communities in Canada to be impacted by a water crisis, this is quickly becoming an issue for all Canadians. Many of the participants in this study have alluded to this.

In terms of potential bias within this study, my First Nation community, Wiikwemkoong, is affiliated with the AN and I have a significant number of family and friends that I had discussed the preliminary research project with before I began my literature review and interview process. My Indigenous friends gave me some ideas about what water security challenges looked like within their own communities and this information supported the shift from my preliminary focus, which was strictly First Nation communities on boil water advisories, to a focus on water security within all First Nation communities in Ontario. I counteracted these potential biases by contacting the PTOs directly and asking them which individuals or communities should be asked to participate.

Another potential bias within this research study were my connections as a former coordinator and policy analyst for the COO office in Toronto, Ontario. Within these positions, I worked for numerous sectors and attended numerous meetings and this job experience helped me to develop my own methods for contacting First Nation communities as well as enabling me to build up networks and potential contacts. For example, with this work experience I learned who the contacts are for each of the PTOs, how they worked with communities and how to contact them. All the contact information for the PTOs and their department leads are available online and using a search engine with the names of the PTOs (Nishnawbe Aski Nation, Grand Council Treaty #3, Anishinabek Nation, Association of Iroquois and Allied Indians, and the Independent First Nations) will bring you to their website where all this information is listed. Therefore, the only

potential bias within this research project are my previous work experiences and the networks and contacts that came with previous positions, the contacts, and networks that I developed personally as an *Anishinabek kwe*, and the fact that I am Indigenous and wanted to do work which supported First Nations. As discussed in the methods, participant selection, and methods of analysis sections, I did my best to mitigate the impacts of these biases by using existing processes for finding Indigenous participants.

During the early research and data collection phases of the project, it quickly became evident that the challenges with the First Nation water crisis in Ontario were more than short and long-term boil water advisories in First Nation communities. The issues included the everyday challenges that many communities with access to clean water were facing. These challenges included overworked and underpaid water treatment plant operators, water treatment plants operating at maximum capacity, reliance on water and wastewater trucks, and precariously keeping up with their water and wastewater maintenance which was evident with thematic themes five and six. Through the discussions on thematic themes four to six, the participants of this study have illustrated that 1) water insecurity is directly linked to housing shortages in First Nation communities; 2) water insecurity is directly linked to the lack of emergency response capabilities in First Nation communities, such as a lack of fire emergency response procedures; 3) water insecurity is linked to the lack of critical community infrastructure such as schools and health care facilities; 4) many First Nation communities with current access to clean water are barely able to keep up with the operations and maintenance of their water systems and / or have water systems that are operating at or over capacity; and 5) that many First Nation communities are worried about contaminated water from sources outside of the community such as agricultural run-off, development activities, and waste from neighbouring cottagers or tourists.

Many First Nation communities, including Six Nations of the Grand River Territory and Batchewana First Nation, cannot expand the building of homes and other essential community infrastructure without significant upgrades to their water and wastewater infrastructure. In the literature review section, INAC's 2011 findings that 20-25% of water and wastewater systems were operating at or beyond capacity is consistent with the reporting from the First Nation participants from Wiikwemkoong First Nation, Sandy Lake First Nation, Batchewana First Nation, Whitesand First Nation, Six Nations of the Grand River Territory, and statements from both of the regional water technicians from the Nishnawbe Aski Nation and the Anishinabek Nation. Right now, the reality for many of these growing communities is that their only option is to either build new homes with the risks from contaminated water or to build homes with cisterns for water truck service, which is expensive for some communities and unreliable during the winter months for other communities. Some communities have only had water truck delivery implemented in recent years while others have been reliant on them for decades, but the fact of the matter is that this should have never been a long-term solution and water truck reliance is one of the sources of water insecurity in First Nations across Ontario. Human Rights Watch stated that Batchewana and Six Nations of the Grand River Territory had 80 community members on a waitlist for housing following their 2016 *Make It Safe* report (Klasing, 2016).

The second most prominent water insecurity issue was how it impedes First Nation communities from being able to create and implement emergency response procedures. The participant from the most northern First Nation community, Sandy Lake, discussed how the lack of emergency response capabilities in their community resulted in the temporary closing of their schools, particularly during the winter months when the community was more likely to experience water shortages or a lack of water access altogether from their water truck getting stuck in snow

or ice or burst pipes. Human Rights Watch added to the participant's statement by illustrating that power outages were a threat to communities with access to water because it would temporarily disable the water treatment plants ability to treat contaminated water (Klasing, 2016). This also means that water insecurity is related to energy insecurity in those communities not connected to the power grid and reliant on diesel generators or other means for their energy needs (Talaga, 2017).

Many of the participants also discussed how their communities' water insecurity issues and challenges impeded the reliability and development of much needed community services. The Sandy Lake participant discussed how their schools would be temporarily shut down several times during the winter months from burst pipes or other issues with their water access. Human Rights Watch discussed how federal investments were unable to keep up with growing infrastructure deficits in First Nations in the literature review section (Klasing, 2016). Human Rights Watch added that wait lists for investments were growing and many communities are still waiting for these investments to be made (Klasing, 2016).

The fourth most prominent challenge found within the literature review and the findings from the participants was the First Nation communities' ability or inability to keep up with the operations and maintenance of their water and wastewater systems. The government investments discussed in the literature review section exceeded \$5 billion dollars "over the past two decades" according to Human Rights Watch, yet many of the water security challenges in First Nation communities have persisted (Klasing, 2016). The exceptions are those communities which were listed as priorities by the provincial and federal governments in their efforts to end all long-term boil water advisories by 2021 (ISC, 2019). These federally prioritized communities have had many of their longstanding water security challenges rectified while the remainder of the communities,

including many communities that participated in this study, continue to face challenges. As mentioned in the literature review section, a major source of the operations and maintenance issues in First Nation communities is that government funding only supplies a maximum of 80% of the overall funding needed for operations and maintenance of water and wastewater systems in First Nations. Additionally, 33% of all government funding for water and wastewater treatment in First Nations communities goes toward funding the government staff and other water agencies to assist the government with implementation on water and wastewater initiatives in communities (Phare, 2009). During the discussion on the first thematic theme on well water, participants in this study have asserted that the government will not provide funding for individual well systems in First Nation community homes, which many First Nation community households have throughout Ontario. Some of the common contaminants found in individual well systems in First Nation communities are uranium, coliform, and E. coli, which several of the participants in this study stated were found in their community water systems. The participants from Batchewana and Serpent River both discussed uranium contamination in their water systems. Human Rights Watch states that the government would not fund water systems which service less than five households, which could be one of the reasons why individual wells are not funded (Klasing, 2016). Another reason the government might not fund individual wells according to some of the water technicians which participated in this study is potential risks associated with individual well systems, but the technicians did not clarify what those risks might be. In the literature review section, I discussed the 2011 INAC report which stated that only 69 percent of households in First Nations had ‘piped water services’ while 19 percent had individual wells and 12% relied on water trucks or had no water service at all (Klasing, 2016). In the same report INAC had determined that there was a lack of wastewater systems for many community households as well as finding that half of the

households that they had assessed were reliant on individual wastewater systems with many of those systems operating at capacity or beyond in 2011 (Klasing, 2016).

Another issue discussed by the participants of this study was how past government investments had resulted in poorly designed water systems. This discussion by the technical participants in this thesis led to thematic theme ten on outdated water systems. The two water technician participants from the AN and the NAN indicated the same findings within their day-to-day work and also discussed how faulty and problematic sand filtration systems were responsible for boil water advisories in communities using those types of systems.

Other challenges discussed in this study were the government policies and initiatives which exacerbated the First Nation water crisis. These initiatives include the permits to take water by Nestle Canada and the building of the 1919 aqueduct to supply the city of Winnipeg with water which effectively isolated Shoal Lake #40. Maude Barlow found it appalling that Nestle was able to draw endless supplies of water from their Aberfoyle plant for a ridiculously small fee while the neighbouring First Nation community of Six Nations did not have an adequate water supply and suffered housing shortages over the years as a result:

Nestle is seeking to buy the Middlebrook Well in Elora, Ontario, near Guelph. The well sits on the Traditional Territory of the Six Nations of the Grand River – the most populous in the country – where over 11,000 people have not had access to clean, running water for decades. As many as four out of the five homes are not connected to water lines and families depend on wells that in recent decades have become contaminated by runoff from local farms, sewage, and industry... it is appalling that Ontario would consider allowing Nestle to bottle water from the watershed and transport it out of the region when it is so desperately needed there. (Barlow, 2016, p. 56-57)

In First Nation communities like Batchewana, they spent \$44,000 on bottled water for their Goulais community which was discussed by the participant from that community as well as discussed in the Human Rights Watch 2016 report (Klasing, 2016). While the Six Nations

participant did not mention Nestle during their interview, Six Nations of the Grand River Territory has been speaking out against the company in numerous media interviews for the past few years as discussed in the literature review.

### 5.1 Combined Recommendations

These recommendations are based on the recommendations that were shared by the participants and supported by the literature review findings. A considerable part of the research conducted in the literature review section of this study emphasized the necessity of including Indigenous traditional and ecological knowledges into existing water laws, and this recommendation was reiterated by some of the participants of the study. The following are recommendations toward mitigating the impacts of the First Nation Water Crisis in Ontario using Indigenous oriented approaches:

- 1) **That Indigenous Knowledge (IK) and Indigenous laws be incorporated into potential solutions.** There are existing documents, such as the Water Declaration, which outline Indigenous priorities, values, and relationships with water that can be used to inform all initiatives and decision-making processes. Furthermore, most Indigenous Nations and many communities have their own laws, resolutions, and policies for the environment and water, and should therefore be included in any mitigation efforts or potential solutions for achieving water security in their communities. The participant from Whitesand discussed the interconnectedness of Indigenous culture with water and recommended that Indigenous peoples keep up with the ceremonial practices and teachings of water which remind us of how precious this gift is from the Creator. We need water to live, but water is also sacred.
- 2) **That both levels of government work with First Nations to solve their water insecurity challenges.** In some cases, this has occurred with the federal government's mandate to end



all long-term drinking water advisories by 2021. However, will short-term drinking water advisories and the water insecurities leading to those be next on the agenda? And what about working with communities on their well water challenges? Is there a plan in place for that? The community of Batchewana is on the federal government's list as "resolved" from their long-term drinking water advisory, but we heard first hand from the participant from there as well as the report conducted by Human Rights Watch that they are still suffering from water insecurity in one of their three communities. Their ability to grow and build new homes is impeded by their current lack of water insecurity as well. What about the communities reliant on water and wastewater trucks? Was this intended to be a viable long-term solution and if so, how can the government justify this? These questions demonstrate that there is still a long way to go in terms of water security and the government is a long way from being done their "work" to achieve water security for First Nations.

- 3) **That community Leaders develop and implement community plans, environmental assessments, and impact studies to protect the community from contamination.** From what we heard from the participants, some communities lack accountability measures that protect their source water from contamination from neighbouring cottagers, visitors and tourists within the community, the mining and other industries, and from their own members dumping raw sewage into the lakes. The participants from Curve Lake, Serpent River, Wahnapiatae, and Couchiching all expressed concerns over these sources of water contamination and their communities' lack of accountability measures to protect the community water supplies. The participant from Curve Lake said that we need to revert back to the ancient Indigenous ways of knowing, thinking, and acting in order to abide by

existing Indigenous laws which favour responsibilities to preserving and protecting the land, animals, and resources for present and future generations. Existing Indigenous laws and ways of knowing, therefore, should be built into these community plans.

- 4) **That a “watchdog” organization be established by First Nations to assist communities with holding industries, neighbouring municipalities / towns and tourists and other visitors accountable for any water contamination that they cause within First Nation communities.** Many communities already have some limited form of this available by their PTOs, COO, and regional tribal councils, but this study has demonstrated that there are a lot of capacity issues and challenges within all these levels of support. The participant that brought this forward wanted an extra accountability measure in place within their community to liaison between their community and neighbouring industries so that the organization “paying” for the water testing and ecological monitoring had a community partner working with the industry employee conducting the surveillance and monitoring. With this in place, communities would have more peace of mind that their best interests are being protected as well as the neighbouring industries, something which is not occurring in each First Nation for a variety of reasons outlined in this study.

These four recommendations were shared by the participants as goals for their own communities, but there was some overlap on some of them such as the first three recommendations. The fourth recommendation is an idea that I believe could benefit multiple communities with neighbouring developers and industries with added environmental surveillance and monitoring conducted by Indigenous organizations or agencies.

## 5.2: Conclusion

In terms of mitigation efforts and potential solutions to the First Nation water crisis, we know from the literature review section and the participant contributions that this is an overly complex process. From the literature review, we saw that the federal government, the Assembly of First Nations, and other Indigenous organizations are committed to working together with the First Nations in Ontario on resolving the long-term drinking water advisories listed by the federal government and repealing the SDWFNA of 2013. It is also clear from the voices of the participating community members that the issues outlined in the literature review are still impacting them in various ways. What is unclear is how many communities currently living with water insecurity and those on short-term drinking water advisories are also being prioritized by the federal government. Questions that remain unanswered for me are what will be done for First Nation community households with individual well systems? What will be done for communities reliant on water trucks? What will be done for communities that lack the infrastructure to build new homes and are currently dealing with overcrowding because of housing shortages? And what will be done to provide adequate resources for operations and maintenance for existing infrastructure to ensure that those First Nations that currently have access to clean water can maintain their systems well into the future?

Research from the literature review and the data collected from participants all suggest that it is critical to include Indigenous traditional law and governance in any mitigation efforts and proposed solutions. John Borrows has done extensive research on how traditional Indigenous law and ecological knowledge can be easily integrated into Canadian laws and regulations, which would strengthen environmental protection. The participants also discussed the need for both the provincial and federal governments to be involved in discussions with the affected First Nations

in any mitigation efforts while resourcing and otherwise enabling First Nation communities to propose their own solutions.

Barlow, Phare, and Human Rights Watch have begun uncovering some of the hidden complexities around the First Nation water crisis. Human Rights Watch concluded that the millions and billions in government investments did not mean that they had “fully met its obligation in relation to the relevant [water] rights and that “[t]he government of Canada has an obligation to respect, protect, and fulfill this and other economic, social, and, cultural rights, progressively and to the maximum of its available resources” (Klasing, 2016, p. 55). Barlow adds that the First Nation water crisis violates the Canadian Charter of Rights and Freedoms “as well as the human rights to water and sanitation defined by the United Nations and the inherent water rights of Indigenous peoples in Canada” (Barlow, 2016, p. 64).

The research compiled throughout this project demonstrates how an Indigenous research paradigm can inform Indigenous water security research. This project has included research from both Indigenous and non-Indigenous researchers on water legislation, Indigenous knowledge, and the cultural significance of water. As a result, this thesis contributes to existing literature on water insecurity by sharing the voices of Indigenous peoples affected by water insecurity from their own Indigenous perspectives. The participants contributed a vast amount of insight into the depth of the First Water crisis and they came from different age groups, technical backgrounds, and geographical locations. Until we finally see sufficient and meaningful solutions for First Nation communities experiencing water insecurity, our work, and our efforts to advocate for these communities must continue. We must also continue to listen to those at the grassroots and community levels.

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## Appendices

### 6.1 Ethics Certification



#### APPROVAL FOR CONDUCTING RESEARCH INVOLVING HUMAN SUBJECTS Research Ethics Board – Laurentian University

This letter confirms that the research project identified below has successfully passed the ethics review by the Laurentian University Research Ethics Board (REB). Your ethics approval date, other milestone dates, and any special conditions for your project are indicated below.

TYPE OF APPROVAL / New <input checked="" type="checkbox"/> / Modifications to project / Time extension	
<b>Name of Principal Investigator and school/department</b>	Rachel Arsenault, (PI) Indigenous Studies LU; Elizabeth Wenghofer, Rural and Northern Health, Jorge Virchez, Northern & Community Studies (Supervisor)
<b>Title of Project</b>	Recommendations Toward Ending Boil Water Advisories in Ontario Using an Indigenous Oriented Approach
<b>REB file number</b>	6012333
<b>Date of original approval of project</b>	February 27, 2018
<b>Date of approval of project modifications or extension (if applicable)</b>	
<b>Final/Interim report due on: (You may request an extension)</b>	February 27, 2019
<b>Conditions placed on project</b>	

During the course of your research, no deviations from, or changes to, the protocol, recruitment or consent forms may be initiated without prior written approval from the REB. If you wish to modify your research project, please refer to the Research Ethics website to complete the appropriate REB form.

All projects must submit a report to REB at least once per year. If involvement with human participants continues for longer than one year (e.g. you have not completed the objectives of the study and have not yet terminated contact with the participants, except for feedback of final results to participants), you must request an extension using the appropriate LU REB form. In all cases, please ensure that your research complies with Tri-Council Policy Statement (TCPS). Also please quote your REB file number on all future correspondence with the REB office.

Congratulations and best wishes in conducting your research.

Susan Boyko, PhD, Vice Chair, *Laurentian University Research Ethics Board*

6.2 Recruitment Poster

# Looking for Your Ideas on Ending the First Nation Water Crisis in Ontario

Aanii, Boozhoo!

Has your community been affected by boil water advisories in the past few months / several years? If the answer is yes and you have recommendations and/or potential solutions that you would like to share, then I would greatly appreciate the opportunity to speak with you.

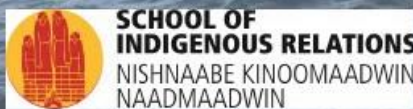
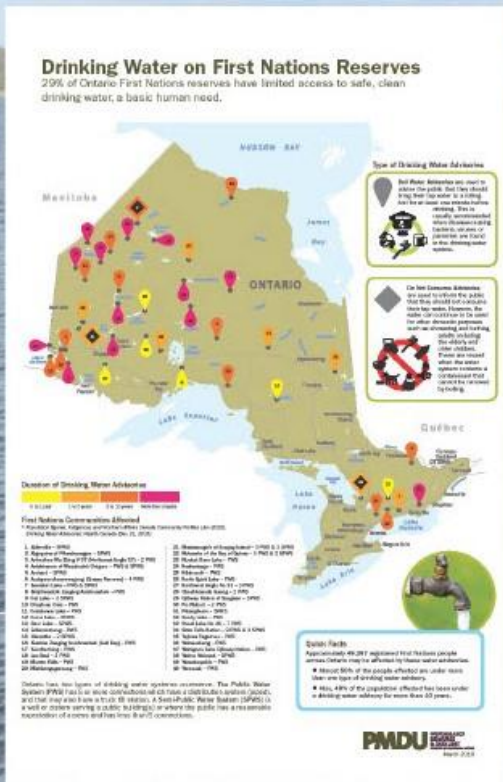
My name is Rachel Arsenault and I am a Masters of Indigenous Relations student at Laurentian University in Sudbury. I would like to conduct interviews and/or sharing circles with any interested Indigenous youth ages 18-29, technicians, Elders and Leaders.

The purpose of this research will be to conduct feasibility studies based on your ideas and create recommendations on eliminating boil water advisories in Ontario. These recommendations will help compliment existing initiatives on ending the First Nation Water Crisis.

The Sharing Circles will take an estimated 2 hours of your time and individual interviews can range from 15 minutes to half an hour.

If you are interested in participating please contact myself, Rachel Arsenault by email at [ry\\_arsenault@laurentian.ca](mailto:ry_arsenault@laurentian.ca).

Miigwetch!



## 6.3 Blank Consent Forms

### APPENDIX B



#### Consent Form – Participants

##### **Recommendations Toward Eliminating First Nation Boil Water Advisories in Ontario Using an Indigenous Oriented Approach**

Rachel Arsenault,  
Laurentian University,  
Sudbury, Ontario

Thank you for agreeing to participate in this research. This research will help me put forward recommendations towards eliminating boil water advisories based on what affected communities would like to see implemented in their communities. The role that you will play in this research includes: 1) participation in an audio-recorded *Sharing Circle* about the program; and/or 2) an individuals interview. The sharing circle could take up to two hours to complete and the survey should take no more than half an hour of your time.

Confidentiality is very important and personal information (name and identifiers) will not be shared in any written documentation unless the participant would like to be identified for future outreach and provides consent. Due to the nature of Sharing Circles, confidentiality cannot be fully guaranteed. To add, the researcher may have a duty to report to the relevant authorities if a participant discloses any reasonable risk of abuse, harm, or threat to another person. However, if participants want and/or need to, they can take a break at any time, may pass on any particular question and may withdraw at anytime without consequence. All sharing circles will be audio-recorded to ensure accuracy and only I will have access to the tapes. Additionally, a list of external counselling services will be available should you require them.

This Consent Form also seeks your permission to use the information you provide to be used in this research. Remember, participation is completely voluntary, if you wish to withdraw at any time you can and the information that you provided will be deleted and not used.

The results of this study will be kept for 15 years in an encrypted password protected file on Google Drive. The potential benefits of this research will can potentially be used to compliment existing initiatives towards ending the First Nation Water Crisis, to increase community capacity, and to help build a collective voice for all communities affected by boil water and do not consume advisories.

If you have any questions please contact:

Rachel Arsenault, Laurentian University  
Email: [ry\\_arsenault@laurentian.ca](mailto:ry_arsenault@laurentian.ca)

Supervisor:  
Dr. Jorge Virchez  
[jvirchez@laurentian.ca](mailto:jvirchez@laurentian.ca)  
705-675-1151 ext. 3359

If you have any questions concerning the ethical conduct of this research, please contact:  
Research Ethics Office  
Laurentian University,

Sudbury Ontario  
Telephone: 705-675-1151 \* 3213 /\* 2436  
Toll Free: 1-800-461-4030  
Email: ethics@laurentian.ca

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I have read, and agree to participate in this study.

Name:

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Print Name

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Signature

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Date

I consent to be audio-recorded

[ ] initial

I would like to receive a summary of the research findings

[ ] initial

6.4 Interview Questions

APPENDIX C



**Questionnaire – For Indigenous youth ages 18 to 29, technicians, Elders and Leadership**

**PART 1: Name and / or Pseudo Name That You Would Like to Use**

All answers are voluntary. Please complete as much of the questionnaire as possible.

If you wish to be named in my research, then please provide it below:

First Name / Surname to be used in my research: \_\_\_\_\_

**OR**

Make up a name for yourself to be used in my research: \_\_\_\_\_

**PART 2: Water Infrastructure Questions and Recommendations**

- 1. Do you know which type of water/Wasterwater system is currently being used to treat water in your community?

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- 2. What are some of the challenges/issues that you faced with access to water in your community?

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Chi-Miigwech!