ENVIRONMENTAL HEALTH MANAGEMENT PRACTICES IN INDIGENOUS COMMUNITIES: A CASE STUDY WITH MISSISSAUGA FIRST NATION

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ABSTRACT

Environmental Health Management Practices in Indigenous Communities:
A Case Study with Mississauga First Nation

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Environmental factors play a critical role in the health and well-being of people worldwide and the distribution of the burden of disease associated with environmental causes is disproportionately high in marginalized populations, including First Nations. In this way, environmental health problems are as much social and political problems as environmental and must be addressed as such. In Canada, the division of responsibilities for environmental health, in combination with the jurisdictional complexities of health and environment regulation and service provision on-reserve creates a First Nations environmental health management system with significant gaps. This research set out to explore the question: What are the current strengths and challenges in First Nations environmental health policy and management? A qualitative exploratory design organized in two stages and employing key informant interviews, document review and a community case study was used to examine this topic. In the first stage a review of existing programs and policies applicable to Ontario First Nations and a series of interviews with key experts on the topic in the province were conducted. A conceptual framework of the core elements affecting environmental health management in First Nations communities was developed and then applied to a case study with Mississauga First Nation in Northern Ontario. The framework included five core elements: Environmental Health Jurisdiction and Responsibility; Participation in Environmental Health Decision-Making; Access to Environmental Health Resources, Communication of Environmental Health Information; and, Role and Influence of Leadership. The findings indicate that "internal"

issues, like community-based decision-making and support for environmental health initiatives seem to be least affected by the "external" issues such as access to federal funding. The "internal" issues were also shown to be critically important factors having impacts on environmental health management practices and policies in Mississauga First Nation. While there are countless barriers associated with the "external" factors that have significant impacts on environmental health management practices and policies, this research suggest that the "internal" factors can potentially be the most important factors in creating positive change in this area and as a result warrant further study in order to improve the state of environmental health issues in First Nations.

Keywords: First Nations, Environmental Health, Policy, Community, Framework

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TABLE OF CONTENTS

Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

AANDC: Aboriginal Affairs and Northern Development Canada

AECB: Atomic Energy Control Board

AFN: Assembly of First Nations

AHP: Aboriginal Health Policy

ATR: Additions to Reserve policy

BRDCCA: Blind River and District Concerned Citizens Association

CCP: Mississauga First Nation Comprehensive Community Plan

CEAA: Canadian Environmental Assessment Act

CEPA: Canadian Environmental Protection Act

CEBR: Canadian Environmental Bill of Rights

CHR: Community Health Representative

CIHR: Canadian Institutes of Health Research

COO: Chiefs of Ontario

EA: Environmental Assessment

EBR: Ontario Environmental Bill of Rights

EHO: Environmental Health Officer

EMA: Environmental Management Agreement

EPHP: First Nations Environmental Public Health Program

FNEHIN: First Nations Environmental Health Innovation Network

FNIHB: First Nations and Inuit Health Branch

FNLMA: First Nations Land Management Act

HPPA: Health Protection and Promotion Act

HTP: Health Transfer Policy

IK: Indigenous Knowledge

MFN: Mississauga First Nation

MOE: Ministry of the Environment, now the Ministry of the Environment and Climate Change

MOECC: Ministry of the Environment and Climate Change

MOHTLC: Ministry of Health and Long-term Care

NSTC: North Shore Tribal Council

OFNTSC: Ontario First Nations Technical Services Corporation

SARA: Species at Risk Act

TCP: Tribal Council Policy

Chapter 1: Introduction

Environmental factors play a critical role in the health and well-being of people worldwide. It has been estimated that one-quarter of the global disease burden is due to modifiable environmental factors (World Health Organization 2006). On one hand, this number is disheartening as it is an indication of the scale of the earth's environmental degradation. On the other hand, it is an indication of our potential to lessen the global burden of disease through effective environmental health management. The distribution of the burden of disease due to environmental factors is disproportionately high in marginalized populations(Lee 2002)and improving health through successful environmental health management, including the development of policies and programs, must be grounded in an understanding of this unequal distribution of disease. As Richmond and Ross (2009) explain, not all health policies and promotional strategies are effective for all populations and understanding the social, historical, and political contexts that shape current health inequalities is essential.

In Canada, environmental health matters in terms of regulations, policies, and services, are typically managed from one of two perspectives: "managing the health of the environment" or "managing the effects of the environment on health". The former perspective involves assessing and controlling environmental factors such as studying contaminant levels in air and soil and implementing air emissions regulations. The latter perspective involves preventing environmental hazards from affecting peoples' health, such as monitoring the safety of drinking water and raising public awareness of the risks of air pollution. These two types of activities are clearly connected and the trickle-down effect of the division of environment and health matters among federal and provincial ministries means, for the most part, that there are overlaps in the services received and resources accessed by mainstream Canadians. For First Nations People living on-reserve however, these existing divisions overlaid with the division of responsibility for on-reserve health and environment services among federal and provincial governments creates a system riddled with gaps rather than overlaps. Furthermore,

from a cultural perspective, the decisions regarding which environmental factors affect human health are not necessarily inclusive of Indigenous perspectives of health.

This research takes the perspective that environmental health management is an area where environmental protection and health dialogues meet. Examining environmental health management inclusively in this way is essential to better understanding the gaps created by the current federal and provincial systems and their artificial separation of health and environment. This research thus approaches environmental health management as both "the health of the environment" and "the effects of environment on health" by exploring the strengths and challenges of jurisdiction and responsibility for environmental health matters on-reserve, Indigenous participating in environmental health decision-making, and accessing environmental health resources in First Nations communities.

The health disparity between Indigenous Peoples and their non-Indigenous counterparts remains a critical global concern despite it being known to health leaders and decision-makers for many decades. Addressing this disparity is by no means a straightforward endeavour given the complexities of the biological, social, cultural, political, and environmental impacts on health outcomes. While health research, policy, and practice in Canada have evolved in recent years to include a set of social determinants of health (Mikkonen and Raphael 2010), what persists in the health dialogue is the exclusion of the connection between the impacts of social and environmental factors (Parkes 2011). Similarly, environmental protection dialogue tends to overlook the socially driven environmental changes that impact health (Parkes 2011). The Canadian health and environment research, policy development, and practice frameworks in general and those specific to Aboriginal Peoples do not adequately reflect the inextricable connections among people, place, and health. What is more, the concepts of health and environmental health embodied within these frameworks differ greatly from Indigenous concepts, which tend to focus on the connection between health and environment. It is known that access to healthy environments is decreasing and exposure to unhealthy environments is increasing, both negatively affecting the

health of Indigenous Peoples. It is also known that Indigenous communities, leaders, and organizations are developing strategies to revitalize the connections among people, place, and health.

Kreuter and DeRosa (2004) argue that environmental health problems are "...in reality a constellation of lined problems embedded in the fabric of the communities in which they occur..." (p. 441) and cannot effectively be resolved without the contribution of community-driven strategies. Similarly, there is a widespread demand that environmental health initiatives respond to and be directed by Indigenous Peoples in order to meet community needs and achieve sustainability (Robinson, Smyth et al. 2005, Assembly of First Nations 2006, Assembly of First Nations Environmental Stewardship Unit 2009). There is also a link between successful environmental management and self-government and sovereignty but environmental matters in many First Nations communities remain under federal management.

Kreuter and DeRosa argue further that researchers and practitioners need to recognize that solving complex public health problems is "...as much a social and political process as it is a scientific endeavour" (p. 441). Socio-economically disadvantaged and marginalized communities have greater risk of poor health from environmental stressors and decreased access to resources. Addressing these environmental (in)justices in communities means having cohesive strategies that address health, social, and economic factors simultaneously(Lee 2002).

Recognizing these gaps in understanding, and potentially significant and important gaps in how environmental health issues are managed, this research examined the issue of environmental health policy and management challenges and strengths in the current context of one Ontario First Nations community. **This research set out to explore the question: What are the current strengths and challenges in First Nations environmental health policy and management?** In order to do this, an exploration of the strengths and challenges in the following areas was pursued: environmental health management jurisdiction and responsibility,

Indigenous participation in environmental health management decision-making, and Indigenous access to environmental health management resources. The project uses literature review and semi-directive interviews in the development of a conceptual framework that is then applied in one case study looking at these issues with the Mississauga First Nation, a community located along the North Shore of Lake Huron within the Robinson-Huron Treaty area.

Background Literature and Theory

The public policies, laws, and regulations on which environmental health management is founded are designed to "... protect the health of the public from environmentally caused disease" (Friis 2007, p. 63). While these policies, laws, and regulations are based on the physical, biological, and chemical factors in the environment, the success of their implementation is greatly affected by a variety of social, political, and cultural factors. For example, the protection of human health is affected by the length of time it takes to implement environmental regulations, the political agendas of the government institutions, and how well a policy addresses the unique needs of vulnerable populations.

When examining environmental health management in an Indigenous context, it is necessary to consider Indigenous concepts of health and environmental health to understand the theoretical foundations on which most health and environmental health policies affecting Indigenous Peoples are, or should be based. This literature review starts with that position. Second, the connections between Indigenous peoples' health, environmental effects, and various social and political factors are then examined to better understand the intricacies of these interrelationships and their current status. Third, an overview of legislated environmental rights specific to Canadians and to Aboriginal Peoples in Canada is presented to provide a basis on which to compare the realities of how these rights are being upheld.

Definitions of Health and Environmental health

Health

Just as the state of health is multidimensional and is a product of an exchange among a variety of biological, environmental, and social factors, the concept of health is a product of the interplay between cultural worldviews and societal expectations and norms. It is important to acknowledge however the basic commonality among all medical and healing systems, and that is that they are "built upon coherent, rational understandings of the universe and people's place within it" (Waldram, Herring et al. 2006, p. 129). Indigenous concepts of health are typically holistic in nature and tend to be defined as balance and harmony found within one's whole self (VanLeeuwen, Walter-Toews et al. 1999, Hunter, Logan et al. 2006), with the natural environment, family and community (Borré 1994, Labun and Emblen 2007), and with the spiritual world (Borré 1994, Fletcher and Kirmayer 1997, Waldram, Herring et al. 2006). There is also a common theme of renewal, strengthening of physical, cultural, spiritual health and identity through being 'on the land' (Johnston, Jacups et al. 2007, Panelli and Tipa 2007), through the use of water as a 'life force' (Blackstock 2001, Jackson, Storrs et al. 2005), through hunting and gathering activities (Langton, Rhea et al. 2005, Samson and Pretty 2005),through the consumption of traditional foods (Conti 2006, Hopkins, Kwachka et al. 2007, Parlee, O'Neil et al. 2007), and through the participation in ceremony (Wilson 2003).

Health as an internal balance of mental, spiritual, and physical realms and is achieved through relationships with physical and social environments (Labun and Emblen 2007). Similarly, health has been defined as being spiritual, rooted in culture and "... is based on peaceful, sustainable relationships with other peoples including family, community, Nation, the natural world, and spiritual beings" (Arquette, Cole et al. 2002, p. 262). Dodgson and Struthers (2005) explain how Ojibwe, Cree, Winnebago, and Lakota women defined health as "the relationships among self, others, and the environment" (p. 341). In Nunavik,

saimmatsianiq refers to a 'sense of joy in life' that is a component of the physical and social health that individuals have with themselves as well as in relationships with others (Fletcher and Kirmayer 1997).

Health is also linked to the fulfillment of cultural, community, and familial roles and responsibilities. For example, in New Zealand, Maori elders consider health and wellbeing to be achieved through the participation in the Maori world and are seen as an "interaction between personal health perspectives and participation in certain key elements of Maori society e.g. land, language, marae (tribal gathering spaces)" (Durie 2004, p. 1142). This concept is also seen among Clyde River Inuit where personal health depends in part on the "fulfillment of the rituals of hunting and food sharing… [health] may best be understood as a consequence of the social relations of hunting and food sharing" (Borré 1994, p. 10).

Religion and spirituality are an integral part of health and healing for many Indigenous peoples; they are ways to maintain harmony within oneself, nature, people, and the supernatural (Oakes, Riewe et al. 2000). For example:

> Everyone needs to have a faith. Whether that spirituality is from a First Nations background or whether it is from a Christian, Catholic, or whatever kind of a background. Because it gives you a reason for being healthy. It gives them a reason to carry on. Or for letting go even. (Young woman as cited in Labun and Emblen 2007, p. 212)

Food is a key component in achieving and maintaining health as well as preventing and curing illness in many Indigenous models of health; when examining traditional plants and foods, Kuhnlein and Turner (1991) remark how Indigenous Peoples do not often specify between 'sustenance' and 'medicine' the way Western science commonly does. Health is achieved and restored not only through the direct use and consumption of foods, but also in performing traditional social acts and upholding cultural values in regards to traditional food harvests. This belief is expressed in the following remark: "Keeping our connection to our land by hunting,

fishing, gathering, planting, drying, and preparing our traditional foods will strengthen our people and sustain our traditional food system into the next generation" (Hugh baker, Hidatsa, December 2003, as cited in Conti 2006, p. 238).

The Dene community of LutselK'e define 'health' as the physical, emotional, mental, and spiritual health attributed to the 'Dene way of life' including: the power and capacity to self-govern community affairs as well as lands and resources; the individual, family, and community ability to heal and address the challenges and obstacles of the past, present, and future; and, cultural preservation of the language, land, and the associated traditional ecological knowledge (Parlee, O'Neil et al. 2007).

When looking specifically at the importance of the physical environment for health, the connection that Indigenous Peoples have with their traditional lands must be acknowledged. The Sto:lo Coast Salish for example, find balance and continuity in visiting physical landmarks, which are deeply connected to restoring health in times of illness (Labun and Emblen 2007). A study exploring Yup'ik Eskimos' concepts of wellness revealed the importance of living traditional lifestyles, creating relationships between communities and the land, and finding creative ways to address extreme cultural change (Wolsko, Lardon et al. 2006).

These Indigenous definitions of health and well-being generally focus on collective and interdependent values while Western definitions of health typically privilege autonomy and individualist qualities (Panelli and Tipa 2007, p. 446). The World Health Organization (WHO) defines health in the WHO Constitution as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, 1946). This definition has not been amended in the WHO Constitution since 1948 and is frequently criticized; it is imprecise, it defines an ideal state that most people do not attain, and it does not contain any measurable variables (Bok 2004). There are many definitions in the literature that attempt to address the criticisms of the WHO definition but most do not address the connection among people, place, and health as seen in Indigenous

definitions. For example, Bircher (2005) defines health as "... a dynamic state of wellbeing characterized by a physical, mental and social potential, which satisfies the demands of a life commensurate with age, culture, and personal responsibility" (Bircher 2005, p. 1).

Environmental Health

Indigenous Peoples have been stewards of the land, water, and air for millennia (Nettleton, Stephens et al. 2007, Stephens, Parkes et al. 2007, Union of Ontario Indians Anishinabek Health Secretariat 2009)and natural environments including animals, plants, and forests are seen as the foundations for the continuity of Indigenous societies (Schwartzman and Zimmerman 2005). Indigenous approaches to environmental health are typically holistic in nature and include the welfare of all living things and physical, mental, emotional, social and spiritual aspects of health. There are many Indigenous definitions of environmental health but it is clear that within the diversity of Indigenous cultures there exist common beliefs about the strong relationship between human health and that of the physical environment (Stephens, Parkes et al. 2007). The Assembly of First Nations' Environmental Stewardship Unit defines environmental health as "...the branch of public health that focuses on all aspects of the natural and constructed environment affecting human health. Risks include air pollution, contaminants in water and soil, tobacco smoke, pesticides, radiation, and noise" (Assembly of First Nations n.d.(a), p.1). Similarly, the First Nations Environmental Health Innovation Network defines environmental health as "the relationship between our well-being and the indoor and outdoor environments in which we live. Environmental health is part of public health and focuses on preventing disease and creating health-supportive environments" (First Nations Environmental Health Innovative Network n.d., p. 1). Many social and cultural factors have also been recognized to affect environmental health. For example, the revitalization of Indigenous cultures and languages has positive effects not only on identity and self-esteem (Odjig-White 1996) but also makes the relationships between land and people stronger, promoting better care of the environment, in turn

creating healthier living conditions for people (FHEHIN, 2008) and ensuring the function and integrity of life sustaining ecosystems (Kimmerer and Lake 2001).

Environmental health is an essential part of the overall health of First Nations, as there is a continued reliance on the environment for their physical, social, cultural, and economic survival and well-being (Assembly of First Nations Environmental Stewardship Unit 2009). This is highlighted in the major similarities between Indigenous definitions of health and environmental health, both emphasizing the importance of the relationship between the physical environment and human health. The We are the Land Declaration 2010 that was developed based on the nuclear energy sessions hosted by the Chiefs of Ontario in 2009 perfectly exemplifies this relationship:

> "We, the Anishinaabek, the Mushkegowuk, and the Onkwehonwe, are the land. Our ancestors were the land, we are the land and our youth and future generations will be the land... What we do to the land – we do to ourselves, and to our future generations.....We draw from sacred law, traditional law, customary laws – we need to protect the lands, the waters and all living things for future generations." We are the Land Declaration 2010

In contrast, non-Indigenous definitions of environmental health are markedly different from non-Indigenous definitions of health. For example, the WHO definition of environmental health is:

> Environmental health addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments. This definition excludes behaviour not related to environment, as well as behaviour related to the social and cultural environment, and genetics. (WHO, 2009)

When comparing this to the WHO Constitution definition of health ("a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." (WHO, 1946)), it is seen that the

similarities between the components of each definition are minimal, further highlighting the divide between people, place, and health.

Health Disparities and Environmental Implications

In Canada, as on a global scale, it has been demonstrated that health status as measured by a number of standard indicators, such as life expectancy and rates of disease, is consistently poorer for Indigenous Peoples than non-Indigenous Peoples living in the same country (Waldram, Herring et al. 2006, Stephens, Parkes et al. 2007, Booth and Muir 2011b). Waldram, Herring et al. argue that Aboriginal Peoples in Canada experience the type of health problems associated closely with poverty, a consequence of the process of colonization, slotting them into a particular position within Canada's social system. This mirrors the health situation of Indigenous Peoples in other countries, where poor health is exacerbated by social and cultural marginalization (Stephens, Porter et al. 2006). The current state of Aboriginal Peoples' health is described by Waldram, Herring et al. in the context of a 'health transition' or 'epidemiological transition' from communicable diseases to so-called chronic non-communicable diseases such as cancer, diabetes, heart disease, and obesity, associated with a "westernization" of lifestyles (Conti 2006). It is important to note however that communicable and infectious diseases have not been eradicated and diseases such as gastro-enteritis, HIV and AIDS pose threats to Aboriginal communities. Waldram, Herring et al. also discuss the emergence of the new epidemic of injuries, both intentional and unintentional, including suicide, violence, and traffic accidents as well as alcohol and drug abuse.

Internationally, Indigenous Peoples are facing many of the same health issues as Indigenous Peoples in Canada (Stephens, Porter et al. 2006). Still, there is much diversity among countries and communities, in Africa, for example, diseases such as malaria, skin infections, parasitic infestation, HIV/AIDS, and alcohol and domestic violence are major health issues (Ohenjo, Willis et al. 2006). Major causes of death for Maori in New Zealand

include respiratory disease, cardiovascular disease, cancer, and injury (Anderson, Crengle et al. 2006). In Hawai'i, the Kanaka Maoli suffer disproportionate mortality rates from heart disease, cancer, and diabetes (Anderson, Crengle et al. 2006). In Latin America and the Caribbean, there is an increase in 'diseases of acculturation', described by Montenegro and Stephens (2006) to be health outcomes related to social environments such as diabetes, obesity, hypertension, heart disease, and alcohol abuse.

The remaining hunter-gatherer societies have been particularly sensitive to global industrialization which has resulted in disease, loss of ancestral lands, marginalization, and poverty (Bramley, Hebert et al. 2005, Johnston, Jacups et al. 2007). Looking specifically at First Nations in Canada, over the last century, First Nations Elders have witnessed a marked decrease in the health of the lands and their people, including higher rates of disease and scarce or inaccessible medicinal plants (Blackstock 2001, Mascarenhas 2007, First Nations Environmental Health Innovation Network 2008).

Because many First Nations practice traditional lifestyles, including the use of traditional foods, the effects of environmental degradation are felt more severely than by those who do not have this connection to the land (Assembly of First Nations 2001, National Collaborating Centre for Aboriginal Health and BC Leadership Chair in Aboriginal Environmental Health 2007, Parlee, O'Neil et al. 2007). Resource development in mining, oil and gas, and hydroelectric projects are an increasing concern due to the negative environmental consequences of such activities; some members of the LutselK'e Dene community for example believe that there is a link between cancer and the environmental effects of hydro and mining development (Parlee, O'Neil et al. 2007). What is more, socially and economically disadvantaged communities have a greater risk of exposure to environmental hazards which play an important role in creating health disparities (Lee 2002, Schulz and Northridge 2004). With exceptions such as Mander and Tauli-Corpuz (2006) and Simpson (2008), the majority of health research of Indigenous issues has not moved beyond focusing on quantifying rates of disease and

mortality while the underlying causes of inequality, such as environmental dispossession (loss or reduction of land use), have generally not been examined (Richmond and Ross 2009).

The consequences of environmental changes due to activities such as resource development in Indigenous communities are multifaceted and difficult to understand (Parlee, O'Neil et al. 2007). It is known however that concerns of many Indigenous communities regarding environmental preservation and the maintenance of Indigenous knowledge is rooted in the need to live on ancestral lands and to maintain local food security and community autonomy; expulsion from ancestral lands, for whatever reason, severely impacts the lives of Indigenous communities by depriving them of their traditional livelihoods (Langton, Rhea et al. 2005) and of identity, a foundation of how one sees oneself and the world(Sylvain 2002).

This research recognizes that exposure to environmental health hazards is a complex process that is affected by factors that are internal and external to individuals, communities, and nations. As a whole, environmental health issues that have currently been identified as main concerns to Indigenous People in Canada include drinking water safety, chemical contaminants in traditional food supply, contamination of soil and water, indoor air quality, household mold(Chan 2005), and the potential long-term impacts of climate change (Assembly of First Nations Environmental Stewardship Unit 2009). The Union of Ontario Indians Anishinabek Health Secretariat also published a document examining the environmental factors of main concern for First Nations children which includes tobacco use, pesticide and herbicide use, household chemicals, food source contamination, soil contamination, waste management, housing, heating sources, emissions from combustion, water contamination, breastfeeding, and fishing (Union of Ontario Indians Anishinabek Health Secretariat 2009).

In 2013, the Assembly of First Nations released a report on the national biomonitoring study, which was a collaboration among the AFN, FNIHB, and First Nations communities across Canada (Assembly of First

Nations 2013). The report provided baseline about 97 contaminants found in First Nations living on-reserve in Canada. The results indicated that traces of environmental chemicals were found in both First Nations and other Canadians populations and that for the majority of the chemicals, there are no current guidelines to indicate at what level adverse health effects may occur. (Assembly of First Nations 2013).

Health Disparities and Social Implications

It is widely acknowledged that minority groups and socio-economically disadvantaged communities are exposed to a greater level of environmental health risks (Fan 2006a, Corburn 2007). In Canada, First Nations are considered to be vulnerable populations where exposure to hazards related to poverty, poor nutrition, lower education levels, and tobacco use are more likely to cause poor health (Assembly of First Nations Environmental Stewardship Unit 2009). As Mascarenhas (2007) explains that in many ways, "First Nations reserves represent the extreme cultural-spatial case of environmental and social inequality. Often located near or downstream of major exogenous waste streams, First Nations communities share in a disproportionate amount of environmental and health risks under neoliberal environmental governance" (p. 574). In their study on environmental health disparities, Gee and Payne-Sturges (2004) argue that to eliminate the health disparities between advantaged and disadvantaged groups, it is important to first eliminate the gaps in community advantages such as neighbourhood resources and social stressors. This means that "Environmental justice must be the starting point for achieving healthy people, homes, and communities" (Institute of Medicine 2001, as cited in Lee 2002, p. 142).

In the United States[1], the Environmental Protection Act (EPA) defines environmental justice as:

[1] Canada does not currently include environmental justice into its policies. Assembly of First Nations Environmental Stewardship Unit (2009). Environmental Health and First Nations Women: Research Paper, Assembly of First Nations.

> 'Fair treatment means no population, due to policy or economic disempowerment, is forced to bear a disproportionate share of the negative human health or environmental impacts of pollution or environmental impacts of pollution or environmental consequences resulting from industrial, municipal, and commercial operations…' (Institute of Medicine Committee on Environmental Justice 1999 as cited in Duderstadt 2006, p 412).

Indigenous leaders also recognize that environmental justice is not limited to effects of environmental conditions on people but also includes the insufficient resources provided by government, continuously weakening the ability of Indigenous leaders to build capacity in a field that is increasingly dominated by professionals and experts[2] (Mascarenhas 2007).

A subset of the resource issue mentioned above is a chronic and consistent lack of environmental and health data to support environmental health research and policy development. There is a general consensus among researchers and Aboriginal authorities that there is a lack of quality baseline health data for Aboriginal Peoples in Canada (Assembly of First Nations Environmental Stewardship Unit 2009, Union of Ontario Indians Anishinabek Health Secretariat 2009, National Collaborating Centre for Aboriginal Health 2010, Chiefs of Ontario 2011). Reading and Wien (2009) suggest that the lack of quality health data for Aboriginal Peoples can be attributed to its fragmentation for reasons such as: not all Aboriginal groups are included in individual surveys; data collected from different authorities use varying tools; there is a lack of accurate and complete identification of Aboriginal persons; and, a lack of culturally relevant health measures. Similarly, one of the main challenges for First Nations in environmental health is to acquire the needed quantities of baseline environmental monitoring and health data (Assembly of First Nations Environmental Stewardship Unit 2008).

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[2]Mascarenhas explains how neo-liberal reform in Ontario severely impaired provincial ministries and local agencies' ability to monitor and regulate the environment by reducing monitoring and reporting requirements for industry. Recognizing environmental harm is now more difficult, especially for First Nations who do not have the resources for technologies and expertise. Mascarenhas, M. (2007). "Where the Waters Divide: First Nations, Tainted Water and Environmental Justice in Canada." Local Environment **12**(6): 565-577.

The Declaration of the United Nations Conference on the Human Environment, also known as the Stockholm Declaration was adopted in 1972. It was the first document in international law to recognize the right to a healthy environment. The first principle of the Stockholm Declaration states: "Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations." (Stockholm Declaration 1972). There is a current proliferation of international law agreements for securing environmental rights and many national constitutions recognize the right to a healthy environment in some form (Boyd 2006). The right to a healthy environment is not explicitly recognized by Canada's *Charter of Rights and Freedoms* but, s. 7 of the *Charter* does state that: "Everyone has the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice". Boyd (2006) argues that:

> "... by virtue of its references to the right to life and the right to security of the person, [it] incorporates an **implicit** right to a healthy environment. In addition, Canada signed the *Hague Declaration on the Environment* in 1989, along with 23 other nations. The *Hague Declaration* recognizes that all individuals have: "the right to live in dignity in a viable global environment, and the consequent duty of the community of nations vis-à-vis present and future generations to do all that can be done to preserve the quality of the environment". (para.5)

Regardless, unlike most industrialized nations, Canada does not have at this time a national health and environment strategy or a coherent legislative and regulatory system to protect its citizens from environmental threats (Boyd 2007).

In the Yukon, Northwest Territories, Quebec, and Ontario environmental rights are recognized, but even within these provincial charters there are many limitations. Looking specifically at Ontario, the Ontario Environmental Bill of Rights (EBR) was enacted in 1993 with the purposes to:

> "(a) to protect, conserve and, where reasonable, restore the integrity of the environment by the means provided in this Act; (b) to provide sustainability of the environment by the means provided in this Act;

> and (c) to protect the right to a healthful environment by the means provided in this Act". (Ontario Environmental Bill of Rights 1993 c. 28, s.2 (1))

At the time of its legislative process, the EBR was considered a landmark statute that would do much to improve Ontario's environmental protection (Lindgren 2011). The EBR has been very successful at implementing and facilitating public participation in environmental decision making, but its success in meeting its purposes to "provide sustainability of the environment" and to "protect the right to a healthful environmental" is largely debatable (Lindgren 2011). One of the major critiques of the EBR is the fact that while its preamble states that the public has the right to a healthful environment, this right is not entrenched within the EBR and the preamble is not legally enforceable (Lindgren 2011).

In 2009, Bill C-469 was introduced to the House of Commons as a private members' bill by Member of Parliament (MP) Linda Duncan and the enactment of this Bill would institute a federal *Canadian Environmental Bill of Rights* (CEBR). The CEBR contains, in its preamble, that "Canadians have an individual and collective right to a healthy and ecologically balanced environment." but unlike the EBR, the CEBR creates actual environmental rights, entrenches the public trust doctrine, and makes it easier for citizens to use the court system to rectify environmental matters (Lindgren 2011). For example, Section 6 states that one of its legislative purposes is to "safeguard the right of present and future generations of Canadians to a "a right to a healthy and ecologically balanced environment"" (Bill C- 469). Similarly, Section 9 states that "all Canadian residents have a right to a healthy and ecologically balanced environment" and "the Government of Canada has an obligation, within its jurisdiction, to protect this public environmental right" (Bill C- 469). Currently, the Bill is as it was in 2009 and remains a proposed bill.

Since 1982, Aboriginal Rights have been recognized and affirmed as constitutionally protected rights under Section 35(1) of Canada's Constitution Act, 1982(Government of Ontario 2007). As Borrows

(1997/1998) argues, the language originally used in the Act did not make clear what Aboriginal Rights were. Eventually, the Supreme Court of Canada decided that the test for identifying Aboriginal Rights must be based on identifying the practices, traditions, and customs that were central to the Aboriginal traditions and societies before contact with the Europeans (Borrows). The misstep here however is that what was central to Aboriginal Peoples in the past does not necessarily translate into what is central to the survival of Aboriginal Peoples today (Borrows). In relation to environmental health, some legal experts such as the Canadian Environmental Law Association (CELA) believe that environmental rights such as the right to clean water and the right to the functions of the water system might be protected under Section 35 of the Constitution Act, 1982 depending on how the Court characterized the right (McClenaghan (Canadian Environmental Law Association) 2013).

As described by Alcantara (2008), two critical decisions made by the Supreme Court of Canada in 2004 had important implications for Aboriginal Rights. The first was *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73, [2004] 3 S.C.R. 511, and the second was *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)*, 2004 SCC 74, [2004] 3 S.C.R. 550. Alcantara explains that in the case of *Taku River*, the court ruled that:

> The duty to consult arises when a Crown actor has knowledge, real or constructive, of the potential existence of Aboriginal rights or title and contemplates conduct that might adversely affect them. This in turn may lead to a duty to change government plans or policy to accommodate Aboriginal concerns. Responsiveness is a key requirement of both consultation and accommodation (para. 25). (p. 357)

In the *Haida Nation* case, the court ruled that the government's duty to consult should be "'proportionate to a preliminary assessment of the strength of the case supporting the existence of the right or title, and to the seriousness of the potentially adverse effect upon the right or title claimed'' (para. 39)" (p.357). Alcantara warns however that consultation and accommodation does not translate into a duty to reach agreement with an Aboriginal group. One of the major challenges Indigenous communities are currently facing is to reach the

implementation stage of these legal principles so that Aboriginal and Treaty Rights become "tangibly expressed through measurable social, cultural and economic benefits within First Nations societies" (Morellato 2008, Intro para 4).

Goals

The first goal was to develop a conceptual framework of the key elements affecting environmental health management in First Nations communities in Ontario. The second goal was to apply the conceptual framework to a case study with the Mississauga First Nation to facilitate what could be learned from the case about environmental health management and to ground truth the framework as a tool to examine these issues in a First Nations community. The third goal was to use the framework to illustrate how the case's environmental health management approaches might be strengthened.

Overview of dissertation structure

The thesis is presented in 5 Chapters. Chapter 1 provides the rationale for the study and presents an examination of the connection between people, place, and health as described in Indigenous and non-Indigenous definitions of health and environmental health. In Chapter 2 the overall research design is presented along with the methods for conceptual framework development and the case study used in this research as well as a discussion of the study's ethical considerations, and the researcher's positionality. Chapter 3 presents the conceptual framework developed for the thesis. It presents separate analyses of the literature review and in-depth interview data of the realities of the jurisdiction and responsibility for environmental health management on-reserve, the participation of First Nations leaders in environmental health decision-making, and the access to environmental health management resources by First Nations communities. This framework was then applied to

a single community case study to examine the reality of environmental health management in one First Nation in Ontario. Chapter 4 presents the findings of the case study with the Mississauga First Nation examining the strengths, challenges, and strategies for environmental health management in the community. Chapter 5 then provides a discussion of the framework development and case study findings, situates these findings in the larger literature on Indigenous environmental health and then finally, presents a general conclusion about the key findings from the research, and provides recommendations for action and future research.

Chapter Two: Methods

Introduction

This research used a qualitative exploratory design to investigate the realities of environmental health management in Ontario First Nations. A grounded theory approach was used to develop a conceptual framework which was then used to guide the case study process in one Ontario First Nation. This chapter presents the ethical considerations, positionality of the researcher, research design, data collection and analysis, and how issues of validity, reliability, and generalizability were considered and addressed.

Ethical Considerations

Ethical space

Ethical space refers to the 'in-between' space where two spheres of knowledge with distinct cultures come together to form a neutral zone of dialogue (Ermine, Sinclair et al. 2004). This neutral zone can be used to bridge worldviews and knowledge systems in an ethical and moral manner that is inclusive of the entire research process. One of the necessities of creating this space is its affirmation and that it "requires dialogue about intentions, values, and assumptions of the entities toward the research process." (Ermine, Sinclair et al. 2004, p. 21). The idea for this research was originally initiated by Garden River First Nation with the support of the North Shore Tribal Council. When the original case communities had to withdraw, a research agreement (Appendix A) was obtained with Mississauga First Nation's Chief and Council that clearly outlines the conditions and benefits of the research. I believe that the ongoing dialogue about intentions, values, and

assumptions created a space of understanding where participants felt comfortable discussing and sharing their knowledge and experiences.

Research Protocols/Agreements

The research protocols that have been followed include: Trent University's Indigenous Studies PhD Ethics Guidelines (Trent University 2004), Trent University's Protocol for Research with Human Participants (Trent University 2006), the Tri-Council policy statement (specifically section 6 for research involving Aboriginal Peoples) (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada et al. 2005), Indigenous Peoples Health Research Centre's (IPHRC) The Ethics of Research Involving Aboriginal Peoples (Ermine, Sinclair et al. 2004), and the Canadian Institutes of Health Research's Guidelines for Health Research Involving Aboriginal People (2007) (CIHR 2007). Informed consent forms (Appendix B) were signed by each participant and a research agreement with Mississauga First Nation was also obtained for case study purposes.

Benefits and Empowerment

As described by the IPHRC's recommendations, the empowerment and benefiting of Indigenous Peoples must be a main focus of any research with which Indigenous Peoples are involved. This includes such outcomes as community education and development, capacity building, knowledge transfer, and ensuring cultural vitality (Ermine, Sinclair et al. 2004). According to the CIHR (2007) guidelines, whatever the benefits, they must be interpreted by the communities themselves. The research agreement with the case study community states that benefits will include: having access to information on the experiences and strategies of other communities that could potentially help improve how environmental health issues are addressed and how services are provided; be provided with recommendations on how to implement changes to improve environmental health management;

and be provided with a list of relevant literature. The lessons learned from the research will also be communicated to environment and health research and policy communities. Informing these research and policy communities on the strengths, challenges, and strategies of environmental health management in First Nations communities has the potential to influence the future use and implementation of culturally appropriate and community-specific environmental health policies.

Protection of Intellectual Property

Under Trent University's regulations, student researchers are the copyright holders of the dissertations (Trent University 2004). This means that all intellectual property that is shared during the research must be protected and respected. To do this, the research participants and communities were given the opportunity to review the proposed uses of this shared knowledge and information in the dissertation prior to publication. The case study research agreement states that the information collected was to be shared, distributed, and stored in these agreed ways: interviews were digitally recorded and transcribed by the researcher; all data was stored on a password protected laptop installed with True-Crypt encryption software; and, a final report was distributed after approval from the community members. All efforts were made to incorporate and address local concerns and recommendations at each step of the project. At the end of the project, the researcher is to participate in community meetings to discuss the results of the analysis with community members.

Situating the Researcher

My motivation for doing this research stems from my passion for better health, my desire to understand why health is unequally distributed, and to learn what can be done about it. I have also had a life-long interest in Indigenous cultures and in a way, this dissertation research represents the overlap my passions and interests. I

have approached this research with the idea that knowledge is based on culture, time, and place (Meyer 2001) and that all of our senses are culturally shaped (Meyer 2005). As a non-Indigenous person I have engaged in a relationship with Indigenous culture and with this opportunity, I held optimistically to the idea that "one does not have to be a member of a culture to understand what culture means or to interpret a culture in a meaningful way" (Mihesuah 1998, p.98).

It was my goal to create research where, as Lewis Cardinal explains, everyone feels plugged in like they are a part of everything (Cardinal 2001). There was no avoiding the fact however, that the ultimate academic outcome of this research was to produce a written dissertation, a product that inevitably creates issues of power and language. I am conscious of the idea that "language is a discourse of power, in that it provides the terms and the structures by which individuals have a world… it implies certain assumptions about the world, a certain history, a certain way of seeing" (Ashcroft, Griffiths et al. 2006, p. 72). Knowing this, I made an utmost effort to articulate the shared knowledge and my thoughts in a respectful and appropriate manner and to present this research as a product of all participants, including myself, coming together as a 'collective mind'.

I am aware of the misrepresentation of Indigenous Knowledge (IK) in environment-related literature by way of omission of certain aspects, particularly the spiritual (Simpson 2004). From the outset, I was open to the prospect of seeking the physical, mental, emotional, and spiritual dimensions of IK of both contemporary and traditional worldviews and practices related to this research. By happenstance however, traditional IK played a minimal role in the dissertation and in the end-products sought by the research communities. Keeping in mind that IK is dynamic and transformative with a flux between traditional and contemporary knowledges, it was not my intention to exclude the knowledge shared by participants from the IK category, I just did not feel it was my role to classify it as such. Regardless of labels, I treated all of knowledge shared by participants with the same care, respect, importance, and protection as is required when privileged with knowledge from a recognized IK holder.

When discussing my influence on data collection, analysis, and interpretation, I have been attentive to what Stake (1995) said: “There is much art and much intuitive processing to the search for meaning” (p. 72) and that “The logical path to assertions often is apparent neither to reader nor to researchers... for assertions we draw from understandings deep within us, understandings whose derivation may be some hidden mix of personal experience, scholarship, assertions of other researchers” (p. 12). It is impossible to measure how I have shaped this research and how it would be different had it been done by someone else. What I can be certain of is that I have tried to be mindful of whom I am and how my life experiences have affected the decisions I have made throughout. I have been committed to having an open mind and pursuing avenues of thought that are outside of the comfort of past experiences.

Research Design

The study took an exploratory qualitative approach organized in two sequential stages (Figure 1). Stage 1 of the project was the ‘theoretical’ stage in which the conceptual framework was constructed based on an analysis of the status of environmental health management in Indigenous communities in Canada and specifically Ontario. The goals of this stage were to learn how environmental health is defined by different people and organizations, to examine the main factors affecting environmental health management, and to examine the strengths and challenges of these factors. Stage 2 of the project was the ‘grounded’ stage in which case study research was conducted with Mississauga First Nation in Northern Ontario. The goal of this stage was to apply the conceptual framework and research questions developed in Stage 1 to the case study to: first, determine how the experiences of the case study communities fit within the framework; and second, to use the framework to illustrate how the communities’ environmental health management approaches might be strengthened. This included using the framework to collect and analyze the case study data, evaluate the

strengths and weaknesses of the case, make recommendations for improvements to current challenges, and to use the case study to further develop and adapt the conceptual framework.

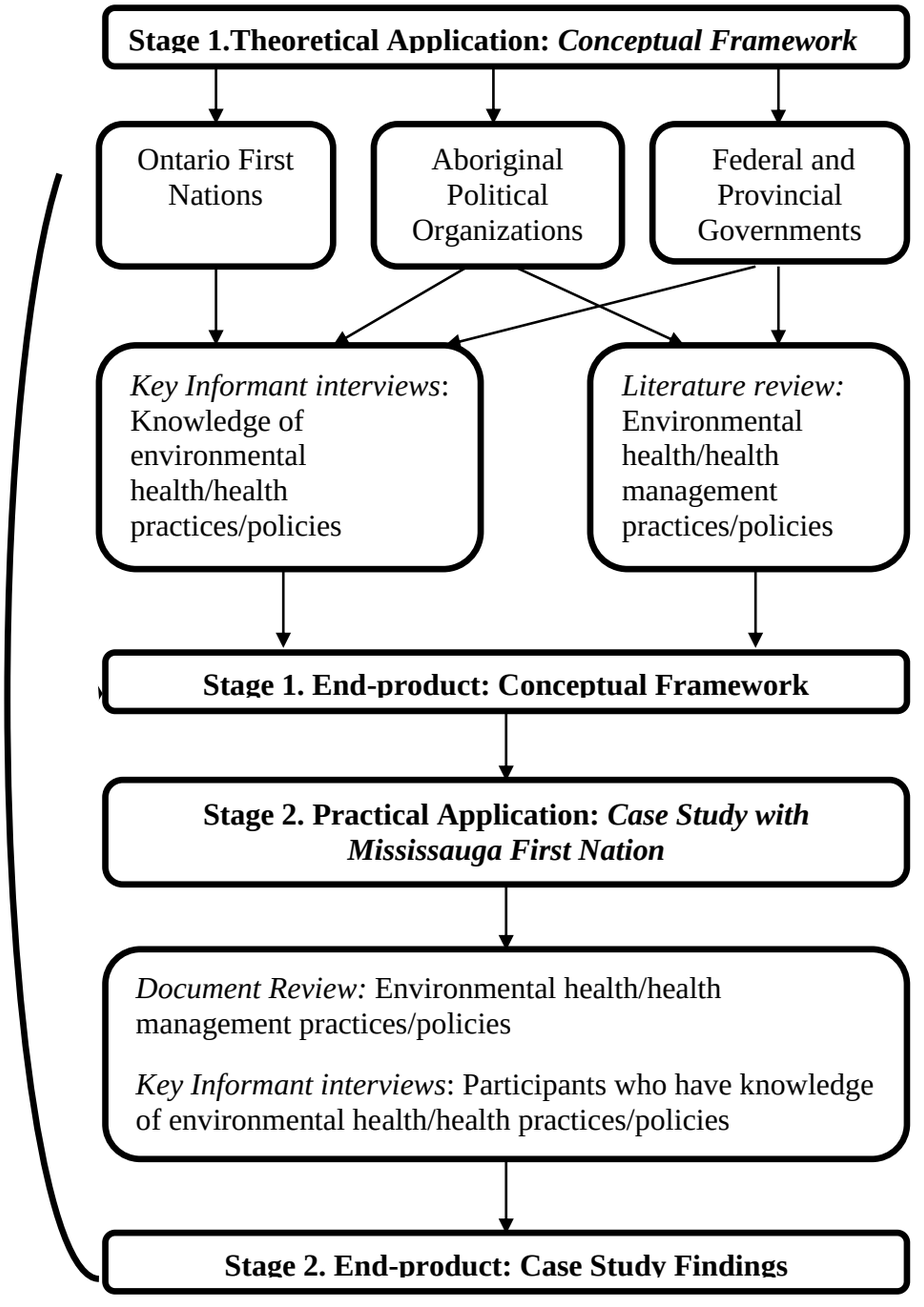

Figure 1. Flow Diagram of Research Design

Stage 1 Methods: Literature Review and Conceptual Framework Development

In Stage 1 a conceptual and analytical framework was developed of the core elements affecting environmental health management in Ontario First Nations. The framework was developed using a grounded theory approach, with its simultaneous data collection and analysis allowing for the development and reshaping of the framework as the research progressed (Kirby, Greaves et al. 2006). The framework development used key informant interviews and literature review as its data collection methods as described below. The framework was developed to direct the collection and analysis of case study data presented in Stage 2 (Chapter 4).

Grounded Theory

Grounded theory first emerged from the field of sociology in 1967 by Barney G. Glaser and Anselm L. Strauss. Strauss and Corbin (1990) state that "the grounded theory approach is a method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon." (p. 24). With this method, concepts and relationships among the data are both generated and tested from the beginning to the end of the research. Charmaz (2006) outlines several components of Glaser and Strauss's grounded theory:

- Simultaneous involvement in data collection and analysis
- Constructing analytic codes and categories from data, not from preconceived logically deduced hypotheses
- Using the constant comparative methods, which involves making comparisons during each stage of the analysis
- Advancing theory development during each step of data collection and analysis
- Memo-writing to elaborate categories, specify their properties, define relationships between categories, and identify gaps

- Sampling aimed toward theory construction, not for population representativeness
- Conducting the literature review *after* developing an independent analysis. (p. 5-6)

As Strauss and Corbin further explain, although grounded theory emerged from the discipline of sociology, because it is driven by procedures, its use is not bound to any one discipline. While it is not a common approach to studying environment and health issues among Indigenous Peoples, there are examples in the literature of its successful use in such studies. One of the studies that has helped to inform this research's methods is a study examining conceptions of wellness among the Yup'ik of the Yukon-Kuskokwim Delta by Wolsko, Lardon et al. (2006). In this study, focus groups were conducted with Yup'ik adults from the Yukon-Kuskokwim Delta region of Alaska. The researchers used 'open' and 'axial' strategies of grounded theory to analyze the data where "continual comparison of the data with an emerging conceptual framework of plausible relationships between themes of health and wellness emphasized by the participants." (p. 352).

Because grounded theory is a data driven approach, it helps the researcher "to tease out the complexities of the phenomena directly from the stakeholders, and helps produce localized theoretical explanations…" (Phillips 2005, p. 105). Guided by studies such as that of Wolsko, Lardon et al. as described above, using a grounded theory approach was an appropriate choice for developing a theory from the perspectives of First Nations communities as to why their environmental health issues are being handled as they are, what challenges and strengths exist in the current approaches, and what positive changes are being made.

Data collection methods

Table 1: Data Collection Breakdown for Conceptual Framework Development

	Groups Represented by Participant or Documentation Reviewed		
	Ontario First Nations Communities	**Aboriginal Political Organizations**	**Federal and Provincial Government Departments**
Document review	Yes	Yes	Yes
Key information semi-structured interviews	Yes	Yes	Yes
Verification of Document Data	No	No	Yes

Semi-structured key-informant interviews

Semi-structured interviews as described by Kirby, Greaves, et al. (2006) where there is variation in the order and format of the questions, were conducted with representatives from First Nations communities, Aboriginal Political Organizations, and federal and provincial governments with knowledge or expertise in health and environment management. Following the grounded theory approach, the simultaneous interviewing and analysis meant that the interview questions became increasingly focused by using the analysis of each interview to guide question development for successive interviews. As Charmaz(2006) explains, in grounded theory interviewing, "we narrow the range of interview topics to gather specific data for developing our theoretical frameworks as we proceed with conducting the interviews." (p.29). The semi-structured interview, which "suggests a certain degree of standardization of interview questions, and a certain degree of openness of response by the interviewer" (Wengraf 2001, p.62) was helpful in asking specific questions while allowing certain aspects of the interview to follow the directive of the participants.

Examples of semi-structured type interviews in the environmental health literature include a study by Adamowicz, Boxall et al. (2002) where informal in-person interviews were used to assess impacts of Canadian

forest harvesting activities on First Nations and Métis hunters, and a study by Johnston, Jacups et al. (2007) where unstructured and semi-structured interviews were used to gather Indigenous perspectives on the link between people and lands in northern Australia.

Table 2: Initial interview questions based on literature review

Research Questions
1. What is environmental health? What is the relationship between health and environment?
2. What is the current state of environmental health in your community? What are the main issues? What are the challenges and strengths?
3. What affects environmental health management in your community? (probe: Funding? Capacity? Expertise? Other?)
4. How is environmental health currently being addressed? What are the challenges and strengths of this approach? Opportunities and threats?
5. What other management models/approaches/practices exist?
6. What type of management plan can be developed and/or changed? What are the guiding principles of an effective plan?

Participants

Semi-structured interviews were conducted with individuals over the age of 18 from one of three groups: 1. Working or involved with an Ontario First Nation and having a connection to environment and/or health management practices in the community either through employment, (i.e. Health and Social Services, Lands and Resources) personal experience, or through Indigenous knowledge and cultural understandings of environmental health management or relationships (referred to as “First Nations reps” throughout); 2. Involved with health and/or environment work of an Aboriginal political organization (referred to as “Aboriginal Org reps” throughout); and 3. Federal or provincial government representatives working with health and/or environment issues in Ontario and in relation to First Nations lands and people (referred to as “Fed/Prov reps” throughout).

Recruitment and Sampling

Initial recruitment for First Nations reps was done using the participant selection criteria outlined above and via email and telephone to Band Councils, Health and Social Services, Lands and Resources offices, and existing community environmental service providers. In December 2010 27 First Nations were contacted to participate in the research based on their location[3] and the presence of an 'environment department/unit', determined by available public information.

Table 3. First Nations selected for Initial Recruitment

First Nation	Environment Department/Unit
North:	
Brunswick House	No
ChapleauOjibway	No
Michipicoten First Nation	No
Missanabie Cree First Nation	No
Ojibways of the Pic River First Nation	Yes
Pays Plat First Nation	No
Pic Mobert First Nation	No
Red Rock First Nation	Yes
Wahnapitae First Nation	Yes
Central:	
Akwesasne	Yes
Algonquins of Pikwakanagan	No
Dokis First Nation	Yes
Henvey Inlet First Nation	Yes
Magnetawan First Nation	No
Nipissing First Nation	Yes
Shawanadaga First Nation	No
Whitefish River First Nation	Yes
Zhibaahaasing First Nation	No
South:	
Aamjiwnaag	No
Alderville First Nation	No
Caldwell	No
Chippewas of Kettle and Stony Point	Yes

[3] Three geographical locations were chosen to create a sample representing a diversity of communities in the north (Wahnapitae First Nation to Red Rock First Nation), central (Nipissing First Nation to Shawanaga), and south (south of and including Wasauking First Nation). Communities without road access were not chosen for initial recruitment due to time and money limitations for in-person interviews.

Curve Lake	Yes
Hiawatha First Nation	Yes
Moose Deer Point	No
Six Nations of the Grand River	Yes
Walpole Island First Nation	Yes

Initial recruitment for Aboriginal Orgs reps was made via email and telephone to national and provincial organizations' health and environment departments. Initial recruitment of Fed/Prov reps was done via email and telephone to federal and provincial health, environment, and Aboriginal departments asking for participants with knowledge and experience in health and/or environment in regards to First Nations peoples. Snowball sampling (Kirby, Greaves et al. 2006) was also used for recruitment by asking confirmed participants to suggest potential future participants upon completion of their interview.

Events

Participants were asked slightly different versions of questions depending on the participant group to which they belonged. In general however, all questions addressed the issues of how environmental health concerns were being addressed, what practices have changed in recent years, and what changes the participants envisioned in how these issues would and should be addressed for the future. The First Nations reps for example, were asked about current environmental health concerns, current environmental health management strategies, what strategies, if any, were leading to positive results and what improvements could be made. The Aboriginal Orgs reps were asked about their work in environment and health, how their work was used by communities, and about the strengths and challenges of working in health and environment. The Fed/Prov reps were asked, for example, to clarify their roles in environment and/or health management to First Nations and on what current and future initiatives they were working.

Interview time-frame

Eighteen interviews with key informants were completed during an eight month period from February 2011 to September 2011 and two interviews were conducted in May of 2012.

Document Review

A systematic search of materials (peer-reviewed articles, government documents, online news articles, Indigenous organizations publications, environmental health websites reports) was made monthly during the eight months of data collection for the framework development stage. The materials were sought until a 'saturation point' was reached where no new information was found that would significantly change the findings (Phillips 2005). Interview participants were also asked to provide suggestions for literature and document materials of relevance to our discussions during or after the completion of interviews. Yin (2003) argues that the advantages of using documents and other written material in research are that the information is stable in that is can be reviewed repeatedly and can provide a broad range of data..

Verification of Document Data

Multiple times, clarification was needed regarding federal and provincial government website material related to environmental health and/or Aboriginal Peoples. Emails were sent to the specific departments for clarification. These emails included no more than four questions and the majority of the questions were closed-ended. For example, Health Canada's First Nations and Inuit Health Branch (FNIHB) was contacted to clarify whether a document outlining standardized procedures used by Environmental Health Officers when applying provincial regulations on-reserve existed. Another example was an email sent to Health Canada to clarify its

role in activities that overlap with those of Environment Canada, such as those pertaining to outdoor air quality, climate change, and environmental contaminants.

Data Organization and Treatment

Maykut and Morehouse (1994) argue that data analysis in qualitative research is "best conducted as an early and ongoing research activity" (p. 123). The constant comparison method (Charmaz 2006) was used to analyze the data retrieved from the semi-structured interviews and document review. By using this method, the data was broken into data units which were coded, interpreted, and organized into themes using thematic content analysis (Creswell 2009, Guest, MacQueen et al. 2011). The 'theory' or conceptual framework was then generated from the understanding of the themes and the relationships among them (Kirby, Greaves et al. 2006).The following description outlines the specific steps taken for data analysis and interpretation for the development of the framework:

1. All interviews and documents were converted into electronic text files and imported into the software analysis program NVivo9. (Note: During transcription of digital recordings and interview notes, separate notes and memos were made to develop potential ideas about relationships and categories, as described by Maxwell (1996)).
2. Data units (portions of data that make sense even when separated from the rest of the text) were coded according to the key themes on which the initial interview questions were based including environment, health, environmental health, relationships, management, funding, capacity, strengths, challenges, and strategies.
3. As coding progressed, codes were monitored for the need to amalgamate codes whose contents were indistinguishable or to separate codes that had expanded beyond one meaning. Conceptual mapping was used throughout to visualize the relationships.

4. Each transcript was coded within a week of the interview. By using the constant comparison method, the information collected from each interview helped shape future interviews and ongoing analyses. Because of this iterative process, all interviews were re-coded after the last interview was completed.
5. Once re-coding was complete, writing began. The analysis continued during the writing stage and a deeper understanding of the relationships among the categories was gained. From this, a conceptual framework of core elements for environmental health management in First Nations communities was developed.

Framework Data Triangulation and Category Refinement

Conflicting data was judged based on source, frequency, strength of argument, type of conflict, and relevance to the research questions. Triangulation of the conflicting data judged to be note-worthy based on the above factors was sought to gain clarity in understanding the conflict and to ensure transparency in the presentation of findings. Data was then presented along with potential explanations of the existing conflicts. Conflicting data was useful in refining the framework by providing evidence to support its structure and to highlight incongruencies requiring modification.

Stage 2 Methods: Case Study Process and Protocol

According to Stake (1995), "Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances" (p. Xi). The case study is a common research strategy in many disciplines including psychology, sociology, business, and political science. Gerring (2004) describes a case study as "an intensive study of a single unit for the purpose of understanding a larger class of (similar) units. A unit connotes a spatially bounded phenomenon—e.g., a nation-state, revolution, political

party, election, or person—observed at a single point in time or over some delimited period of time" (p. 342). Cassel and Symon (2004) explain that case studies are well suited when a "detailed understanding of social or organizational processes" (p. 26) is sought, benefiting from the richness of data the case study process is capable of producing. The use of a case study in this research was therefore appropriate in obtaining an understanding of how environmental health issues are currently being managed, why management can be challenging, and how First Nations are addressing these challenges in the contemporary context. An example of a relevant case study used in environmental health research is by Corburn (2007), where a low-income Latino immigrant neighbourhood's involvement in changing the exposure assessment of the US Environmental Protection Agency was studied using a detailed case study.

Theory and Conceptual framework

Yin (2012) highlights the importance of having an 'exploratory' or 'pilot' phase to gain clarity about certain key aspects of the case study such as "… the questions to be asked, the hypotheses of study, the data collection methods, the access to the data, or the data analysis methods" (p. 30). In accordance, the conceptual framework developed in Stage 1 was used to guide the case study process. Another advantage of developing a conceptual framework to be used in the case study is that it can help generalize findings by suggesting "how and why the eventual findings might be expected to be relevant to other similar situations or conditions" (p 28-9). As Cassell and Symon(2004) argue, "The theory needs to provide not only a sense of the particular circumstances of the case but also what is of more general relevance and interest... Without a theoretical framework, a case study may produce fascinating details about life in a particular organization but without any wider significance" (p. 324).In this study, the case study was grounded in a theory based on the data collected from multiple First Nations, Aboriginal Political Organizations, and Federal and Provincial health and

environment experts. This allowed for the in-depth findings of the case study to be situated in a broader set of realities and social and political circumstances shared by many other First Nations.

Case Study Selection Process

Case study selection should be based on maximizing what can be learned, or which cases will most likely lead to understandings, assertions, and to adapting generalizations (Stake 1995). In other words, it is important to ask: "which cases can help us understand the problem?" (Stake 1995, p.5). Yin (2012) explains that "All case study research starts from the desire to derive an in-depth understanding of a single or small number of cases set in their real-world contexts... which aims to produce an invaluable and deep understanding, hopefully resulting in new learning about real-world behavior and its meaning" (p. 4). Stake explains that cases can be selected for their commonality and their uniqueness while time and access for fieldwork are also major factors in case selection as they are almost always limited; it is important to choose cases that will be "easy to get and hospitable to our inquiry" (p. 4).

Informal discussions were held with community contacts when reviewing possible cases for this study. Through this process it was identified that Mississauga First Nation possessed two important characteristics of a potentially valuable case for this research. First, they have been addressing the environmental health risks of being situated in close proximity to a uranium refinery since the late 1970s; and second collectively there is evidence representing the fact that they have experience and expertise in environmental health (e.g. they have an environment consultant and are currently developing their land code under the *First Nations Land Management Act*). The last determining factor in selecting MFN was that they agreed to participate and provide access to needed data in a timely manner.

Data collection methods

Case documents and key informant interviews were used as the primary forms of data collection methods in the case study, which supports the argument that case studies are best suited to multiple forms of data collection (Yin 2003, Cassell and Symon 2004) .

Semi-structure in-person key-informant interviews

Cassell and Symon(2004) explain that qualitative research interviews seek to "see the research topic from the perspective of the interviewee, and to understand how and why they come to have this particular perspective" (p. 2) which is best accomplished with predominately open-ended interview questions that have a 'low degree' of structure, focussing on specific situations instead of general opinions. In accordance, semi-structured interviews were conducted as a primary method of data collection for this case study, capitalizing on their use of both standardization and variation in structure and format of interview questions (Kirby, Greaves et al. 2006). The use of key informants was appropriate for this case study as they provided what O'Leary (2005) describes as 'insider knowledge': "when you're researching real-world problems, set in real-world contexts, it is not unusual for 'experts' or 'insiders' to be precisely the right people to help you answer your research questions" (p. 83). In addition to providing particular insights into the topic, key informants can also suggest further sources of supportive or contrary perspectives (Yin 2003). In this study, new participants were identified by previous participants based on their connection to and knowledge of environmental health issues.

Participants

Semi-structured interviews were conducted with key informants over the age of 18 where participant identification and recruitment was based on individuals' current employment position and/or past experience with health and/or environment management issues in Mississauga First Nation (Appendix C).

Interview Questions

Using a case study approach shapes the types of questions asked to participants, focusing on open-ended, semi-structured, and targeted questions toward participants' experiences and perspectives from within the specific case study community (Yin 2003). Semi-structured interviews (Wengraf 2001, Kirby, Greaves et al. 2006) were used in the case study and the interview guide (Appendix D) which was developed based on the conceptual framework developed in Stage 1, included questions and sub-questions regarding the three core framework elements: jurisdiction and responsibility, participation in decision-making, and access to resources. Participants were also asked at the end of each group of questions if any other issues needed to be mentioned or discussed. During the concluding questions of the interview, participants were also given the opportunity to raise further important issues not yet discussed.

Interview time-frame

Six in-person key informant interviews were completed during a three month period from May to July 2013 in Mississauga First Nation.

Document Review

Documents pertaining to the uranium refinery, environmental health management strategies and plans, jurisdiction and responsibility issues, participation in decision-making protocols and examples of past

participation, and any documentation related to the community's access to resources such as funding, programs, and services were sought from community representatives and contacts. An online search for peer-reviewed articles, news articles, and other media relating information pertaining to Cameco, the uranium dust release of 1990, and MFN's environmental health history were also sought using standard online search engines.

Data Organization and Analysis

All interview transcripts were imported into the qualitative analysis software program NVivo9. Most case documents were only accessible in hard copy and were used in that format. Interview transcripts and electronic documents were coded in NVivo9 while paper documents were coded manually using a similar colour coding system used in the NVivo9 program. Using thematic content analysis (Creswell 2009, Guest, MacQueen et al. 2011), coded pieces of text from the documents were then transcribed and compiled with the electronic data in NVivo9 and coded using the core framework elements, new emerging issues, and conflicting data.

The core framework elements are presented as unique and distinct concepts, however, they are very much related and interconnected. To minimize extensive duplicate coding of text units, decisions were made to assign data pieces to the code to which it was most strongly associated in helping to illustrate the realities of environmental health policy management.

The treatment of the interview and document data was the same, in that the content of each was coded using thematic analysis guided by the existing core framework element as well as emerging themes and conflicting data. Yin (2012) explains that examining "alternative" or "rival" explanations is one of the case studies invaluable functions, which is accomplished by gathering evidence supporting multiple explanations of what might have occurred in the case. In this way, the process of coding and analysis highlighted data for which some form of triangulation was needed to gain clarity and ensure transparency in the presentation of findings.

Based on the evidence found in the key-informant interviews and case study documents, the issue represented in each framework sub-element was evaluated for its importance in the management of environmental health matters in the case community and for the type of impact it had on the management. Confidence levels in the evidence and ability to determine the importance and type of impact were also determined. This evaluation was done using the following criteria:

Scoring for Importance of Issue:

"Important": Issue noted to be important by key-informants or in relevant case documents

"Not Important": Issue not discussed or noted to be unimportant by key-informants or in relevant case documents

"Important/Not Important": Issue noted to be important and unimportant by key-informants and/or in relevant case documents

"No data available": Importance of issue not discussed in interviews or documents reviewed for the case

Scoring for Type of Impact of Issue on Environmental Health Management in Case:

"Positive": One or more key-informant or relevant case document discussed the impact as being positive

"Negative": One or more key-informant or relevant case document discussed the impact as being negative

"Positive/Negative": At least one key-informant or relevant case document discussed the impact as being positive and at least one key-informant or relevant case document discussed the impact as being negative

"No data available": Type of impact not discussed in data gathered

Scoring for Confidence of Importance and Type of Impact:

"Low": Few key-informants or relevant case documents discussed the issue

"Med": Approximately half of the key-informants or at least one relevant case document discussed the issue

"High": The majority of key-informants or relevant case documents discussed the issue

"No data available" Score: Issue not discussed

Scores were assessed for each sub-element in the framework and for each source of data speaking to that sub-element. Based on the scores determined for all sources of data gathered in the case study for an individual framework sub-element an overall score for the importance, type of impact and confidence in these assertions were determined as follows:

Overall Scoring for Importance of Issue:

Overall "Important": Key-informant and case document have "Important" scores, or, one "Important" score and one "No data available" score in either key-informant or case document

Overall "Not Important": Key-informant and case document have "Not Important" scores, or, one "Not Important" score and one "No data available" score in either key-informant or case document

Overall "Important/Not Important": At least one "Important" and one "Not Important" score

Overall "No Score": Both key-informant and case document have "No data available" scores

Overall Scoring for Type of Impact:

Overall "Positive": Key-informant and case document both "positive" scores, or, one "Positive" score and one "No data available" score in either key-informant or case document

Overall "Negative": Key-informant and case document both "negative" scores, or, one "Negative" score and one "No data available" score in either key-informant or case document

Overall "Positive/Negative": At least one "positive" and one "negative" score

Overall "No Score": Both key-informant and case document have "No data available" scores

Overall Scoring for Confidence of Importance and Confidence of Type of Impact:

Overall "High": One or more "high" score

Overall "Med": One or more "Med" score, no "High" score

Overall "Low": Two "Low" scores

Findings and Final Narrative

As Stake (1995) explains, arriving at an entirely new understanding is uncommon in research; what can be expected is the refinement of existing understandings. Similarly, in this research the case study findings suggested a refinement of the existing conceptual framework. In terms of the final narrative, Yin (2003) writes

that case study reports can themselves be important community devices and "should reflect emphases, detail, compositional forms, and even a length suitable to the needs of the potential audience". (p. 145). Beyond the inclusion of participant voices in the final narrative, it also includes a report oriented toward the case study community needs. As outlined in the research agreement (Appendix A) between myself and MFN, the community asked for specific written work including recommendations on how to implement changes to improve environmental health management and a list of relevant environmental health literature. As such this thesis has been produced in traditional thesis format, but will also result in a community case study report, and then also peer reviewed publications for communication to the research community.

Validity, Generalizability, and Reliability

This section describes issues surrounding validity, generalizability, and reliability, potential threats to these three issues, and the strategies used in both Stage 1 and 2 of the research to address these threats.

Validity

Qualitative validity is one of the strengths of qualitative research and is based on whether the researchers, participants, and readers of an account consider it to be accurate (Creswell 2009). Maxwell (1996) lists descriptive, interpretive, and theoretical as the three main types of validity in qualitative research.

Descriptive Validity

Descriptive validity refers to the accuracy and completeness of the data (Creswell 2009). In Stage 1 it was proposed that all interviews would be digitally recorded and transcribed verbatim but some participants did not want to be recorded, and in these cases, detailed interview notes were taken and sent to each participant for

reviewing, editing, and approval prior to analysis and interpretation. The recorded interviews were transcribed and proof-read while listening to the recording. The transcripts were also sent to each participant for editing and approval for inclusion in the analysis. In Stage 2 all interviews were digitally recorded and transcribed. The transcripts were proof-read while listening to the recording to ensure descriptive validity. The transcripts were sent to each participant for editing and approval for inclusion in the analysis.

Interpretive Validity

Interpretive validity refers to the accuracy of the meaning attributed to participants' behaviours and words and the actual participants' perspective (Maxwell 1996). In Stage 1 inter-coder agreement (Creswell 2009) was tested with a secondary coder. In this process, the secondary coder was provided with my main research question, interview questions, and research proposal to work with me on developing my coding structure. Once the structure was established, three randomly selected interviews were analyzed by both of us with four randomly selected thematic codes. Once completed, the secondary coder performed an inter-coder variability and reliability check in Nvivo9, which resulted in a 90 percent agreement. The final analysis was also sent to each participant for review in both Stage 1 and 2.

Theoretical Validity

Theoretical validity is the extent to which the phenomena is explained by the research, where the theoretical constructs are those of the researcher and of the participants (Cohen, Manion et al. 2003). Maxwell (1996) explains that the most serious threat to theoretical validity is not considering alternative understandings of the data and not collecting discrepant data. In Stage 1 when appropriate, data was collected from interviewees from each of the three participant groups (First Nations reps, Aboriginal Orgs reps, Fed/Prov reps) about the

same topics. Contradictory data and alternative explanations were included in the framework development analysis and case study analysis in Stage 2.

Researcher Bias and Reactivity

Two specific threats to validity in general are researcher bias and reactivity (Maxwell 1996). The first, researcher bias, was mentioned in the explanation of interpretive validity and has been addressed by listing personal biases and the ways they could have affected the research (Table 4). The second, researcher reactivity, is the researcher's influence on the research participants, settings, processes, and events. The goal is not to eliminate the researcher's influence but to understand how the researcher is influencing the research (Maxwell 1996). I tried to be mindful of my biases while formulating initial interview questions, in my reactions to participants' answers, and then in formulating and delivering follow-up questions. For example, one of my personal assumptions was that I was expecting to find that the main problem with environmental health management was a lack of capacity in regards to time, finances, and expertise. In this case, in Stage 1, I did not directly ask participants if any of these factors were an issue, but rather asked what factors, if any, were issues.

Table 4. Personal assumptions and biases

Personal Assumptions and Biases	**Bias Controls**
I approached this as a non-Indigenous researcher with a background in Western science and quantitative research methods experience.	The two years of interactive course work in Indigenous philosophy, knowledge, and culture, as well as field work in Inuit communities gave me a basis for understanding of how to engage in respectful Indigenous research. Qualitative research methods were also studied at length through course work and personal research.
I expected to find that a main challenge with environmental health management is lack of infrastructure in regards to time, finances, and	Interview questions used to gather data for the initial framework development were not focused on infrastructure.

expertise.	Participants interviewed for the initial framework development were not asked directly about infrastructure issues unless participants volunteered the information.
I assumed that case study participation would be obtainable once the research agreement was signed.	Participants had the right to withdraw at any time without fault.

*See also Section 1.6 “Situating the Researcher” for an elaboration of personal assumptions and biases presented here.

Triangulation

Triangulation, a methodological approach using various “methods, sources, theories, and/or investigators” (Farmer, Robinson et al. 2006, p. 377), was used to increase validity of the findings. The thematic analysis was based on various sources of data and included perspectives from different types of participants, as described by Creswell (2009). In Stage 1, the conceptual framework stage used three forms of triangulation: methodological triangulation, data triangulation, and investigator triangulation (Farmer, Robinson et al. 2006). For methodological triangulation, which is the use of multiple data collection techniques or research methods, data was collected from semi-structured interviews, and document review. Data triangulation was achieved using documents from different sources (e.g. peer-reviewed journals and government documents) and the inclusion of different participant groups (e.g. First Nations, Aboriginal Political Organization, and Government representatives). Investigator triangulation was applied by conducting a process of inter-coder variability testing as described above.

In Stage 2, methodological triangulation was addressed in the case study by using both semi-structured interviews and document review methods. Data triangulation was addressed by collecting documents from various sources (e.g., by identifying categories of kinds of sources used here) and by doing interviews with participants employed in different Band Departments, with different responsibilities, knowledge and experience

on these issues. Investigator triangulation was accomplished with the review and interpretation of the analysis by a second researcher.

Triangulation can also result in dissonance in the data, where two or more data sources give conflicting findings (Farmer, Robinson et al. 2006). Farmer (2006) explains how dissonance in data can help form new hypothesis and develop more intricate understandings of the data. In both Stage 1 and Stage 2, conflicting or dissonant data was examined based on the following criteria: source, frequency, strength of argument, type of conflict, and value in answering research questions. If the source was a participant, the experience and knowledge of the participant in regards to the particular topic was taken into consideration. If the source was a document, it was judged based on scientific rigor (i.e. peer-reviewed journal vs. opinion paper) or quality of the source when pertaining to case study documents. The source was also important in understanding what type of conflict was presented. For example, a conclusion about the conflict was made by taking into consideration if the data came from similar sources (i.e. two Health Directors from two different communities) or from different sources (i.e. a community Health Director and Health Canada Health Director). The data was also judged based on frequency and strength of the author's conviction. Lastly the degree to which the conflicting data helped to answer the research questions was used to judge the importance of the conflict to the research.

Generalizability

Maxwell (1996) describes internal generalizability as a key issue for qualitative case studies because the validity of the conclusions depends on their generalizability to the case as a whole. External generalizability on the other hand is not a crucial component of qualitative research and it is often the lack of this type of generalizability that provides an ideal or extreme case. This does not mean however that the generalizability of qualitative studies is restricted to the research participants. Stake (1995) argues that qualitative case study

researchers attempt to preserve multiple realities of a case, including the contradictory views. The overall benefit of doing this is to greatly strengthen a case's analysis by gathering enough data to determine whether alternative explanations can be rejected, thereby increasing certainty about the case's conclusions (Yin 2012). In both Stage 1 and 2 participants were asked to what extent they believed their experiences were generalizable to the experiences of other First Nations communities, when appropriate.

Reliability

In qualitative research, reliability refers to the consistency of the researcher's approach by following standardized procedures (Creswell 2009). In Stage 1 reliability was checked with the inter-coder agreement process described above and descriptions of thematic codes were created in Nvivo9 to help ensure the codes and their meanings remained consistent throughout the analysis. In Stage 2, in addition to the code description created in Stage 1, descriptions of new codes developed in the case study were created to help ensure the thematic codes and their meanings remained consistent throughout the analysis. A second researcher also reviewed the case study analysis for thematic consistency.

Chapter Three: Conceptual Framework Development

Introduction

To achieve sustainable success, environmental health initiatives must respond to and be directed by Indigenous Peoples (Robinson, Smyth et al. 2005, Assembly of First Nations 2006, Assembly of First Nations Environmental Stewardship Unit 2009). Currently, many Aboriginal communities are actively revitalizing legal traditions and developing contemporary governance structures based on traditional approaches (Alcantara and Whitfield 2010) yet the fact remains that most decisions currently being made regarding on-reserve environmental health in Ontario are largely based on federal and provincial laws, policies and programs. The realities created by this scenario include major obscurities in the jurisdiction and responsibility for environmental health matters on-reserve, a lack of opportunity for genuine participation in environmental health decision-making on the part of First Nations, and countless political and social barriers inhibiting First Nations' access to needed environmental health resources.

Presented in this chapter are the results and analyses of Stage 1. Conceptual framework development, as per the research design described in Chapter 2: Methods. Stage 1 of the project was the 'theoretical' stage in which the conceptual framework was constructed based on an analysis of the status of environmental health management in Indigenous communities in Canada and specifically Ontario. The goals of this stage were to learn how environmental health is defined by different people and organizations, to examine the main factors affecting environmental health management, and to examine the strengths and challenges of these factors. A conceptual framework with three core elements and seven sub-elements was developed based on the document and literature review and key-informant interview analyses. The literature and document review section and key-informant interview section are presented separately, each providing analyses of the core framework elements.

Results: Conceptual Framework Development

Data collection

As outlined in Chapter 2, multiple methods were used in the development of the conceptual framework for use in the case study presented in Chapter 4. These included key-informant interviews and document review of primary and secondary sources.

Document Review

Approximately 30 documents were identified through a purposeful sampling process to focus on materials pertinent to the research questions. Documents sought were those that pertained to the legislative, policy, and social issues surrounding environmental health management in Indigenous communities in general and Ontario First Nations in particular as expressed in publications by Indigenous organizations, federal and provincial governments, and peer-reviewed journals. Additionally, interview participants suggested further documents to help respond to questions that were asked in interviews and these documents were also gathered. Greater than half of all documents suggested by interview participants were related to health and/or environment management at the provincial and federal levels. Documents were reviewed for their content specifically related to the research questions. For example, two participants suggested examining the Walkerton Inquiry Report (The Honourable Dennis R. O'Connor 2002) for its recommendations on increasing First Nations participation in water-related decision-making. As water issues are environmental health issues, this document was included in the analysis. An example of legislation that was not included was the Ontario Forest Tenure Modernization Act, 2011, which involves forestry market pricing, and was mentioned briefly by only one participant.

Data verification

To gain clarification on various federal and provincial governments' website materials related to health, environment, environmental health, and/or Aboriginal Peoples identified in the secondary document search for the framework development, emails were sent to agency contacts asking questions of clarification on the website and document content. For example contact was made with Environment Canada to determine whether facilities on Federal and Aboriginal Lands are required to report to the National Pollutant Release Inventory as this was not made clear in their website material or documentation found.

Semi-directed Interviews

Semi-directed, in-depth telephone, face to face or email interviews were conducted with a total of 18 participants from First Nations communities, Aboriginal organizations and Federal or Provincial government departments knowledgeable in health and/or environment management and/or service provision (Table 5). All participants were over the age of 18 and interviews lasted between 30 and 90 minutes. Information required from Environmental Canada representatives was provided by email with four individuals and therefore no telephone interview was conducted with that organization. Only three of the interviews were recorded due to participant consent. Interview notes were taken and participants were provided with the opportunity to review, edit and approve the notes after the interview. Thirteen of the 20 interviews were reviewed, and three participants chose to review the inclusion of their information in the dissertation document at a later date and before any publication.

Participant selection

For the initial recruitment, three geographical locations were chosen to create a sample representing a diversity of communities in the north (Wahnapitae First Nation to Red Rock Indian Band), central (Nipissing First Nation to Shawanaga), and south (south of and including Wasauking First Nation). Communities without road access were not chosen for initial recruitment due to time and money limitations for in-person interviews. The participants were purposefully selected for their diverse environment and health knowledge acquired through a variety of means including personal and work-related experiences. As interviews progressed, three sub groups of participants within the initially targeted groups started to appear and were subsequently identified this way in the data collection and analysis. One was environment and health employees in First Nations communities, a second was environment and health employees at Aboriginal political organizations, and a third was federal and provincial representatives in environment and health sectors. Snowball sampling (Kirby, Greaves et al. 2006) was also used once the first three interviews were completed.

Table 5. Breakdown of in-depth interviews by participant category

Participant Category	**Number of Participants**	**Number of First Nations, Organizations, or Agencies**	**Number of Interviews**
First Nations environment/health and/or cultural representative	7	7 First Nations	8
Aboriginal political organization representative	4	1 provincial organization 1 national organization	5 (3 provincial, 2 federal)
Government representative	7	5 provincial agencies 1 federal agency	7 (5 provincial, 2 federal)
Total	18	15	20

Topics of Interviews

Interviews were conducted to discuss common issues (strengths, limitations, challenges, barriers, facilitators) that exist in the context of environmental health management in Ontario First Nations. Topics covered in the interviews included: the management of environmental health concerns, how management has changed in recent years, and what changes participants envisioned for the future. Depending on the participant group, different types of questions were also asked (Appendix E). For example, the Band employees were asked about current environmental health concerns, current environmental health management strategies, what strategies, if any, were leading to positive results and what improvements could be made. Participants in Aboriginal political organizations were asked about their work in environment and health, how their work was used by communities, and about the strengths and challenges of working in health and environment. The federal and provincial governments group was asked, for example, to clarify their roles in environment and/or health management and service provision to First Nations and on what current initiatives they were working.

Conceptual Framework Development

Once the document and interview data were gathered, organized and analysed, core framework elements were identified highlighting the most important factors influencing the management of environmental health issues, based on collected data, in Ontario First Nations. The three core elements of the conceptual framework arising from this analysis were: 1. Environmental health jurisdictions and responsibilities; 2. Participation in environmental health decision-making, and; 3. Access to environmental health resources. All framework elements are worded neutrally to direct the collection of data and analysis of case study data as presented in Chapter 4, regardless of whether the documents reviewed and interviews conducted for the framework development identified differing perspectives among participants. The framework is comprised of three core elements; each is discussed separately below, but recognition that they are inherently interconnected exists as

was evidence in the data gathered for this stage of the research. A summary of the conceptual framework is presented below:

Framework Overview:

Environmental health jurisdictions and responsibilities:

Clarity for jurisdictional matters for on-reserve environmental health matters.

Clarity in division of responsibility between federal and provincial governments

Clarity in division of responsibility between 'health' and 'environment'

Participation in environmental health decision-making:

Existing opportunities for participation in legislation, policy, and program development and review

Level of community consultation within First Nations for environmental health initiatives

Access to environmental health resources:

Access to federal and provincial programs (external resources) for environmental health

Community support and vision (internal resources) regarding community environmental health initiatives.

The analysis and synthesis of data conducted for the development of the conceptual framework is presented in the following section. The data from the document review and key-informant interviews are presented separately and a summary presentation of the core framework elements and sub-elements is then provided. The review and analysis of the key-informant interviews and documents reviewed for the thesis

identified three general and 7 specific elements for inclusion in a framework of critical elements to examine in the case of Ontario First Nations environmental health management.

Document Review Analysis

Core Framework Element #1: Environmental Health Jurisdictions and Responsibilities

In reviewing the documentation gathered for this thesis, it was apparent that there was a common theme pertaining to the issue of clarity of jurisdictions and responsibilities for environmental health matters in First Nations communities. It was seen that the issue of clarity was created, for the most part, by the division of environmental health into 'health' and 'environment' jurisdictions between federal and provincial governments, overlapped with the overarching federal responsibility for Aboriginal Peoples. Together these create jurisdictional obscurities resulting in a lack of resources and services for many First Nations. The following section examines the current realities of jurisdiction and responsibilities in terms of health, environment, and environmental health management and service provision in communities without self-governing agreements or land codes.

Health Jurisdictions

The *Constitution Act,1867*defines much of how Canada operates and gives provinces jurisdiction over health matters (Constitution Act 1867 30 & 31 Victoria, c. 3. (U.K.)) and each province and territory has its own healthcare system where individual governments are responsible for the delivery of services as per the *Canada Health Act, 1984 (Canada Health Act R.S., 1985, c. C-6).* The provincial and territorial governments do not take sole responsibility for the healthcare systems though, there are many inter-connected components where federal,

municipal, and Aboriginal governments, and private sectors are contributors, creating a "patchwork" system (National Collaborating Centre for Aboriginal Health 2011). Similarly, Reading, Kmetic et al. (2007) argue that conflicting ideas regarding constitutional responsibilities for First Nations health care have created a complicated and incomplete blending of federal, provincial, and First Nations community-provided services.

In regards to the *Constitution Act, 1867* there are multiple interpretations of jurisdictional obligations for health. For instance, under Section 91(24), exclusive authority to legislate on matters pertaining to "Indians, and Lands reserved for the Indians" is held by the federal government but it is argued that the Act is unclear as to whom has the jurisdictional obligation for on-reserve health care delivery (Assembly of First Nations 2006). Federal First Nations Health care policies, such as the Indian Health Policy 1979 and the Health Transfer Policy 1989, meant to clarify jurisdictional issues over First Nations health are in reality "thin and loosely woven" (National Collaborating Centre for Aboriginal Health 2011, p. 26). The *Indian Act, 1982*affects the delivery of health care services to First Nations in two critical ways: first, by assigning "Status" the federal government dictates through the Act who is considered an Indian and therefore under federal responsibility; second, by defining federal jurisdiction boundaries where federal responsibility for health care is restricted to "on-reserve" (Kelly 2011).

The federal government maintains that health care services provided to First Nations are policy rather than rights-based (Boyer 2004, MacKinnon 2005, Kelly 2011) and it is at the discretion of the federal government to pay for and allocate health care. The 2002 Commission on the Future of Health Care in Canada (also known as the Romanow Commission) included the following statement:

> The Canadian government is responsible for funding and organizing services for First Nations living on reserves. According to the federal government there is no constitutional obligation or treaty that requires the Canadian government to offer health programs or services to First Nations people. A 1974 ministerial policy statement describes federal responsibility for First Nations health issues as voluntary, aimed at ensuring "the availability of services by providing it directly where normal services [were] not available

> and giving financial assistance to indigent Indians to pay for necessary when the assistance [was] not otherwise provided (Canada. Health and Welfare 1974). (as cited in Reading, Kmetic et al. 2007, p. 6)

Furthermore, the federal government's interpretation of "Medicine Chest Clause"[4][5] is based on the 1966 Supreme Court of Saskatchewan ruling, also known as the Johnston appeal, stating: "the [medicine chest] clause itself does not give to the Indians the unrestricted right to the use and benefit of the "medicine chest" but such rights as are given are subject to the direction of the Indian agent (Canada, 1966, p. 753)" (National Collaborating Centre for Aboriginal Health 2011, p. 26).

Treaty interpretation is an overarching issue in jurisdiction debates and many First Nations interpret the "medicine chest" clause as the basis for the federal government to provide health services (National Collaborating Centre for Aboriginal Health 2011). Many also believe the federal government has primary responsibility for Aboriginal health services based on treaty obligations and overriding fiduciary responsibility (Scott 2011). This interpretation is in line with a court ruling in 1999 that criticized the Johnson appeal's narrow interpretation, stating that: "it is clear that the Saskatchewan Court of Appeal took what is now a wrong approach in its literal and restrictive reading of the medicine chest clause in the 1966 decision in Johnston.... In a current context the clause may well require a full range of contemporary medical services (Canada, 1999, p. 5)" (National Collaborating Centre for Aboriginal Health 2011, p.27).

Responsibilities for Aboriginal health are fragmented between provincial and federal jurisdictions of power (Fiske and Browne 2006): "Canada's constitution divides powers and responsibilities for Aboriginal

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[4]The explicit reference to medical care in Treaty Six is known as the "Medicine Chest Clause". Reading, J. L., et al. (2007). First Nations Wholistic Policy and Planning Model Discussion Paper for the World Health Organization Commission on Social Determinants of Health, Assembly of First Nations: 81.

[5] The federal government has acknowledged that a similar clause was also promised during treaty negotiations of Treaties 7, 8, 10 and 11.Assembly of First Nations (2006). First Nations Public Health: A Framework for Improving the Health of Our People and Our Communities, Assembly of First Nations**:** 186.

people between the federal and provincial governments – sometimes this responsibility falls clearly upon one level of government, sometimes it is shared, and sometimes it is not clear which level of government can or should address Aboriginal matters" (Levecque 2011, Appendix D: The Legal and Constitutional Framework). Even in the wake of landmark studies highlighting the complexities in jurisdictional roles, such as the Royal Commission on Aboriginal Peoples (1996), the complexities have increased in part due to a shortfall of provincial/federal coordination and an increase in Aboriginal self-government[6](National Collaborating Centre for Aboriginal Health 2011).

Much like the debate in regards to the federal role in Aboriginal health being a matter of constitution or policy, provincial governments' obligations to act in the interest of Aboriginal Peoples above and beyond their obligations to all provincial residents is still being debated (Health Canada 2004). Some provincial health legislation in Alberta, New Brunswick, Ontario, and Saskatchewan indicate that the Minister responsible for health may enter into an agreement with First Nations and/or Canada for health service delivery, suggesting that the provision is not included in the provinces' mandates (National Collaborating Centre for Aboriginal Health 2011). These types of legislated specifications regarding responsibilities for Aboriginal health services are limited though. There are also a small number of Aboriginal specific health legislations and policies. For example, Ontario was the first province to create an Aboriginal Health and Wellness Strategy in 1990, and to develop an overarching Aboriginal Health Policy in 1994 (National Collaborating Centre for Aboriginal Health 2011).

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[6] Self-government agreements define jurisdictions for Aboriginal, provincial, and federal levels of government. In Newfoundland & Labrador, Quebec, and the Yukon, health legislation includes self-government provisions and clarifies governmental roles and responsibilities for matters of health where self-government agreements exist. National Collaborating Centre for Aboriginal Health (2011). Looking for Aboriginal Health in Legislation and Policies, 1970 TO 2008 The Policy Synthesis Project: 63.

As McKinnon (2005) argues, the "piecemeal" delivery of health care to First Nations is linked to serious gaps between the health of First Nations and the rest of Canadians. The author goes on to explain that "Throughout this jurisdictional interplay, the federal and provincial governments continually seek to find ways in which the other government may pay the costs of services" (p. S14). With all of the jurisdictional obscurities however it is important to keep in mind that "...Aboriginal people to whom the Crown in all its' emanations owes an obligation of protection and development, must not lose the benefit of the obligation because of federal-provincial jurisdictional uncertainty. Pratt, 1989" (as cited in Health Canada 2004, p. 5-5). Similarly, Chief Justice Dickson of the Supreme Court of Canada has stated, "from the Aboriginal perspective, any division that the Crown has imposed on itself...are internal to itself."13" (as cited in Assembly of First Nations 2006, p. 38), meaning that the relationship between Aboriginal Peoples and the Crown is independent from which representative the Crown chooses.

Ontario has the Aboriginal Health and Wellness Strategy (1990) and overarching Aboriginal Health Policy (AHP) (1994) which remains the most comprehensive Aboriginal health policy in Canada (National Collaborating Centre for Aboriginal Health 2011). The AHP is used as a framework from which to tangibly address Aboriginal health issues by providing "broad guidelines for Aboriginal community involvement in the planning, design, implementation and evaluation of programs and services directed at the Aboriginal population across Ontario, whether on- or off-reserve" (Ontario Aboriginal Health Advocacy Initiative 1999, p.1). The AHP was developed to address a number of issues including a need for ongoing provincial support for Aboriginal health and to clarify provincial versus federal responsibility for Ontario's Aboriginal population (Ontario Aboriginal Health Advocacy Initiative 1999). Unfortunately, there is no more clarity today on the division of responsibility. The Ontario Health Plan for an Influenza Pandemic published in 2008 by the Ministry of Health and Long-Term Care, stated that: "The Province of Ontario, the Government of Canada through First Nations and Inuit Health (FNIH) and the First Nations communities share responsibility for First Nations health

services in Ontario" (Ministry of Health and Long-Term Care 2008). The document also states that FNIHB provides primary care and public health services in remote and isolated areas where provincial services are not readily available (Ministry of Health and Long-Term Care 2008). It is not clear however if this means that the Ministry of Health and Long-term Care is responsible for providing these services to non-remote or isolated First Nations communities.

The *Department of Health Act*(Department of Health Act 1996, c. 8) also fails to clarify whether Health Canada has jurisdiction over subjects not explicitly addressed by provincial legislation such as public health and health service provision on reserves (National Collaborating Centre for Aboriginal Health 2011). It is the opinion of some that Ontario has the primary responsibility for the provision of health care services to all Ontarians, including people living on-reserve (Scott 2011) and that all residents are entitled to receive the same programs and services without discrimination (Levecque 2011).

Public Health and Environmental Health Jurisdictions

In Canada, environmental health is considered to be a branch of public health (Assembly of First Nations n.d.(b)) and the *Constitution Act'*s division of jurisdiction to deliver health services has been interpreted as provinces governing local public health matters[7] while the federal government having authority over health risks that are of national concern and occur at Canada's international borders (Assembly of First Nations 2006). In Ontario, 36 Public Health Units deliver programs to the public and are governed by the Public Health Division of the Ministry of Health and Long Term Care and are in accordance with the Ontario Public Health Standards

[7] Ontario local public health agencies and/or provincial Ministers of Health are responsible for many areas of environmental health such as inspections and enforcement of regulations, investigation of environmental health hazards and, advertizing on human health impacts of environmental health issues. Assembly of First Nations (2006). First Nations Public Health: A Framework for Improving the Health of Our People and Our Communities, Assembly of First Nations: 186.

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(Ministry of Health and Long-Term Care 2012). The funding is provided by the province (75%)[8] and the municipalities (25%) (Ministry of Health and Long-Term Care 2012). Almost all Public Health Units have at least one First Nations community that falls within their provincial jurisdictional boundaries but many do not consider on-reserve First Nations part of their responsibility (Levecque 2011). First Nations are again subject to jurisdictional obscurities for public health services; First Nations health matters are essentially federal responsibilities, but the federal government does not have the legislative authority for many aspects of public health. Provincial involvement is then relied upon for public health services like disease surveillance, immunization programs, and health emergencies (Assembly of First Nations 2006). Also, there is insufficient regulation-making authority within the *Indian Act* to create a comprehensive public health regulatory framework on First Nations reserves (National Collaborating Centre for Aboriginal Health 2011).

Health Canada does have a mandatory on-reserve program called the First Nations Environmental Public Health Program (EPHP) which "...works to identify and prevent environmental public health risks that could impact the health of community residents" (Health Canada 2008a, p.3) in First Nations communities south of 60 degrees latitude. Environmental Health Officers[9] (EHOs) employed mostly by Health Canada and some by First Nations or Tribal Councils "provide advice, guidance, education, public health inspections and recommendations to First Nations and their leadership to help them manage public health risks associated with the environment" (Health Canada 2008a, p.4). Services delivered through this program are based on the needs of communities and include drinking water, food safety, health and housing, wastewater, solid waste disposal, facilities inspection,

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[8] The way funding is transferred to provinces and territories from the federal government for health care allows provinces to distribute the funds as per their own health policies. This means that public health programs do not receive specific funding and must compete with other provincial needs like doctor fees ibid.

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[9] All EHOs working in First Nations communities must have a Canadian Certificate in Public Health Inspection.

communicable disease control, emergency preparedness and response, environmental contaminants research and risk assessment (Health Canada 2008a).

Environment Jurisdictions

There is no federal First Nations environment branch comparable to that of the FNIHB, thus the AANDC and Health Canada fund different aspects of environmental health issues; on-reserve drinking water is a prime example of how complex this system can be. AANDC assist First Nations in ensuring safe drinking water in their communities, south of 60 degrees parallel, through the Drinking Water Safety Program and monitored as per the *Guidelines for Canadian Drinking Water*(Health Canada 2008b, p. 1,2). According to the federal government, the responsibility for safe drinking water is shared between First Nations communities and the Government of Canada. Chief and Council are responsible for drinking water basic infrastructure and for routine operation of water and wastewater systems on reserves. AANDC provides funding for water services and infrastructures and financial support for the training and certification of operators(Health Canada 2008b).

Under the *Indian Act*, environmental management remains in the control of the federal government; the AANDC has developed legislative and program options for First Nations who want to take full or partial control of reserve land management, but most are still managed by AANDC (Office of the Auditor General of Canada 2009). Off-reserve, environmental protection is generally regulated provincially and in Ontario this is through the Ministries of Environment and Climate Change and of Natural Resources. In regards to comparing on- and off- reserve environmental protection, the report of the Auditor General on land management and environmental protection on reserve stated that "the federal government is committed to providing the same standards of environmental protection that other Canadian communities have come to expect" (Office of the Auditor General of Canada 2009, p. 5). What the "other" communities are is not specified however.

Regulation Enforcement

Regulation enforcement on-reserve is a complex matter due to the jurisdictional obscurities discussed above: "Territorial and provincial laws that attempt to regulate registered Indians in an area of exclusive federal authority are invalid. However, territorial and provincial laws that do not invade a domain of exclusive federal authority may apply to Indians (British Columbia Ministry of Aboriginal Relations and Reconciliation, 2010)" (as cited in National Collaborating Centre for Aboriginal Health 2011, p. 22). One of the complicating factors in this is that there are few areas of 'exclusive federal authority' in the areas of health and environment. It is also important to understand that 'authority' over an area does not necessarily translate into creating 'regulations' for that area. For example, many federal activities and activities on federal lands and Aboriginal lands are unregulated under the federal *CEPA*, 1999[10].

According to the Government of Canada, federal environmental protection laws apply to First Nations. The *Species at Risk Act (SARA)* is one of these laws and according to the Assembly of First Nations (AFN), it is important to First Nations for three main reasons. First, First Nations have always been devoted to the protection and preservation of the environment. Second, *SARA* provides the opportunity to play central role in protection and recovery of species at risk. Third, First Nations must ensure that *SARA* fully respects Aboriginal and Treaty Rights and interests. The *SARA* preamble states that " 'the roles of the aboriginal peoples in Canada… in the conservation of wildlife in this country are essential', and that 'the traditional knowledge of the aboriginal peoples of Canada should be considered in the assessment of which species may be at risk and in developing and implementing recovery measures'"(Assembly of First Nations n.d.). The AFN also argues that the *Canadian Environmental Protection Act (CEPA)* applies to Indigenous lands as defined by the *Indian Act* and to land

[10] Also, the federal authority to create objectives, guidelines, and codes of practice for a range of environmental health threats on reserve through CEPA Part 9 has not been used to date. Assembly of First Nations (n.d.(c)). Canadian Environmental Protection Act, 1999 (CEPA, 1999) Toolkit, Assembly of First Nations.

claims or self-government agreements where the federal Crown holds the land title(Assembly of First Nations n.d.(c)).

Core Framework Element #2: First Nations Participation in Environmental Health Decision-making

The opportunities for Aboriginal Peoples' participation in environmental health decision-making in such ways as federal or provincial board or committee membership, consultation on legislation and policy developed and review, and in the Crown's duty to consult on environmental matters were repeatedly identified in the literature and document review as important components of this topic. As will be further discussed in the key-informant interview analysis, it is important to note that while the written inclusion of Aboriginal Peoples participation within legal documents is noteworthy; its value does not necessarily translate into actual participation or measurable outcomes. Regarding the language used in policy documents, Lavoie (2010) writes:

> As in any text, policy documents are textual constructions embedded in a historical, political, and social context. The language and content of policy documents is more likely to reflect the need to mediate the political landscape than to truly outline how policy statements and objectives are to be translated into practice. (p. 85)

Health

Few references to health are made under the *Indian Act* but Articles 73 (1) and 81(1) give the power to enact regulations to improve the health of the First Nations (Assembly of First Nations 2006). These Articles are critiqued however for their limitations; while they allow bands to enact health by-laws, section 4: Application of Act ensures that these by-laws are in compliance with provincial and territorial health laws (National Collaborating Centre for Aboriginal Health 2011).

In terms of the development of health programs, the federal Health Minister's response to the Environmental Petition No. 67 "Implementation of Rio Declaration principles for Indigenous Peoples" (A Canadian Resident 2003) states that "Health Canada's programs[11] for Aboriginal people, both on- and off-reserve, have been developed with input from Aboriginal communities and organizations, building on Aboriginal people's ideas, interests, values, traditions and commitment to positive change". There is much evidence however indicating that health services and programs for First Nations communities are not meeting their needs (Lavoie, Forget et al. 2010, National Collaborating Centre for Aboriginal Health 2011). There is also the concern that health needs for the 50 percent of First Nations living off-reserve and in Northern territories are being overlooked, one of the reasons being under-representation in the health decision-making processes of regional authorities (Assembly of First Nations 2006).

In June 2011, a resolution passed to establish the Trilateral First Nations Health Senior Officials Committee to improve health outcomes for First Nations people living on-reserve and to strengthen provincial, federal, and First Nations relations, consisting of representatives from Chiefs of Ontario, the federal government and Ontario (Ministry of Health and Long-Term Care 2012). This committee is a first of its kind in Ontario, providing a collaborative forum for First Nations leadership and federal and provincial governments to identify opportunities for targeted activities in the priority areas of mental health and addictions, diabetes, public health, and data management (Ministry of Health and Long-Term Care 2012). As environmental public health is included in public health services and programs, this could be an important resource for highlighting environmental health service concerns in First Nations communities.

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[11]The programs included in the response are the Aboriginal Head Start and Canada Prenatal Nutrition Program. National Collaborating Centre for Aboriginal Health (2011). Looking for Aboriginal Health in Legislation and Policies, 1970 TO 2008 The Policy Synthesis Project**:** 63.

Environment

Looking at environmental protection specifically, the *Canadian Environmental Protection Act*, 1999 (*CEPA*, 1999) contains certain provisions that specifically address how Aboriginal representatives can participate in decision-making roles as well as how the Ministers may consult with Aboriginal governments in regards to the *CEPA*. The *CEPA* has a National Advisory Committee where, in addition to an Environment Canada and a Health Canada representative, the committee provides for a representative of each of the provinces and territories and a maximum of six representatives of Aboriginal governments[12]. The CEPA regulates federal lands only, not provincial or crown lands.

Section 2 of the *CEPA* also states that one of the duties of the Government of Canada in the administration of the Act shall " (i) apply knowledge, including traditional aboriginal knowledge, science and technology, to identify and resolve environmental problems;" (Canadian Environmental Protection Act 1999, c.33). It does not however specify how the Ministers should do this. There is also Part 9: Government Operations and Federal and Aboriginal Land, which allows the Ministers to make regulations for the protection of the environment with respect to federal and Aboriginal lands. The Ministers can also recommend that regulations be made for environmental and human health issues such as establishing environmental management systems, pollution prevention plans, and environmental emergency preparedness (Canadian Environmental Protection Act 1999, c.33). A document prepared by the Assembly of First Nations claims that there are no current objectives, guidelines or codes of practice established under Part 9 of the *CEPA* and the only three regulations that have been made are related to halocarbons, mobile polychlorinated biphenyl treatment and

[12] CEPA 1999 defines Aboriginal government as a government established under an agreement with the Crown and that is empowered to enact environmental protection laws. Canadian Environmental Protection Act (1999, c.33). Canadian Environmental Protection Act,. Department of Justice Canada.

destruction, and registration of storage tank systems for petroleum products and allied petroleum products (Assembly of First Nations n.d.(c)).

The Environment Minister's response to the Environmental Petition No. 67 "Implementation of Rio Declaration principles for Indigenous Peoples" (A Canadian Resident 2003) submitted to the Office of the Auditor General of Canada uses the *Species at Risk Act* (SARA) to demonstrate how Canada is meeting the obligations under Chapter 26.3 of Agenda 21 of the Rio Declaration[13]. Within the response, the Minister stated that "Many Aboriginal people contributed significantly to the development of the Act, particularly through the sharing of information on their specific issues, needs and capacities in the protection of species at risk. Their involvement resulted in several meaningful changes to the Act so as to better address specific areas of concern for Aboriginal peoples of Canada" (p. 3). The response further explained that a subcommittee under the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) specializing in Aboriginal traditional knowledge and a National Aboriginal Council on Species at Risk are required to be established under the *SARA*.

One of the purposes of the *Canadian Environmental Assessment Act* (CEAA) is "to ensure that projects are considered in a careful and precautionary manner before federal authorities take action in connection with them, in order to ensure that such projects do not cause significant adverse environmental effects" on federal lands (Canadian Environmental Assessment Act 1992, c.37, Purposes 4.(1)(a)). Environmental effects in respect of a project are in part defined as environmental changes and any effect those may have on the current use of lands and resources for traditional purposes by Aboriginal Peoples (Canadian Environmental Assessment Act

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[13] Chapter 26.3 of Agenda 21 of Rio Declaration stipulates that Indigenous people and governments work together to establish a process to empower indigenous communities, by (a) adopting or strengthening appropriate polices and/or legal instruments; (b) recognizing indigenous values, traditional knowledge and resource management practices; (c) developing national dispute resolution mechanisms arrangements; and (d) supporting capacity building.

1992, c.37, Interpretation Definitions). The Crown has the duty to consult when conduct might adversely affect Aboriginal Rights or Title (Government of Ontario 2007, Alcantara 2008). How the Crown exercises this duty however is not in sync with what is required of the Crown at law:

> A challenge faced today in virtually every Indigenous community in this country is the implementation, in a respectful and collaborative manner, of newly established legal principles such that Aboriginal and treaty rights "become real" and tangibly expressed through measurable social, cultural and economic benefits within First Nation societies".(Morellato 2008, para. 4 in Introduction)

The definition of what is to be considered "meaningful" consultation has never been prescribed by judges (Booth and Skelton 2011a) and there are many examples in the literature where consultation has been less than adequate for First Nations (Mascarenhas 2007).

Decision-Making Strategies

While not without their challenges and limitations, there are other avenues that First Nations are pursuing to increase the level of meaningful consultation and participation in environmental health decision-making. Four of these options are discussed below: two specific to environment (Land Claims and *First Nations Lands Management Act*) and two for health (Health Transfer Agreements and *Health Protection and Promotion Act* Section 50 Agreements)

Land Claims

The Federal government divides Aboriginal land claims into two categories, comprehensive and specific:

> Comprehensive land claims are based on the assertion of continuing Aboriginal rights and title that have not been dealt with by treaty or other legal means [and] specific land claims arise from alleged non-fulfillment of treaties or other legal obligations, or from the alleged improper administration of lands and other assets under the *Indian Act* or other formal agreements.(Library of Parliament 2009, p.1).

The range of issues that comprehensive land claims can address is limited, they are costly and tend to drag on, but they can also increase and make permanent the lands controlled by Aboriginal groups, and can strengthen government's duty to consult and accommodate[14](Alcantara 2008). Specific land claims are used to resolve allegations that the crown failed to interpret or implement the terms of a treaty properly, thus can only be used by Aboriginal groups who have completed a treaty (Alcantara 2008).

First Nations Land Management Act

The First Nations Land Management Act (FNLMA) is a federal law that came into effect in 1999 and was developed to give First Nations more flexibility in the areas of land, resource, and environmental management (Office of the Auditor General of Canada 2009). The provisions relating to land management in the *Indian Act* do not apply to First Nations who have ratified land codes (Aboriginal Affairs and Northern Development Canada 2011). Once the land codes are ratified, the First Nation takes over all land management responsibilities from the Crown (Alcantara 2008). The land codes provide First Nations with the law-making authority over environmental protection for reserve land(Aboriginal Affairs and Northern Development Canada 2013). In the 2009, Report of the Auditor General of Canada it found that AANDC[15] could not fund the "full implementation" of the program and less than a quarter of the First Nations who were expected to use the

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[14] The level of governments' duty to consult and accommodate depends on the strength of the case for Aboriginal title; being accepted into treaty negotiations is one way to assess strength. Alcantara, C. (2008). "To Treaty or Not to Treaty? Aboriginal Peoples and Comprehensive Land Claims Negotiations in Canada." Publius: The Journal of Federalism **38**(2): 343-369.

[15] Environment Canada withdrew from participation after less than two years because resources were not secured. Government of Canada (2010). "Government of Canada Announces New Funding to Expand Reserve Land And Environment Management Program." Canada News Centre. from http://news.gc.ca/web/article-eng.do?m=/index&nid=535549.

program actually had (Office of the Auditor General of Canada 2009). The Economic Action Plan 2013 had proposed a two-year investment of $9 million for the expansion of the First Nations Land Management Regime which will add 33 First Nations to the regime (Canada's Economic Action Plan 2013 n.d.).

Health Transfer Agreements

The federal government develops on-reserve health policies and delivers health services. The Health Transfer Policy (HTP) was introduced in 1989 in support of First Nations'[16] desires to design health programs and services and to distribute funding in accordance with health needs and priorities of the communities (Lavoie 2007). Prior to the HTP, most services and programs were delivered on-reserve directly by what is now the FNIHB (Lavoie 2007). MacIntosh (2008) states that the transfer happens in "gradual phases, requires specific mandatory public health programs to be provided, gives communities flexibility to allocate funds according to community priorities, and limits funding, by way of a non-enrichment clause, to health care delivery costs at the time of transfer" (Kelly 2011, p.3). The HTP provides First Nations' with increased participation in planning and delivering services which offers much potential for improving health outcomes but funding formulas to not necessarily reflect the needs of the community, undermine the foreseen benefits (Lavoie 2007). Other potential HTP benefits include having communities identify their own unique needs and establish their own priorities (Health Canada 2004) but it has been found that funding restrictions limit control over the design and delivery by First Nations (MacKinnon 2005).

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[16] Only First Nations and Inuit communities situated south of the 60th parallel are eligible to enter into the health services transfer process managed by FNIHB. Health Canada (2004). Transfer of Health Programs to First Nations and Inuit Communities, Handbook1 An Introduction to Three Approaches, Government of Canada**:** 1-54.

Health Protection and Promotion Act agreements

Under Section 50[17] of the *Health Protection and Promotion Act* (HPPA), a board of health of an Ontario Public Health unit and a local Band Council may enter into an agreement in writing under which the board agrees to provide health programs and services to the Band, and the Council of the Band agrees to accept the responsibilities of a municipality within the health unit. There are currently two First Nations in Ontario who have this type of an agreement, Curve Lake First Nation and Hiawatha First Nation. As will be discussed in detail further on, Section 50 agreements allow First Nations to better meet their health service needs by having more control in deciding which services the community needs and how it will be delivered.

Core Framework Element #3: Access to Environmental Health Resources

Throughout the literature and document review, it was found that accessing environmental health resources was a critical issue affecting environmental health management in First Nations communities. For example, at the 2008 National Aboriginal Health Organization (NAHO), First Nations Environmental Health Innovation Network (FNEHIN), and Chiefs of Ontario (COO) regional workshop on First Nations environmental health issues in Ontario, almost all participants noted the challenges surrounding funding and responsibility among AANDC, Public Works Canada, other provincial and federal agencies, and municipal governments (First

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[17]Section 50 Agreement with council of band
50. (1) A board of health for a health unit and the council of the band on a reserve within the health unit may enter into an agreement in writing under which,
(a) the board agrees to provide health programs and services to the members of the band; and
(b) the council of the band agrees to accept the responsibilities of the council of a municipality within the health unit.
(2) The council of the band that has entered into the agreement has the right to appoint a member of the band to be one of the members of the board of health for the health unit.
(3) The councils of the bands of two or more bands that have entered into agreements under subSection (1) have the right to jointly appoint a person to be one of the members of the board of health for the health unit instead of each appointing a member under subSection (2).
(4) An appointment under this Section may be for one, two or three years.
(5) In this Section, "band", "council of the band" and "reserve" have the same meanings as in the *Indian Act* (Canada). Health Protection and Promotion Act (R.S.O. 1990, CHAPTER H.7). Health Protection and Promotion Act, ServiceOntario *e-Laws*.

Nations Environmental Health Innovation Network 2008). In addition to the regulated federal and provincial public health services which include some environmental health services, and the one mandatory federal First Nations Environmental Public Health Program, there is other funding and resources related to environmental health available to First Nations communities. This section examines some of the funding, program, and service opportunities available to qualifying First Nations communities through federal and provincial governments as well as the resources provided by Aboriginal political organizations.

Federal and Provincial Environmental Health Resources

FNIHB has an Environmental Health Research Program which focuses on research related to environmental risks that affect the health of First Nations and Inuit. This research program:

> ...supports First Nations and Inuit in their efforts to conduct community-based research, monitoring, surveillance, laboratory and field studies related to the physical, chemical, biological and radiological risks to human health. These activities are aimed at increasing First Nations and Inuit participation in research and studies relating to the role of environmental hazards in illnesses or in health problems. (Health Canada 2013, para 3)

The program's key elements include: biomonitoring, climate change, chemical safety of traditional foods, drinking water, environmental health guides, FNINB laboratory, indoor air quality, and research and monitoring (Health Canada 2013). Environment Canada offers other programs to qualifying First Nations linked to environmental health such as the Lands Environmental Action Fund (LEAF), from which funds can be used for such initiatives are environmental training, developing environmental stewardship, addressing environmental concerns related to First Nations Land Management, and developing and managing environmental data and systems (Environment Canada 2012). Qualifying First Nations can also apply for funding from the Aboriginal

Aquatic Resource and Oceans Management Program (Environment Canada 2012) and the Aboriginal Species at Risk Program (Environment Canada 2012) among others.

The Ontario Ministry of the Environment and Climate Change (MOECC) provides engineering and technical advice to some First Nations, and carries out conformance assessments of First Nations drinking water systems upon request[18] free of charge to First Nations. The MOECC administers an operator certification program through the Ontario Water Wastewater Certification Office (OWWCO) through which some First Nations' drinking water system operators have completed OWWCO's certification program. In July of 2011, the Ontario First Nations Pilot to Improve Drinking Water Quality, a collaborative effort among AANDC, MOECC, Ministry of Aboriginal Affairs, and the Ontario First Nations Technical Services Corporation (OFNTSC), was launched. This three-year initiative aims to improve the quality of drinking water in Ontario First Nations communities with innovative approaches to addressing some of the concerns on reserve (Ministry of Health and Long-Term Care 2012, Ministry of the Environment and Climate Change Aboriginal Affairs Branch 2012). The federal government has committed a total of $5 million towards the pilot (Ministry of Health and Long-Term Care 2012), and the technical expertise in engineering and review will be provided by the MOECC and OFNTSC (Ministry of the Environment and Climate Change Aboriginal Affairs Branch 2012).Despite the seemingly numerous environmental health funding opportunities for First Nations, the fact remains that the funding is inadequate to meet community needs (Assembly of First Nations Environmental Stewardship Unit 2009).

[18] Thirty-nine out of a possible 130 First Nations communities were completed at time of interview.

Aboriginal Political Organizations Resources

In 2005 the AFN published a First Nations Environmental Stewardship Action Plan which "focuses on the development of an environmental stewardship/management/care strategy that is First Nations designed and controlled, holistic, and reflective of the diversity of First Nations cultures and knowledge" (Assembly of First Nations 2001). The AFN is also a partner on the First Nations Environmental Health Innovation Network (FNEHIN), which is a national virtual network connecting people involved in environmental health and is funded by Health Canada's First Nations & Inuit Health Branch, Environmental Health Research Division. The FNEHIN creates partnerships between First Nations communities and researchers to carry out local community-specific activities in environmental health and increase community capacity (First Nations Environmental Health Innovation Network 2008). As a partnership-based organization, the FNEHIN must be politically neutral and respect the mandate of all partners but concerns have been raised about how this neutrality can negatively affect the research (First Nations Environmental Health Innovation Network 2008).

The AFN is part of the Holmes on Homes "Building Homes and Building Skills" pilot project in Atikameksheng Anishnawbek (Whitefish Lake First Nation) in Ontario. For this project, upgrades will be made to homes, schools and community buildings, creating a centre of excellence where First Nations specific building codes and planning procedures will be developed and disseminated, and training workers in building techniques (Indigenous Corporate Training Inc. 2006-2013).

The AFN, in partnership with FNIHB have developed the First Nations Biomonitoring Initiative to establish baseline levels for specific environmental contaminants in First Nations Peoples living on reserve. The information will be used to examine how the contaminants affect human health and will provide the needed data to track exposure trends, and make comparisons with the other Canadian populations (Assembly of First Nations 2013, Health Canada 2013). The AFN and FNIHB have also partnered on the National First Nations

Environmental Contaminants Program (NFNECP) which supports community-based research on environmental contaminant trend and their relation to human health (National First Nations Environmental Contaminants Program 2013).

One of the environmental resources the Chiefs of Ontario (COO) developed was an Ontario First Nations Environmental Assessment Toolkit (Chiefs of Ontario 2011). "The purpose of this Toolkit is to assist First Nations in Ontario whose Aboriginal rights, title or treaty rights may be affected by a project undergoing an environmental assessment (EA)" (p. 1) by providing advice to help First Nations effectively engage in the EA process.

The Union of Ontario Indians Anishinabek Health Secretariat published a manual in 2009 entitled *First Nation's Children Environmental Health.* The manual examines the major environmental issues affecting First Nations children on and off reserve related to air, earth, fire, and water, such as tobacco use, food source contamination, heating sources, and fishing and is intended to help service providers address environmental health concerns in a manner that is "culturally sensitive and strength based" (Union of Ontario Indians Anishinabek Health Secretariat 2009, p. 2).

Semi-directed Interview Analysis

In this section the key information interview analysis is presented. The material was organized around the three core framework elements.

Core Framework Element #1: Environmental Health Jurisdictions and Responsibilities

In reviewing the key-informant interview material, it was apparent that there was a common theme pertaining to the issues of jurisdictions and responsibilities for environmental health matters in First Nations

communities. Clarity of jurisdiction and responsibility for environmental health matters were commonly spoken of in terms how they affect funding and services available to First Nations communities. The following section examines the current realities of jurisdiction and responsibilities in terms of health, environment, and environmental health management and service provision in communities without self-governing agreements or land codes.

Federal Jurisdiction

In terms of environmental health services, one of the most common challenges expressed by the participants was a lack of funding due to the lack of clarity of responsibility for First Nations' services. For example, when asked to explain one of the biggest environmental health management challenges in her community, Pamela Nolan, the Health Manager in Garden River First Nation, answered that the AANDC and Health Canada are unclear as to their own responsibilities for funding environmental health initiatives in First Nations, resulting in communities not receiving the funding. A similar concern was shared by an Environmental Health Officer in First Nations communities, Ray Alatalo, where one of the main barriers to the remediation of environmental health concerns is the financial arrangement between AANDC and First Nations. Tracy Antone, the Health Coordinator at the Chiefs of Ontario also made reference to the complicated jurisdictional relationship between AANDC and Health Canada and explained that communities' access to water sampling training offered by Health Canada is problematic due to AANDC's role in drinking water on-reserve.

As explained by Sue Chiblow, the former director of the Environment Department at the Chiefs of Ontario at the time of the interviews, there is no federal funding to communities for "environment departments" that would be comparable to funding communities receive for "health departments". Environmental issues are subsequently managed in various other ways. It is important to reiterate that how "environmental health" is

defined and thus what services are provided under this title varies. For example, the First Nation and Inuit Health Branch (FNIHB) delivers a mandatory program called the First Nations Environmental Public Health Program (EPHP). The name of the program changed in recent years to include the word "public" to avoid further misconceptions as to what services the EPHP provides. As Ivy Chan, the Director of Environmental Public Health Division at Health Canada explained, the program's about "the impacts of environment on human health", and not "the health of the environment, that's what Environment Canada does". Many of the types of services provided through the EPHP however, are similar to the types of "environment" issues by Environment Canada and "health" issues by Health Canada such as evaluations of indoor air quality, water monitoring and testing, and contaminants research. When asked about what seems to be an overlap between environmental work done by Health Canada and Environment Canada, it was said that Health Canada has always had a longstanding role in protecting Canadians from environmental health risks, and Health Canada works closely with Environment Canada to ensure coordinated action on environmental matters[19](Health Canada).

In First Nations communities environmental health issues are addressed through a wide variety of services and funding. Some of these can include Health Departments, Public Works Departments, Lands and Resources Departments, and others. For example Chief Phyllis Williams, former Manager of the Curve Lake First Nation Health Centre explained that part of the Health Centre's promotion and prevention work is helping people understand the importance of maintaining their wells and keeping their property in order so as not to contaminate their water. Similarly, when discussing the roles of Environmental Health Officers (EHOs), Alatalo explained that although they have the same training as certified Public Health Inspectors[20], EHOs are involved in

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[19]Examples of this coordination include the joint administration of the *Canadian Environmental Protection Act (CEPA)*, 1999 and the co-management of the Chemicals Management Plan (CMP), a comprehensive strategy to protect Canadians and the environment from harmful chemical substances and launched in December 2006. Health Canada (2011). Personal Communication with Suzanne Leppinen Director of Horizontal and International Programmes, Safe Environments Directorate. D. Denomme.

[20]Through the Canadian Institute of Public Health Inspectors.

environmental matters which differ from Public Health Inspectors who are not typically involved in environmental matters. Waste management issues are a large part of the programming and any site specific-concerns where there is a breach or discharge to the environment (e.g. spills, train derailments, vehicle accidents, and home heating oil spills).

Provincial Jurisdiction

The Ministry of Health and Long-Term Care (MOHLTC) is guided by the Aboriginal Health Policy (1994)[21] and whether the Ontario government provides a particular service or program to Aboriginal People, depends on various factors, such as the status of the client (Registered Indian or not), the residence of the client (on- or off-reserve), and/or the location of the service (on- or off-reserve) (Ministry of Health and Long-Term Care). The Ministry also explained that Aboriginal People, regardless of residence on-reserve or Indian status, access the full range of provincial health services: "Notwithstanding the federal government's role in First Nations health, Ontario has primary responsibility for the provision of health care services to all its citizens, including Aboriginal people living on-reserve" (Ministry of Health and Long-Term Care). As previously discussed however, the federal government's role lacks clarity and determining the provincial role based on the federal role does not improve the clarity of this issue. Paula Willis, Policy Analyst, Aboriginal Health Strategy Unit (AHSU) Health System Policy and Relations Branch at the Ministry of Health and Long-term Care explained that for Primary Health Care Services, the federal government provides services only in remote First Nations and the province provides health care services through the mainstream health care services to all other

[21] The AHP "… provides the government with broad direction and guidelines for Aboriginal involvement in planning, design, implementation, and evaluation of programs and services provided to Aboriginal communities. The Aboriginal Health Policy supports an "inclusive" approach to Aboriginal health meaning that strategy, programming, policy and engagement are inclusive of all Aboriginal populations (First Nations on- and off-reserve, Inuit, and Métis)." Ministry of Health and Long-Term Care (2012). Personal Interview.

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First Nations. Willis further explained that in some ways there are two systems operating in parallel; "there's the provincial health system so regardless if people are living on reserve they're either accessing services off reserve or accessing services on-reserve, they're interacting with the Ontario health system but in addition, Health Canada provides their health services".

Environmental health is a branch of public health and public health programming for First Nations is problematic for reasons such as ambiguous federal legislation and multi-jurisdictional agreements, in addition to issues with organizations and administration (Assembly of First Nations 2006). The relationship between local public health units and First Nations communities varies across Ontario. Some health units have no contact with First Nations communities, others deliver services such as immunizations, and a small few partner with local First Nations to deliver a full range of services. When asked what factors affect the type of relationship that is established, the MOHLTC replied that:

> The province does not provide public health services directly to the public. This includes First Nations on or off reserves. There are 36 local public health units that provide public health programs and services to the public across the province. Services are in accordance with the Ontario Public Health Standards and are funded by the province (75%) and municipalities (25%).

This suggests that the relationship and subsequent delivery and access to services depend on the interaction between the local public health units and the First Nations.

Some First Nations in Ontario have agreements under Section 50[22] of the *Health Protection and Promotion Act* (HPPA), where a board of health of a health unit and a local Band Council enter into an

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[22]Section 50 Agreement with council of band
50. (1) A board of health for a health unit and the council of the band on a reserve within the health unit may enter into an agreement in writing under which,
(a) the board agrees to provide health programs and services to the members of the band; and
(b) the council of the band agrees to accept the responsibilities of the council of a municipality within the health unit.
(2) The council of the band that has entered into the agreement has the right to appoint a member of the band to be one of the members of the board of health for the health unit.

agreement in writing under which the board agrees to provide health programs and services to the Band, and the Council of the Band agrees to accept the responsibilities of a municipality within the health unit. There are currently two First Nations in Ontario who have this type of an agreement; both are with the Peterborough County-City Health Unit who currently has Memorandums of Understanding based on Section 50 of the HPPA with Curve Lake First Nation and Hiawatha First Nation. When asked if Curve Lake First Nation had representatives on the Peterborough-area Board of Health, it was answered in the affirmative, but not due to the Section 50 agreement[23]. Chief Phyllis Williams, the former Curve Lake Health Centre Manager explained that they were represented for inclusiveness and being a community within Ontario, where each municipality is represented and so should be each First Nation.

Part II Section 4 of the HPPA states that: "Every board of health, (a) shall superintend, provide or ensure the provision of the health programs and services required by this Act and the regulations to the persons who reside in the health unit served by the board" (Health Protection and Promotion Act R.S.O. 1990, CHAPTER H.7). There are multiple interpretations of whether reserves are within the boundaries of health units as described in HPPA Regulation 553 Areas Comprising Health Units (O. Reg. 553). Liam Scott of the MOHLTC at the 2011 First Nations Public Health Dialogue Series presented four of these interpretations on whether the HPPA applies on-reserve: one, the HPPA does not apply due to the definition of "board of health"; two, it

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(3) The councils of the bands of two or more bands that have entered into agreements under subSection (1) have the right to jointly appoint a person to be one of the members of the board of health for the health unit instead of each appointing a member under subSection (2).
(4) An appointment under this Section may be for one, two or three years.
(5) In this Section, "band", "council of the band" and "reserve" have the same meanings as in the *Indian Act* (Canada). Health Protection and Promotion Act (R.S.O. 1990, CHAPTER H.7). Health Protection and Promotion Act, ServiceOntario *e-Laws*.

[23] The Health Protection and Promotion Section 50 states "(2) The council of the band that has entered into the agreement has the right to appoint a member of the band to be one of the members of the board of health for the health unit." Ibid.

applies, but only if a Section 50 agreement is in place with a local board of health; three, a Section 50 agreement only applies to the Ontario Public Health Standards which are mandatory health programs and services under the HPPA, not to the local Medical Officer of Health's statutory powers (unless there is an outbreak, absent a band-by-law to the contrary); four, a Section 50 agreement is merely a means for bands to have input into the health services provided on reserves where, even without a Section 50 agreement, the boards of health are responsible for providing mandatory health programs and services on reserve (barring a Band by-law) (Scott 2011).

The agreement between Curve Lake First Nation and the Peterborough County-City Health Unit has existed since 1965, setting a provincial precedent (P Williams, Manager Curve Lake Health Centre). Williams further explained that the Union of Ontario Indians has taken on the role to advocate on their behalf to eliminate the need to pay a fee but until then, the community continues to pay and to benefit from the partnership. When asked why she thought there were only two communities with Section 50 agreements, Williams replied that financial constraints can be a barrier and that there is the belief that the responsibility for First Nations' health lies with the federal governments.

The federal government has jurisdiction over drinking water on reserve but the MOECC provides some services in this area at the request of the First Nation. Generally, the MOECC does not issue on-reserve approvals but in certain cases it has issued approvals for a number of on-reserve activities, typically diesel generators and in one case (for Walpole Island First Nation) an approval for a waste water treatment facility. The Ministry was asked if it has the responsibility to protect the health and environment of all Ontarians, First Nations included, and the reply was that legal questions could not be answered. The Ministry did comment however that, in addition to reacting to the Ipperwash Report, the MOECC is creating change to meet other objectives, such as protecting the environment and human health for all Ontarians, and helping implement the government's new direction on Aboriginal Affairs (Ministry of the Environment and Climate Change Aboriginal Affairs Branch).

Application of Regulations

As previously discussed, most health and environment matters in Canada are regulated provincially and there are generally no regulations designed specifically for First Nations communities[24]. As explained by Ray Alatalo, Environmental Health Officer (EHO), much of the work done by EHOs is built around the Ontario framework and EHOs are trained in the Ontario regulations based on the HPPA. When asked what guidelines EHOs use when performing inspections and whether there is a documented process for navigating the regulatory gap between federal and provincial legislation, Ivy Chan, Environmental Public Health Division Director at Health Canada explained that:

> There are differences among provinces, and there are no federal regulations designed for First Nations communities. The training that the EHOs receive when becoming Public Health Inspectors allows them to know what the provincial regulations are and where to look for environmental health risks. They use this knowledge as the basis for their assessments, but there are no enforceable regulations.

Chan went on to discuss how many of the EHOs have worked as Public Health Inspectors before working in First Nations communities so they have that experience to guide them as well as a network of people in the province to provide guidance. They also use the provincial regulations as a basis regardless of whether regulations can be applied on-reserve. Health Canada has also produced the 2009 *National Framework for the Environmental Public Health Program in First Nations Communities South of 60* as program guidance.

Alatalo explained that some First Nations have "BCRd" (Band Council Resolution) certain parts of provincial regulations onto the reserve which is similar to a bylaw of a municipality in that it provides guidance. For example, “BCRing” the use of the Ontario Building Code for all new sewage systems installed on the reserve would allow EHO’s to use the building code as a framework for the review and approval of applications. In deciding which regulations to use for guidance, Alatalo further explained that AANDC’s service agreement

[24]Not including the communities who have self-government agreements, land codes, and other community-specific governing agreements.

states that the most applicable statute or guideline will apply. For water there are only two, Canadian Guidelines on Drinking Water Supplies and Ontario Regulation 170 and both are used as reference documents (R Alatalo). When no applicable Ontario or federal regulation is available, other countries' regulations are used (e.g. EPA in the US) and in this type of scenario EHOs work with regional managers and other departments or programs at Health Canada (R Alatalo).

As most regulations are used only for guidance on-reserve, the regulations cannot be "enforced" as per the legislation outlines. Alatalo explained that:

> Applying enforcement in First Nations is different in that each one has to go through the legal process of having each of the Ontario regulations applied to their community. This is a very cumbersome process. None of the communities I work with have gone through this process.

There are other means by which regulations are "enforced" on-reserve. As Chan explained "The main difference with having regulations is that it makes it clear who's responsible for what and what the consequences are if not followed. Without having the regulations, it's based on peoples' goodwill and interest in protecting the public". Compliance is done in large part on a voluntary basis in First Nations and, as Alatalo explained, it is an implied enforcement in that every First Nation has the ability to pass any kind of resolution; "There are rules and laws that exist regardless of whether they have been formalized legally (e.g. seatbelts, traffic laws, civil laws)... Enforcement can be done through by-laws and pressure from within the community itself" (R Alatalo).

In terms of the HPPA Section 50 agreements, issues of non-compliance and regulation enforcement are not necessarily clearly defined on reserves when provincial legislation, like the HPPA, is used. As discussed by Rosana Pellizzari, Medical Officer of Health at the Peterborough County-City Health Unit, the public health unit works with its First Nations partners, respectful of by-laws and policies that the community may have, as well as liaising with the Chief and Council for compliance and enforcement of any Health Protection and Promotion

Act-related activities. Like many areas of health care, enforcement is decided on a community-by-community basis. For example, Pellizzari explained that to enforce Sections 22 (Order by M.O.H. re communicable disease) and 35 (Order by Ontario Court of Justice) of the HPPA, she would "work through and with the health staff in that specific First Nation".

When Environment Canada's Enforcement Branch was asked if their officer's duties[25] extend to Aboriginal lands, the Branch responded that:

> There are a number of areas that may go beyond matters that are integral to Aboriginal culture or that are strictly internal to an Aboriginal group. In these areas, laws and regulations tend to have impacts that go beyond individual communities. Therefore, primary law-making authority would remain with the federal or provincial governments, as the case may be, and their laws would prevail in the event of a conflict with Aboriginal laws.(Enforcement Branch Environment Canada)

For environmental health, these matters include environmental protection, assessment and pollution prevention, fisheries co-management, and emergency preparedness (Enforcement Branch Environment Canada).

Core Framework Element #2: Participation in Environmental Health Decision-making

Environmental health is transboundary by nature and "The development of environmental health policies is a highly political process and policy outcomes have diverse and varied impacts on individuals, groups, economic interests and geographic regions" (Jack, Brooks et al. 2010, p. 653). The review of key-informant materials revealed a common theme pertaining to the participation of First Nations representatives in environmental health decision-making that affect the management of their environments and health. The

[25] "Environment Canada's Enforcement Branch is built around the principle of ensuring that companies and individuals comply with the pollution prevention and conservation goals of environmental and wildlife protection acts and regulations. Enforcement is delivered through the work of in-the-field enforcement officers across Canada working through the Environmental Enforcement Directorate and the Wildlife Enforcement Directorate." Environment Canada (2013). "Enforcement." Retrieved January 23, 2014, from http://ec.gc.ca/alef-ewe/Default.asp?lang=En&n=B670A72A-1.

following section examines First Nations participation in decision-making in legislation and policy development and review, environmental consultation, program development and review, and in community-based environmental health initiatives.

Participation in Legislation Review

When asked about the participation of Aboriginal Peoples in the development of the *Species at Risk Act* (*SARA*), Dean Jacobs, the Walpole Island First Nation External Projects Contact Person explained that the Walpole Island Heritage Centre has had input from the beginning; they did as much as they could to improve it, but feeling like they were the only First Nation participating, and with no case law at the time (in 2002), very few concrete accommodations were realized. The Heritage Centre has continued to participate in the development of the *SARA* and has made strides while all along trying to communicate that the fundamental way that the law has been established (at best as an ecosystem approach not a species by species approach) is not in line with the Heritage Centre's vision and beliefs on species at risk. During the five year review of the *SARA* the Heritage Centre made presentations to the parliamentary committee and have been engaged to improve legislation, policies, and management. When discussing the involvement of First Nations in the review of environmental legislation like *CEPA* and *SARA*, Sue Chiblow, former Environment Department director at the Chiefs of Ontario explained as a member of *SARA*'s subcommittee, "The work is getting done but it takes a long time, doesn't happen overnight".

According to Don Sharp, the Director of the Environmental Stewardship Department at the AFN, the AFN has been involved with the *CEPA* review for several years and have provided input and analysis that can be used to update the Act. Sharp also explained that they have certain contribution agreements to work with government departments on various small projects or to provide analyses to government on programs such as the

Ambient Air Quality Standards. The AFN is also on the stakeholders advisory committee for Chemicals Management Plan (D Sharp).

One of the purposes of the *Canadian Environmental Assessment Act* (CEAA) is "to ensure that projects are considered in a careful and precautionary manner before federal authorities take action in connection with them, in order to ensure that such projects do not cause significant adverse environmental effects[26]" (Canadian Environmental Assessment Act 1992, c.37, Purposes 4.(1)(a)). The CEAA also includes a provision that community knowledge and Aboriginal traditional knowledge may be considered in conducting an environmental assessment. Chiblow explained that the current government made many changes to the CEAA without consultation at any level, let alone with First Nations in order to streamline their environmental process to make it easier for industry to access desired areas. The COO has developed Environmental Assessment (EA) toolkits and conducted training sessions in First Nation communities to help communities participate fully in the EA process (S Chiblow). Other participants explained that their communities have developed or are in the process of developing their own EA protocols as well (T Bouchard, D Jacobs) as also provided for in the COO Environmental Assessment Toolkit(Chiefs of Ontario 2011).

The Ontario Ministry of the Environment and Climate Change (MOECC) explained that the Report of the Walkerton Inquiry included a number of recommendations related directly to First Nations. One was that First Nations should be included in the watershed planning process, which they have been through the *Ontario Clean Water Act* (The Honourable Dennis R. O'Connor 2002). The other is that legally enforceable drinking water standards should be applied to federal lands, including reserves, which has not been done. When asked about Bill S-11, the *Safe Drinking Water for First Nations Act,* Dean Jacobs explained that there is much disconnect

[26] Environmental effects in respect of a project are in part defined as environmental changes and any effect those may have on the current use of lands and resources for traditional purposed by Aboriginal Peoples Canadian Environmental Assessment Act (1992, c.37). Canadian Environmental Assessment Act, Department of Justice Canada.

between provincial, federal, First Nations Political organizations, and community grass-roots communication in all directions. Some participants commented that the bill holds little meaning because it does not address the underlying infrastructure issues and there was not adequate consultation with First Nations about the bill (P Nolan, S Chiblow).

Consultation

When asked what the "duty to consult" meant to the MOECC's activities, it was answered that there is duty on the Crown, including the province, to consult to ensure Aboriginal Rights are not infringed upon when undertaking activities such as issuing approvals (e.g. permit to take water, Environmental Assessments, drinking water facility approvals): "Consultation means the ministry must consult the affected First Nations on applications or other activities to ensure there is no infringement on Treaty and Aboriginal Rights" (Ministry of the Environment and Climate Change Aboriginal Affairs Branch).

Jacobs explained that if industry is interested in Walpole Island First Nation's traditional territory for example, they use the *SARA* principles as one way of showing duty to consult and to guide the Environmental Assessment process. The Walpole Island Heritage Centre has taken these consultations to a level where they are no longer simply given the opportunity to comment on Environmental Assessment reports retroactively, but are involved in all aspects of the assessments, from beginning to end. They have been:

> …so successful in that instead of just getting these aquatic, species at risk, and socio-economic reports etc. and then comment on them, we've been able to say that we want to be involved in the scoping of these reports. So we're involved in what is being studied as well as the study itself. We want to be involved from the start to the end and part of decision making and that's opened the door for other First Nations to take part in government review. (D Jacobs)

Jacobs also clarified that he could only speak for his community, but that he believes there is a duty to engage in meaningful consultation despite the fact that many past consultations have not been meaningful: “we've been burned so many times because our words are just taken for granted and they're not really used”.

Some participants explained how earlier government consultation with their First Nation could have prevented certain current environmental issues. For example, Terry Bouchard, Elder and Consultation Points Person at the Lands and Resource office in Red Rock Indian Band, discussed how the problem of deforestation north of Lake Nipigon has caused caribou to move south and disrupt their use of that land for gathering food and medicines. Other participants expressed a common sentiment that federal and provincial mismanagement of certain aspects of the natural environment have made their First Nations resistant to those same government departments’ attempts to interfere with the successful environmental management practices used by the communities. For example, Jacobs explained that Walpole Island is fighting not to have their lands declared as ‘critical habitat’ in order to maintain their management strategies that have thus far been successful.

The Walkerton Inquiry Report included in its recommendations that “It is also highly desirable to include First Nations in watershed planning working groups where appropriate. Water does not recognize the boundaries of First Nations reserves. Although the form of consultation may vary to accommodate local circumstances, the need for it is clear” (The Honourable Dennis R. O'Connor 2002, p. 109). The MOECC explained that one of the ways this is happening in Ontario is through the *Ontario Clean Water Act* where there are opportunities for First Nations to participate in source protection. Other First Nations participate on source protection planning committees for municipal drinking water facilities. The source protection areas usually include the traditional territory of a First Nation, however it may not necessarily include their own source of drinking water (Ministry of the Environment and Climate Change Aboriginal Affairs Branch).

Program Development and Review

Ivy Chan was asked how Health Canada First Nations Environmental Public Health Program's (EPHP's) current core programming areas were chosen and explained that the decision is based on several factors. One is how the program and services to First Nations by Health Canada have evolved over time. A second is what the frontline EHOs working in communities report to be community needs. A third considers what training the EHOs were provided; "there's no point in including something in the program that EHOs are not trained to perform. The EHOs are all certified public health inspectors and we focus on their strengths" (I Chan). Sue Chiblow explained that, although the process has improved in recent years, the federal government still develops programs without consulting First Nations communities and Pamela Nolan suggested that the EPHP is not in fact based on evaluations at the community level.

In the HPPA, there is a minimum standard for the services and programs that Ontario public health units must provide and then there is flexibility in what additional services and programs can be provided[27]. Rosana Pellizzari, Medical Officer of Health, explained that the Peterborough Health Unit offers all programs and services equally to all of the municipalities and First Nations, who then decide whether they want them: "The First Nations make it very clear that they will choose which of the programs and services they wish to receive" She went on to explain that the public health unit develops programs with 'priority populations' in mind and have the mandate to make sure all of the programs are accessible. Because of this, programs and services may be offered more frequently, or in different ways, in different parts of the Peterborough area. When asked whether the minimum standard services and programs outlined in the Ontario Public Health Standards as per the HPPA

[27]Section 5 of the HPPA states that "every board of health shall superintend, provide, or ensure in the following areas" and Section 9 "a board of health may provide any other health program or service in any area in the health unit served by the board if the board of health is of the opinion that the health program or service is necessary or desirable and the councils of the municipalities in the area approve" Health Protection and Promotion Act (R.S.O. 1990, CHAPTER H.7). Health Protection and Promotion Act, ServiceOntario *e-Laws*.

are optional for the municipalities, she replied that “Usually municipalities take what we offer but we recognize the self-governance of our First Nations and respect their decisions regarding which programs they want”.

Community Decision-making

One of the major issues raised by Ray Alatalo to improve his work as an EHO in First Nations communities was the need to get the communities together to identify the issues and figure out how to address the problems as the EHOs do not have the resources to address remediation. Alatalo also explained that it is difficult to deliver programs to smaller communities and having more liaisons amongst communities to work more closely together on shared concerns would be helpful. Some of the strategies Alatalo listed to foster these liaisons included: hosting water workshops to bring all of the water plant operators from one area together to talk about shared concerns, and getting Community Health Representatives (CHRs) trained on environmental health matters in order to more effectively identify community concerns, “we need to find out if the issues currently getting our attention are in fact the ones that should be”.

Dean Jacobs credits, in part, the early success of the Walpole Island Heritage Centre to the fact that their central research claims unit was established in a community-based research capacity where ownership remained with the community. The Heritage Centre has also been very successful throughout the years in obtaining funding and completing projects to which Jacobs credits engaging the community from the beginning of each project, listening and reacting to community concerns, having a cohesive community vision, and having protocols in place to ensure research is conducted respectfully and ownership of data remains with the community.

Core Framework Element #3: Access to Environmental Health Resources

The analysis of the key-informant interviews revealed that accessing environmental health resources was a common theme found throughout the material. Community access to resources depends on many factors, some of which are external to the community (e.g. process of obtaining funding), and some of which are internal to the community (e.g. having community support for environmental initiatives). The external and internal factors are related however in that each affects the other. For example, the process of obtaining funding can require substantial human expertise while the ability of a community to retain human expertise typically depends on their financial resources. The following presents the various factors that affect a community's access federal and provincial as well as community-based resources as discussed by interview participants.

Access to Federal and Provincial Funding and Programming

According to several participants, obtaining funding from government agencies and other funding organizations for needed programs and services is a constant effort for most communities (D Jacobs, P Nolan, P Williams). Typically, as Tracy Antone at the Chiefs of Ontario (COO) explained, communities compete for relatively "small pots" of money. As discussed by Dean Jacobs, without multi-year funding it is very difficult for First Nations to sustain their research capabilities and their consultation capacity. In his experience, Jacobs has noted that the type and length of funding available to a community can depend on the relationship between the community and the decision-makers within the funding agency[28]. Another logistical obstacle in accessing resources discussed by a participant was not including travel costs as part of the funding received to attend specified courses and programs (T Antone).

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[28] Even with the creation of the Aboriginal Affairs Branch, the MOECC is not contacted for assistance or services in dealing with matters such as drinking water due to the status quo of the provincial government not intervening in on-reserve matters. Williams, P. (2011). Personal Interview.

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There is a dearth of baseline environmental health data for First Nations Peoples. As Phyllis Williams, manager at the Curve Lake Health Centre explained, "the lack of data is a critical point for us to be able to plan, address the immediate concern, and just plan generally as a province or region or just in a collective way locally". Williams also explained that data is also needed to obtain funding for resources such as water treatment plants but many communities are maxed for time, money, and workloads which leave few resources for data collection, research, and policy development. She discussed further how communities have a historically poor level of participation in census and health surveys (even with the First Nations Regional Health Survey). As EHO, Ray Alatalo expressed frustration in the lack of communicable disease incident reporting in First Nations in Ontario due to some communication issues between FNIHB and the local Health Units. He also explained that the Environmental Health Information System (EHIS) (a software database system that keeps track of the work performed by EHOs) was not being used at the time of the interview due to staffing shortages and data input training.

In terms of Health Canada's First Nations Environmental Public Health Program (EPHP), Ivy Chan, Director of the Environmental Public Health Division at Health Canada was asked what happens when, for whatever reason, there is not enough time for the EHOs to fulfill all of their duties. To this she replied that none of the regional managers have reported that important inspections do not get done but the inspections may get prioritized based on risk assessed by the EHOs/regional managers. An employee at an Ontario Public Health Unit however, explained that in the past they have been asked by an EHO to send their Public Health Inspectors to do high risk inspections in a local First Nation when the EHO was too busy with other inspections (Anonymous, Ontario Public Health employee).

Chan explained that the number of communities an EHO regularly inspects depends on the region and the area that the EHO serves as it has always been more difficult to get people interested in working and staying in the North (south of 60 degrees). When there is a shortage of personnel, the ones who are there have to cover

more ground; this is not by design but it is a reality (I Chan). At the time of the interview, Alatalo regularly inspected eight communities around the Sudbury/Parry Sound area but due to a staff shortage the previous summer he was inspecting 35 communities[29]. Chan explained that there were approximately 100 EHOs[30] working in First Nations reserves and approximately 600 to 700 First Nations community sites in Canada. Some First Nations also employ their own EHOs.

Alatalo explained workload is divided among communities and that the number of assigned communities is based on workload and workload is based on the EPHP as applied to the communities. The aim of the program is that the EHOs work under a work plan[31] finalized with the Health Departments in the communities while the plans cover each component of the EPHP which are reviewed with the community. Alatalo also explained that being familiar with community needs helps to figure out the workload in each community but that on-demand work is the hardest to gauge (i.e. rabies investigations, housing complaints, emergency calls).

Chan was asked how community members can report environmental health concerns to which she replied that they can contact their EHOs with their concerns and the EHOs will assess the situation to determine if it is a valid complaint. In some communities however, members report to the Band Administrator first and if it is an issue that can be dealt with internally, they will proceed in this way; if the EHO is needed, then he is contacted (N Noganosh, Traditional Person and Community Health Representative, Magnetawan First Nation). Being able to contact an EHO is a concern for some communities as one Community Health Representative (CHR) reported

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[29] EHOs can be responsible for up to 16 communities and may be overstretched in terms of their workload which can negatively impact communities. First Nations Environmental Health Innovation Network (2008). Proceedings Report of Contaminants and Environmental Health: A Discussion Group for First Nations in Ontario. August 5th, 2008, Ottawa, Office of the National Aboriginal Health Organization.

[30] In the 2006-2007 Health Canada Departmental Performance Report online, 478 First Nations communities were listed as having access to EHOs. Treasury Board of Canada Secretariat (2007). Archived - Health Canada, Section II Analysis of Performance by Strategic Outcome.

[31] Not all communities actually have a work plan.

that EHOs are not on-call after-hours or on weekends, which is a major concern for the CHR whom the community members contact for help on weekends (Anonymous, CHR). One of the comments from the 2008 National Aboriginal Health Organization (NAHO), First Nations Environmental Health Innovation Network (FNEHIN), and Chiefs of Ontario (COO) regional workshop on First Nations environmental health issues in Ontario was that participants felt that environmental health issues would receive more attention and be dealt with more effectively if communities had their own EHO as current EHOs are not residents in the communities (First Nations Environmental Health Innovation Network 2008).

Pamela Nolan, Health Manager at Garden River First Nation, stated that the EPHP and thereby Health Canada are "diminishing the governmental role of Chief and Band Council by forcing them to take on administrative duties that they don't have time for. Like the EPHP's reliance on the communication between the EHOs and Band Council to make the decisions...". She further explained that an administrative arm of the EPHP is needed to alleviate these duties from Band Council which does not have the resources to deal with the EPHP on top of all other duties.

Phyllis Williams, Manager at Curve Lake Health Centre, disclosed that the primary reason that Curve Lake First Nation entered into the HPPA Section 50 Agreement was because the community was lacking in services. When asked about any potential overlap between the services offered through the public health unit and federal programs received by First Nations, like the EPHP, it was explained that they try not to duplicate but rather compliment the federal programs (R Pellizzari, Medical Officer of Health, Peterborough County-City Health Unit). With a Section 50 agreement under the HPPA, First Nations can still use the services of their own Environmental Health Officer but can also call on the public health unit to provide additional support. For example, upon request of one of their First Nations communities, Peterborough public health staff created a report on how changing fish populations were related to water quality, which was submitted to the First Nations Council for their use (R Pellizzari). Likewise, Williams explained that because of their Section 50 agreement

they have the liberty of calling on the public health inspectors when there are issues such as disease outbreaks and broken playground equipment.

Access to internal resources (people, programs, partnerships)

Dean Jacobs, Walpole Island First Nation External Projects Contact Person, explained that Walpole Island First Nation is gifted in a way that they have a lot of capacity, especially human capacity, which gave the Heritage Centre the luxury of focusing on many environmental concerns while economic and community growth were already being addressed in the community. One participant stated that larger communities could likely develop higher standards and work more quickly than smaller communities due to the availability of resources (N Noganosh). When asked if a lack of resources was a reoccurring theme, one participant said yes and that many of the funding projects require "people with credentials" (P Williams). This is an issue for many First Nations because though they may have the expertise within their membership, they do not necessarily have the economic base to retain people in the communities (D Jacobs, S Chiblow).

Having the support of the community and having a community vision were two of the main reasons the Walpole Island Heritage Centre has had so much success in securing funding, completing projects, and building on their successes (D Jacobs). Being successful in securing funding is also "about the story and community vision and the politics of the First Nation. You might not agree with them [First Nations political leadership] but you have to understand how the operations of the First Nations government works" (D Jacobs). Jacobs further explained that the Heritage Centre's engagement of community members and the community's engagement and interest in the Centre's activities have and continue to be essential to their success.

The reputation that communities have for completing projects can also affect what funding opportunities they may receive. For example, Don Sharp at the AFN explained that, among other factors, the First Nations

community chosen for the Holmes on Homes project (Indigenous Corporate Training Inc. 2006-2013) was chosen because it has a reputation for "getting things done".

Core Conceptual Framework Elements

The three initial core framework elements of: 1) jurisdiction and responsibility, 2) participation in decision-making, and 3) access to resources, are presented below and represent three critical factors in understanding the strengths and challenges of environmental health management in First Nations communities. Based on the data gathered for the framework development and presented here some initial general observations of the role of these factors and their implications on environmental health management in Ontario First Nations are possible. In terms of jurisdiction and responsibility, there appears to be a lack of clarity for environmental health matters in First Nations due in part to the constitutional division of environment and health areas between federal and provincial governments overlaid with the complexities of service and program provision in First Nations. Participation in environmental health decision-making in terms of legislation and program development and review appears to be limited and the Crown's 'duty to consult' appears to have inadequately protected Aboriginal Rights in many events. Finally, access to federal and provincial environmental health resources is limited due to the inadequacy of the resources themselves as well as the time, money, and expertise First Nations require to access the resources.

The conceptual framework table (Table 6) was used to develop case study interview questions (also presented in Table 6) and to direct data collection and analysis around core elements and sub-elements, barriers, and strategies in the specific case presented in Chapter 4. Questions were also included in case study data collection to identify other information (factors, elements, barriers and strategies) not currently captured under the initial framework presented in this chapter. Chapter 4 presents the case study data and uses this structure to

evaluate the strengths, challenges, and strategies used to overcome these challenges. Review, critique and recommendations for adaptation to the framework are also presented.

Below is a conceptual framework presenting the core elements, sub-elements, challenges and strategies to overcome challenges in environmental health management in First Nations communities as identified in key-informant interviews and document review. Questions directing data collection for the case study are also presented for each element.

Table 6. Conceptual framework summary

Framework Categories and Data Sources	Sub-element	Challenges	Strategies to address challenges
Jurisdiction and Responsibility (who has right and power to apply legislation for environment and health issues in First Nations communities) **Document review:** legislation, legislation analyses docs, peer-reviewed journal articles, opinion papers and reports from well-established organizations working in health and/or environment (e.g. WHO) and from Aboriginal Political Organizations, First Nations community documents, Federal and provincial government docs. **Key-informant Interviews:** Chief and Council, Environmental Health Officers, community Health Directors , community persons with significant experience with environmental health, Assembly of First Nations and Chiefs of Ontario environmental reps, Federal	**Legal strength of legislation (enforceable, not enforceable, enforceable but narrow etc)** **Question to gather data about:** *What is the legal status and strength of existing legislation for the case example?*	Effectiveness of remediation **Question to gather data about in the case study:** *What, if any, challenges are created by the legal status and strength of existing legislation? (probe: Does the strength of existing legislation affect remediation processes?)*	**Question to gather data about in the case study:** *What, if any, strategies are used to address the challenges created by the legal status and strength of existing legislation? (probe: Are by-laws enacted? How does the EHO work to improve remediation?)*
	Scope of the regulations-making authority of the Indian Act **Question to gather data about:** *How, if at all, does the Indian Act affect how environmental health matters can be addressed on Aboriginal lands?*	**1. By-law enactment restrictions** **2. Regulatory framework creation** **Questions to gather data about:** *What, if any, barriers does the Indian Act create in addressing environmental health matters on Aboriginal lands? (probes: Does it affect the regulation-making process or by-law enactment in the community? Does it affect public health?)*	**Questions to gather data about in the case study:** *What, if any, strategies are used to overcome the barriers created by the Indian Act in addressing environmental health matters? (probe: How are regulations enforced? Through public education and persuasion? How are public health needs being addressed? Are partnerships formed with communities, Aboriginal Orgs (e.g. Chiefs of Ontario), government agencies (e.g. Ontario Water Wastewater Certification Office), or provincial departments (e.g. MOHLTC)?*

and Provincial reps for Aboriginal and/or health and environment issues	**Clarity (or lack) of who has responsibility for environment and health issues** **Question to gather data about:** *Is there clarity in the division of responsibility for the provision of environmental and health services to communities among federal, provincial, and First Nations governments?*	Access to resources and services **Question to gather data about:** *What, if any, are the challenges in the (lack of) clarity of division of responsibility for the provision of environmental and health services to communities among federal, provincial, and First Nations governments? (probe: does the community have access to the needed resources from the federal government? What environment and health services/resources does the community receive from the provincial government?)*	**Questions to gather data about:** *What, if any, strategies are used address the barriers created by lack of clarity of responsibility for the provision of environmental and health services to communities among federal, provincial, and First Nations governments? (probe: Does the community have the internal capacity to support its needs? Does the community form partnerships with other communities, Aboriginal organizations, or government agencies)*
Aboriginal participation in decision-making **Document review:** Federal and provincial government docs, opinion papers and reports from well-established organizations working in health and/or environment and from Aboriginal Political Organizations, First Nations community docs, peer-reviewed journal articles **Key-informant Interviews:** Federal and Provincial reps for Aboriginal and/or health and environment matters, Chief	**Nature of consultation with Aboriginal authorities.** **Questions to gather data about:** *What is or has been the nature of consultation with Aboriginal authorities for the development and review of environment and health laws, policies, and programs?*	Cultural acceptability of regulations, policies, and programs **Questions to gather data about:** *What, if any, are the challenges within or created by the consultation process with Aboriginal authorities for the development and review of environmental health laws, policies, and programs? (probes: How does Aboriginal participation (or lack of) affect the cultural acceptability/appropriateness of regulations, policies, and*	**Questions to gather data about:** *What, if any, strategies are used to address the challenges of the consultation processes with Aboriginal authorities for the development and review of environmental health laws, policies, and programs? (probe: Do Aboriginal organizations and community members educate government and lobby for legislative change?)*

and Council, Environmental Health Officers, community Health Directors, community persons with significant experience with environmental health, Assembly of First Nations and Chiefs of Ontario environmental reps		*programs?)*	
Federal programs and funding **Document review:** Federal and provincial government docs (e.g. program descriptions and histories, Auditor General reports), First Nations community docs, opinion papers and reports from well-established organizations working in health and/or environment and from Aboriginal Political Organizations **Key-informant Interviews:** Federal and Provincial reps for Aboriginal and/or health and environment matters, Chief and Council, Environmental Health Officers, community Health Directors, community persons with significant experience with environmental health, Assembly of First Nations and Chiefs of Ontario environmental reps	**Existence and funding for environmental health programs for First Nations communities.** **Question to gather data about:** *What environmental health programs exist for First Nations communities? How are they funded? Are there any program restrictions that could affect community accessibility?*	Access to programming that meets community needs **Questions to gather data about:** *What, if any, challenges are created by the nature, accessibility, and funding of the programs? (probes: Do mandatory programs like the EPHP meet community needs? What are the strengths and challenges of the EPHP? Does the community have access to non-mandatory federal programs? If so, which one(s)? If not, why not? Do these programs meet community needs?*	**Questions to gather data about:** *What, if any, strategies are used to address challenges created by the nature, accessibility, or funding of government programs? (probe: Are partnerships with other communities, Aboriginal organizations, or government agencies formed?)*
Community resources **Document review:** First	**Nature of community support for environmental health work**	Community interest **Questions to gather data**	**Questions to gather data about:**

Nations community docs, opinion papers and reports from well-established organizations working in health and/or environment and from Aboriginal Political Organizations, peer-reviewed journal articles **Key-informant Interviews:** Chief and Council, Environmental Health Officers, community Health Directors, Community Health Representatives, community persons with significant experience with environmental health, Assembly of First Nations and Chiefs of Ontario environmental reps	**Questions to gather data about:** *What is the nature of community interest and moral support for environmental health initiatives, such as research, public education, or remediation?*	**about:** *How, if at all, does community interest and moral support affect environmental health initiatives? (probe: does it affect its sustainability and success?)*	*What, if any, strategies are used to address the challenges created by community interest and moral support? (probe: provide tangible results to community to increasing community trust and support? Ensure cultural values are represented and respected in environmental health work? Educate community members about environmental health concerns?)*
	Availability of resources for Environmental Health work in community **Questions to gather data about:** *What is the availability of human and monetary resources for environmental health initiatives, such as research, public education, or remediation?*	Access and allocation of resources. **Questions to gather data about:** *How, if at all, does the availability of human and monetary resources affect environmental health initiatives? (probe: does the access and allocation of resources affect the type of environmental health work being done?)*	**Questions to gather data about:** *What, if any, strategies are used to address the challenges created by the availability of resources? (probes: Does the community form partnerships with Aboriginal organizations to collect data, conduct research, and lobby government? Are community members advancing environmental agendas be acting on interests/concerns in their personal lives?* *Does the community secure its own funding, partner with universities, or access non-mandatory government programs?)*

Chapter Four: Case Study

Introduction

This chapter presents a case study of the current strengths, challenges, and strategies of environmental health policy and management in Mississauga First Nation (MFN) with a specific emphasis on MFN's actions in relation to their concern regarding Cameco, a uranium refinery located on the border of their reserve lands. The conceptual framework and research questions developed in Chapter Three were used in the case study to: first, determine how the experiences of the case study communities fit within the framework; and second, illustrate how the communities' environmental health management approaches might be strengthened. This included using the framework to collect and analyze the case study data, evaluate the strengths and weaknesses of the case, make recommendations for improvements to current challenges, and to use the case study to further develop and adapt the conceptual framework.

Interviews and participants

Six semi-structured key-informant interviews were conducted in MFN with the Band Director of Operations, and with staff working in the Band Health Department and Lands and Resource Department (Table 7). Participants were sought based on their expertise in the health and/or environment sectors[32] and experience with the Cameco case (see Appendix B for participant backgrounds).

[32]Interviews were sought with members of Band Council but did not take place due to time constraints.

Table 7. Key-informant Interview Participant Characteristics

Name	Position	Area of Expertise
Jim Cada	Director of Operations	Environment
Keith Sayers	Lands and Resource Manager	Environment
Sue Chiblow	Environment Consultant for MFN	Environment
Linda Ambeault	Health Director	Health
Lucy Ann Trudeau	Assistant Health Director	Health/environment*
Rita Wilson	Community Health Nurse	Health

*Lucy Ann Trudeau has previous experience working in the environment unit that was part of the North Shore Tribal Council

Interview Questions

The case study interview guide (Appendix C) was developed based on the conceptual framework (See Chapter 3), and included questions and sub-questions regarding the three core framework elements: environmental health jurisdictions and responsibilities, participation in environmental health decision-making, and access to environmental health resources. Questions were also worded in a way that they were open to exploring other topics participants thought were of importance on the subject of their management of environmental health issues of importance to their people.

Document Review

Approximately 64 community documents (Appendix F) were accessed, 45 of which were used in the analysis. The documents were obtained from the MFN website, by searching through MFN Band Office bookshelves and binders, and through referral or request from key-informants willing to share electronic copies

of documents they thought relevant to the case. The types of documents varied greatly, ranging from community emergency plans, land management plans, air and soil monitoring studies specific to the Cameco site, to community ratification processes. A few federal government documents related to the First Nations Land Management Act (FNLMA) were also accessed to better understand the FNLMA process. For a detailed description of the methods used in the case study please refer to Chapter 2.

Results: Case Study Description

This section presents an overview of the case community and environmental health issue of focus that was chosen to direct the review of environmental health management in this First Nation. The information presented below comes from secondary sources, document review and key-informant interviews.

Mississauga First Nation Community Background and Relationship with Cameco

Using community documents and key-informant interview data, this section provides a description of the Mississauga First Nation (MFN) community, background information about the connection between MFN and the Cameco Uranium Refinery, and details regarding the perceived risk of uranium contamination in MFN, and efforts to address the risks over time.

Location

Mississauga First Nation is an Ojibway community located within Northern Ontario's Algoma District on Highway 17 above Lake Huron's North Channel and is part of the 1850 Robinson-Huron Treaty (Appendix G). The Town of Blind River is approximately one kilometer to the east and Sault Ste. Marie is 130 kilometers to

the west. The southern boundary of the reserve is south of the Trans-Canada Highway No. 17 and extends north to Chiblow Lake. Mississauga is one of seven member communities of the North Shore Tribal Council. The reserve is large but the community is settled in a small area of this land at the edge of Highway 17.

Land Base

Mississauga First Nation has one of the largest First Nations land bases in Canada (Mississauga First Nation 2012a) . The reserve is approximately 16,000 hectares and includes mixed forests, lakes, rivers and wetlands (Appendix H). Approximately five percent of the "reserve lands" are developed as the main community area, leaving the remaining 95 percent as resource lands (Ogamauh annag Consulting 2012).

The reserve land includes the original reserve land and the Land Settlement Area lands, which have recently been returned to the MFN. The original reserve land consisted of 1,977 ha located west of the Town of Blind River and was situated entirely within Cobden Township, District of Algoma. The Land Settlement Area consists of approximately 16,195 ha of land located Northwest of the Town of Blind River, in the Townships of Cobden, Scarfe, Thompson, Patton, Montgomery and a small section in Mack, District of Algoma. There are many other private and leased lands within or immediately adjacent to the land settlement lands. These lands will ultimately go through the Additions to Reserve process to become reserve land in the future (Genivar 2011).

People

At the time of the case study there were approximately 1150 registered members of the Mississauga First Nation in 2011 with 400 living on-reserve and 750 living off-reserve. Including the non-members and non-status individuals, there is an estimated on-reserve population of 480 (Ogamauh annag Consulting 2012). The largest demographic of on-reserve Band members are 19 years and under and comprise approximately 37 percent of the

total population(Mississauga First Nation 2012a). Since 1991, the overall Band membership population has grown significantly, but the on-reserve population has remained static for a decade(Mississauga First Nation 2012a).

Housing

There are 160 housing units registered in the community and 87 percent of these are single-detached dwellings and 13 percent apartments and other multi-units. MFN acknowledges that there has been a lack of new housing developed in the last decade(Mississauga First Nation 2012a).

Facilities

Some of the community facilities include: administration buildings, a sports & culture center, a ball field, an old church, cemetery, daycare, water treatment plant, fire hall, education office, library, and elders centre.

Infrastructure

The Water Treatment System was constructed in 1998 and water is piped to the treatment centre from a community well and then to homes. The community has a primary and secondary operator for its type 2 Water Treatment system. Waste is brought to the landfill located in the northern part of the community before it is transported off reserve. A recycling program includes blue bins collected from each house by Public Works where recyclable materials are delivered to the Blind River Municipal Waste facility.

Governance

Mississauga First Nation (MFN) is part of the Anishinabek Nation which is guided by the principles of B"Maadziwin, the "good life" (Mississauga First Nation 2012c). The principles of B"Maadziwin are the seven gifts given by the Creator: love, truth, respect, wisdom, humility, honesty, and bravery. While the governing structure of the Canadian parliament has been imposed on modern day First Nations governing systems, many First Nations, including MFN, are revitalizing and restructuring themselves into a "...system that promotes and maintains peace, welfare and good governance for its citizens, community, nation and the land" (Mississauga First Nation 2012c, p. 3).

Tribal Council

In 1985, MFN helped form the North Shore Tribal Council (NSTC), also known as Mamaweswen. The Tribal Council Program (TCP) is a component of the First Nation Indian Government Support Funding Program, and aims to "deliver products and services that enhance the collective sustainability of our member communities"(Mississauga First Nation 2012a, p. 10) More specifically, the TCP provides technical advice and services to communities in the areas of health services, second level education services, administration, financial management, economic development, employment and training services(Mississauga First Nation 2012a).

Connection to the land

Historically, the Mississauga Delta area, where MFN is now located, was inhabited by Ojibway people in the summer months, gathering to perform ceremonies and reconnect with family among other activities. When French and later British trading posts were established in the area in the early 1700s, the "Anishinabe balance of life began to shift" (Mississauga First Nation 2012a, p. 8)from complete reliance on the land to become increasingly reliant upon European trade goods including weapons, steel, and food. During the time leading up

to the War of 1812, land ownership and Aboriginal sovereignty was negotiated with various alliances and treaties.

During the 1840s, provincial and federal governments encouraged and supported non-Aboriginal settlement in Anishnawbek territory, increasing recognition of the need to legislate Aboriginal land rights and boundaries by the Chiefs of the Sault Ste. Marie area and the British government. The Robinson Huron Treaty, 1850 was thus created. This treaty aimed to "establish mutual government-First Nation respect, set aside specific lands for the exclusive use of the Anishinabe, provide unrestricted traditional hunting and fishing to First Nations people, and provide each Anishinabe family with a guaranteed annual payment to offset living expenses"(Mississauga First Nation 2012a, p.9).Treaty objectives were not met however and, due to territory restrictions, First Nations People in the area could no longer practice their traditional way of life.

In 1870, the first federal Indian legislation was passed, granting the superintendent General of Indian Affairs control over land within reservations, superseding the communities' autonomy. The federal government gained exclusive authority over Indian affairs by passing the *Indian Act* in 1876, including First Nations governance, lands management, and determining "Indian" status, among others. To date, the federal government maintains the power to legislate most Aboriginal affairs.

While the governing structure of the Canadian parliament has been imposed on modern day First Nations governing systems, many First Nations, including MFN, are revitalizing and restructuring themselves into a "...system that promotes and maintains peace, welfare and good governance for its citizens, community, nation and the land" (Mississauga First Nation 2012c, p. 3).

The Environmental Management Agreement, Step 2 – Milestone 1 states that MFN is "committed to their responsibilities of co-existence with all creation and their inherent right to self-government" (Ogamauh annag

Consulting 2012, p.3). It also explains that MFN leadership and Elders, through the signing of the treaties, have never surrendered their rights to manage the lands. The MFN Land Code reiterates this idea:

> The traditional teachings of the Mississauga First Nation speak of the obligation of the people of the Mississauga First Nation to care for and respect the lands and the magnificent wonders of Nature created on the land. By enacting this Land Code, Mississauga First Nation is reassuming this special responsibility which is believed to be part of its inherent right to self-government. The authority of the Mississauga First Nation to govern its lands and resources flows from the Creator to the people of the Mississauga First Nation, and from the people to Chief and Council according to the culture, traditions, customs and laws of our First Nation. (Mississauga First Nation Land Code 2009, Section 3.1)

Looking to the future, the MFN Comprehensive Community Plan states that "Land is the basis for determining community development and existence"(Mississauga First Nation 2012a, p. 12). In terms of environmental health management, monitoring and addressing the effects of the Cameco refinery are a primary concern for MFN since the late 1970s. Other current environmental concerns, in order of priority, include: 1. Solid Waste Disposal, 2.Sewage Treatment Management, 3.Environmental Emergencies, 4. Fuel Storage Tank Management and Mold Management in households, 5. Community Drinking Water Supply Protection and Drinking Water Treatment, 6. Environmental Impacts associated with Community Development, 7. Existing Abandoned Water Well Decommissioning and Environmental Impacts associated with Commercial Development, 8. Environmental Impacts relating to forestry operations and river/lake contamination, 9. Aggregate operations impacts, and, 10. Fisheries, and 11. Abandoned mine decommissioning (Ogamauh annag Consulting 2012).

History and Relationship with the Cameco Uranium Refinery

The material presented below comes from the case documents and key informant interviews and examines the following events relevant to the case study: the involvement of MFN in deciding Cameco's

location; an overview of the MOECC environmental monitoring of the Cameco site and the concerns raised by MFN for increased environmental and socio-economic impact assessments; a description of the uranium dust release incident of 1990 and subsequent environmental assessment and monitoring studies; an account of MFN's perceived environmental health risk of Cameco based on community documents (i.e. environmental engineering reports) and on key informant interviews. A timeline of events relevant to the case can be found in Appendix I.

Cameco's Location

Eldorado Resources Ltd., which became part of Cameco[33] in 1988, is a uranium refinery which produces uranium trioxide from an ore concentrate that contains 70 percent uranium (James F. MacLaren Limited 1978) and began operation in 1983. Cameco is located approximately two kilometers south of MFN's southern boundary on the Mississagi River (Appendix J). In 1979, the Government of Canada announced that the refinery would be built to encourage industrial development in the region. In 1980 (approx) an evaluation of cultural resources on the Eldorado Resources Ltd. Property concluded "it is of cultural significance that a refinery has been placed on an area of the delta that did not encourage Amerindian or early settler habitation" (Buchanan, Bertalli et al. early 1980s, p. 39). While the Buchanan study focused on events that took place centuries ago, Participant 1 shared recent information about the land used by Cameco:

> Down where Cameco is right now, a lot of our people used to camp there. Like years ago, even my Dad's time, people lived there along the riverbanks. We used to camp there as kids and we used to do a lot of logging, that river was used for logs so they used to do a lot of logging on that river. So I remember as a child being along that river where Cameco is right now and we'd go set up our camps for the summer and camp there all summer. And now, Cameco's been there since the 70s. They blocked off a road going to the boom camp and we wondered by they were blocking off the road not realizing that Cameco had already taken ownership of the land and was blocking it off. (Participant 1)

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[33]In 1988, a new private company, Cameco, was formed from the merger of two crown corporations, Eldorado Nuclear Limited and Saskatchewan Mining and Development Corporation. Natural Resources Canada (2007). "Phase I of the Port Hope Area Initiative Evaluation, AEB Project: EV0703." Retrieved Aug 29, 2013 (web page archived 2010), from http://www.nrcan.gc.ca/evaluation/reports/2007/2763.

Participant 1 further explained that a general sentiment in the community is that nobody knows how Eldorado came to be on that land or that people must know but will not say. Jim Cada, Directors of Operations at MFN, explained that in the 1970s the Chief was in support of Cameco because of the opportunities it represented for community members in terms of employment.

Despite major opposition from concerned citizens, including surrounding First Nations, the MFN Chief at the time, Camille Chiblow strongly supported the Blind River site for Eldorado and actively lobbied for its construction. One article of The Star newspaper (date unknown, prior to 1983) entitled "Eldorado has raised shrill voices on North Shore" quotes Chief Chiblow as saying "We campaigned damn hard to get that thing in here. My people want to work" (Vander Doelen n.d.). The same article also quotes Chief Chiblow as saying "We are absolutely sold that is a clean plant. That's the first thing we wanted to know when we heard they were coming in here – how clean is it? I'm convinced the precautions are adequate". Among other efforts, Chief Chiblow sent letters to the Minister of Energy, Mines, and Resources (Chief Cammille Chiblow 1978), the Environmental Assessment and Review Board (Chief Cammille Chiblow 1978), and to Environment Canada (Chief Cammille Chiblow 1979), supporting the Blind River location for the refinery. In one letter, Chief Chiblow reiterated the messages the Band's youth had on placards during a visit to the Minister of Energy, Mines & Resources: "We need Eldorado, We need jobs, We want steady employment, We want a better standard of living, We are tired of Welfare" (Chief Camille Chiblow 1978a)

In 1980 Eldorado Nuclear Ltd. submitted a Site Approval Application to the Atomic Energy Control Board (Eldorado Nuclear Limited 1980) for the Blind River site, which was subsequently approved. In the application there were two notable changes to the project that has been previously accepted by a Federal Environmental Assessment and Review Panel in 1978. One was that the refinery would produce double the uranium trioxide (UO_3). The other was a change in refinery location. The report states that the refinery had

been moved 2.5 km northwest of the original location (Appendix K). The analyses of the original site which was characterized by a low-lying swampy area and large, relatively flat outcrops show that "...although construction on rock is feasible, the expense and the disruption caused by blasting to level the area could not be justified. Thus, an agreement was reached between Eldorado and the Town of Blind River to select an alternate location" (p. 1-1).

A letter to MFN from Eldorado in September of 1980 explained that the construction on the original site for the refinery would be "extremely difficult" but that during a discussion with the Town of Blind River, the town agreed to allow Eldorado to move the site to a new location near the Mississagi River and that Chief Camille Chiblow stated that "he would not object to the move as long as an adequate buffer zone was maintained" (Stinson 1980 (Sept), p. 1). There is also documentation about an exchange of land between MFN and Eldorado Ltd which resulted in MFN acquiring three parcels of land in exchange for giving up future land claims against the Eldorado site and signing a two year permit allowing Eldorado to proceed without intervention from MFN (Stinson 1980, Barrister & Solicitor 1980 (Oct)). A letter written by the then vice-president of Eldorado Nuclear Ltd. to Chief Chiblow in 1980 states that a donation of $15,000 would be made to the Mississauga Band Recreational Hall Building Fund upon Eldorado receiving site approval from the Atomic Energy Control Board (AECB) (Dakers 1980 (Nov)).

In October of 1980, the Blind River and District Concerned Citizens Association (BRDCCA) submitted a document to the AECB for the review of the site application for the refinery (Campbell and Purych 1980). This report heavily questions the decision to change the site location as "Thousands of dollars were spent on site plans, geology and hydrogeology surveys; all concluding that the [original] site was suitable" (section 2. Site Change, para 3). The authors go on to discuss the environmental, cultural, recreational, and historical importance of the new site and state that "Under no circumstances should this area be subject to industrial development… We can not[sic] fathom the rationale of Town Council in offering this as industrial land,

especially to an industry that is surrounded by such an aura of controversy". (Section 2. Site Change, para 7). The BRDCCA subsequently submitted comments regarding the AECB's reply to their original submission in which it states:

> It has not been explained why the new site was not selected prior to the Hearings in 1978. A competent company would have picked the cheapest site first... The people of Blind River, including the members of Town Council have always felt that E.N.L. [Eldorado Ltd] chose the more expensive site to sway the Panel away from choosing Blind River due to economic considerations. Then when directed by a political decision to come to Blind River, E.N.L. "suddenly discovered" a new and cheaper site to avoid higher costs. (Blind River & District Concerned Citizens Association (BRDCCA) 1981 (Feb 18), Section 2(a) Moving the Site, para 1).

The document further discusses how the public would have shown much more opposition to the new site than they did to the original site at the time of the public hearings due to its significance s a recreational area.

Transcripts from a 1978 Environmental Assessment & Review Panel in Blind River show Chief Chiblow asking about needed qualifications for prospective employees and how long job training would last. The reply from the Blind River refinery manager at the time, W. J. Stinson, to chief Chiblow was that the needed qualifications would be a grade 10 education or be 35 years old with experience, and training would last between two weeks and three months (Environmental Assessment & Review Panel 1978). A letter written in 1981 by W.J. Stinson (Blind River refinery manager) to the new MFN Chief at that time, Irvin Niganobe, states that preference will be given to local people for all of the job opportunities as long as qualifications are met. The required qualifications listed in this letter for non-trades people was a grade 12 education or equivalent and three to six months of job training, as opposed to the original grade 10 education and two weeks to three month training requirements, respectively (Stinson 1981).

A Comprehensive Community Profile from the early 1980s stated that Eldorado Nuclear had not fulfilled MFN Band expectations: "First, Band members did not have the initial input they desired. Second, the Band did

not receive the anticipated employment. Third, members see the potential land exchange between the Band and Eldorado as beneficial only if Eldorado signs a training and employment agreement with the Band" (Coda Computer Systems Limited n.d., p. 3,4.). Similarly, in 1983 one of the conclusions of an Environmental Impact Protection Program Summary Progress Report stated that in regards to employment that the expectations of the MFN were not fulfilled as the Band was interested in ensuring 17 members obtained employment at Eldorado, while only eight did. The results of a community survey completed in 1984 found that Band members indicated that they did not have a true "say" on the refinery's presence (Mississauga Band of Ojibways 1984).

Environmental Monitoring of Cameco

In 1981, the Ontario Ministry of the Environment initiated a network of permanent tree plots in the vicinity of the refinery and samples of vegetation were collected for chemical analyses. Results from analyses of samples taken from 1981-1987 concluded that: uranium concentration in foliage of vegetation has increased primarily up to a distance of 300 m from the refinery with no discernible effect at 2400 m; significant accumulations of uranium had occurred in two and three year old needles of red and white pine 200 m northeast of the refinery; minor increases of uranium in surface soil up to 1200 m from the refinery were observed but were considered to be within normal ranges; the highest level of uranium found in wild edibles were within a normal concentration (0.67 ug/g); no phytotoxic (toxic effect of chemicals on plant growth) effects from the refinery in vegetation were reported; levels of uranium in the soil in the vicinity of the refinery were not expected to have a phytotoxic effect; and high volume samples collected at St. Joseph's Hospital from 1982 to 1987 indicated low levels of suspended particulate in Blind River (Environment Ontario 1989). Another study done by Environment Ontario using moss monitors to detect uranium increases in sites around the refinery concluded that the greatest impact was observed to the east and northeast of the refinery to a distance of up to

800 m but that uranium emissions from the refinery were detected by all monitors except the control (Environment Ontario 1992).

In 1984, MFN created a Terms of Reference for an Environmental Impact Assessment and Socio-economic Impact Assessment of Eldorado Ltd (Mississauga Band of Ojibways 1984). This document states that a 1984 community survey found that "the Band members have indicated that they had no real say in whether the plant should exist" (n.p., Para 3, Background). In 1985, a letter from S. Radcliffe, Project Engineer, Environment Canada replying to the letter sent by Mr. Bruce Ralph, environmental planner (Environorth Associates Inc.), outlining the Terms of Reference prepared by the Mississauga Band for a study entitled "Environmental Impact Assessment of Eldorado on the Mississauga Band" states that based on the monitoring results to date "there is not a need at this time for additional monitoring in the vicinity of the refinery. Perhaps after the plant has been in operation for five years or so a reassessment of environmental impacts could be undertaken" (Radcliffe 1985, p. 1-2)[34].

Accidental Dust Release at Cameco

On May 16th and 17th, 1990, there was an accidental dust release of 178 kilograms of yellowcake uranium from Cameco. Lucy Ann Trudeau, Assistant Health Director, remembers the accident and explained:

> When they had that last spill there was a big dust plume and everyone noticed the dust. Had they not seen all of the physical evidence, there was no warning, no media release of information, it was just that you could see it... I don't think we knew for a couple of weeks that it actually happened.

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[34]In 1982, MFN, Serpent River First Nation, Spanish First Nation submitted a joint proposal to study the impacts of resource development on their respective First Nations. Some of the goals of the MFN study were to ensure safe air and drinking water from effects of the refinery, to collect baseline community health data, to ensure that the health of MFN members working at the refinery is adequately protected, and to enable MFN to maximize social benefits while minimizing losses associated with the operation of the refinery. No community documents were found showing evidence that this study was conducted. Chief and Coucils of the Mississaugi and Serpent River and Spanish River Reserves (1982 (Aug)). A joint proposal for funding to study the impact of resource development on the Mississaugi, Serpent River and Spanish River Reserves, Submitted to: Minister of Indian Affairs Department of Indian Affairs and Norther Development.

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Similarly, Participant 1 explained “There was a dust on everything… nobody would have known had they not started questioning what the stuff was that was coating everything... there was a lot a lot of dust”. Regarding the community notification of the release, Sue Chiblow the Environmental Consultant for MFN, explained that “they didn't have any type of plan in place to notify any of the surrounding communities”.

A document entitled “Unusual Occurrance[sic] Report” by Paul Taillefer, Environmental Health Officer from Health &Welfare Canada provides a description of the 1990, May 16th and 17th, dust release at Cameco which claims that “there was an easterly wind, which caused the dust to be carried in a westerly direction and over the Mississauga First Nations location” (Taillefer n.d. (1990), p. 1). The document also includes the “action taken to date” with a list of eight people and departments contacted, six on May 17th, and the remaining two on May 18th. At the end of the document, Taillefer writes that Chief Doug Daybutch of MFN should be contacted as soon as possible and be informed of the occurrence. No date was found on the document so it was impossible to determine how much time elapsed between the spill and the Chief being contacted, but he was not among the first eight, even though the vested interest of MFN regarding the occurrence is clearly stated[35] in the report.

Following the dust release of 1990, Dr. Rosalie Bertell at the International Institute of Concern for Public Health conducted a preliminary investigation in MFN known as the “Bertell study” (International Institute of Concern for Public Health 1991). The purpose of the study was to “...determine whether or not a more detailed health and environmental monitoring programme is warranted at the Mississauga First Nations Reserve” (p. I). The environmental testing included random sampling and analysis of drinking water in local wells, vegetation, medicinal herbs, and soils in the vicinity of the reserve. Analyses of air filters in personal automobiles operated on the reserve during the release were used as an indicator of uranium, while not a quantifiable measure of

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[35] “...Mr. Paul Taillefer, was notified, because of the involvement of the Mississauga First nations Reserve” (p.1)

exposure. The report concluded that the effect of the combination of uranium in "drinking water, soils and vegetation on the reserve… poses a potential health risk to Band members. Further study to determine the extent of this risk and the need for further action by the Band is warranted" (p. II).

Following the Bertell study, three groups of experts concluded that the Bertell findings were invalid. One was from the Bureau of Radiation and Medical Devices Medical Advisor who concluded that rain and wind conditions would have made it extremely unlikely that any radioactive dust came in contact with people in the region and that the methodology used in the Bertell Study was flawed and conclusions invalid (G.E. Catton 1990). A second was from the Supervisor and Project Officer of Uranium Processing Facilities Section of the Uranium Facilities Division concluding that risk of harmful impacts to humans, soil, and vegetation were very low (White and Vajcovec 1990). A third, a correspondence by Dr. F. Lapner at the Children's Hospital of Eastern Ontario, concluded that the blood and urine samples of children collected during the Bertell study did not provide evidence of any medical condition related to the dust release (Fred Lapner 1990). In 1992, the MOECC released a report stating that phytotoxic effects were not expected to result from soil and vegetation uranium concentrations based on samples taken in the vicinity of Cameco in May 1990 and that the total suspended level and airborne radionuclide concentrations based on available monitoring results were below draft guidelines developed by Health and Welfare Canada (Ontario Ministry of the Environment 1992).

MFN perceived risk of Cameco

The document review revealed that in the early 1990s, MFN contracted environmental engineering consultant Henderson, Paddon Environments Inc. to conduct their Environmental Issues Inventory Phase II.

This study listed the uranium contamination risk from Cameco as "high"[36] and recommended action be taken to monitor air-borne uranium due to risk posed to MFN. In 1997 Henderson Paddon Environments Inc. conducted the Mississauga First Nation Phase III Environmental Issues Inventory of Selected Sites. Through various means of consulting community members, a list of the top five environmental issues was created. Although the uranium contamination concern was not part of this final list, it was noted in the report that the community members still felt it was an important concern. One of the explanations for the uranium issue being left off of the list is that at the time of the study, MFN had already been engaged in the First Nations Land Management Act (FNLMA) steps (for which environmental issues inventories are needed), and which regulations are limited to "on-reserve" environmental issues and Cameco is located "off-reserve". As part of the FNLMA Framework Agreement at the time, a First Nations had to enter into an Environmental Management Agreement[37] with the

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[36]A high ranking would indicate that the situation of exposure does or is likely to cause human health/safety problems with the community and the environment (no date). The environmental concerns listed in the report are: "1) the air-borne emissions from the CAMECO refinery may be affecting the health of the First Nation people, 2) the emission records received from CAMECO may not reflect the actual conditions on the First Nation, 3) when accidents or incidents occur, CAMECO may not always notify the First Nation, 4) the high volume samplers provided by INAC are missing some components and have never been set-up, 5) impact of increasing uranium levels in soils and vegetation on health, 6) impact of increased likelihood of large release due to reduced staff and increased plant age". The recommendations included: "1) immediately commission and set-up the hi-vol samplers, train First Nation staff, and initiate a regular operation, analysis, and evaluation program to determine and monitor uranium in air levels on the First Nation using First Nation members or a consultant, 2) request all historical and ongoing CAMECO hi-vol, stack emission, and wind results, including all individual results, 3) request that CAMECO provides a working copy of the current air dispersion model, parameter assumptions, and relevant documentation, 4) request that CAMECO provide the DRL development reports, data, and assumptions used to calculate the latest DRL, 5) evaluate this air dispersion model and, if appropriate, use CAMECO's hi-vol and stack results and the MOE's and the First Nation hi-vol results to calculate isopleths (contours) or uranium in air on the First Nations, 6) design and carry out a survey to determine good intake patterns for Mississauga First Nation members, 7) design and carry out a uranium in soil and vegetation program at appropriate locations on the First Nation and compare the results of this program to literature results on uranium bioaccumulation, 8) evaluate and use the results of the literature search and technical assessment from section 6.1.1 (to determine the current state of knowledge of the effects of law levels of uranium in drinking water, urine, and blood upon human enzyme activity and upon the human genome) to estimate the potential health impact of the uranium in soil and vegetation levels observed/predicted on the First Nation, 9) obtain and review a copy of the latest Facility Licensing Manual and the latest Facility Operating License for the refinery, 10) request the AECB to consider the above results in their next review prior to issuing another Facility Operating License, request that the AECB hold the Board meeting to consider this license at the First Nation, and, depending on the results above, request the AECB to direct CAMECO to install HEPA or other appropriate filters to ensure that no detectable uranium in air emissions reaches First Nation property" (no page # available).

[37] EMA has four steps: Step 1 – identify environmental issues, Step 2 – Develop plan for enacting laws and negotiate EMA, Step 3 Develop, adopt and enforce environmental laws, Step 4 – Monitor EMA and laws. Genivar (2011). Environmental Management Agreement - Step 1. Owen Sound, ON.

Federal Minster of the Environment before “Law Making Powers” are granted to First Nations[38](Genivar 2011). In 2011, Step One of the EMA was completed and 11 Categories for Environmental Regulations[39] were created. It is important to note however, an Environmental Issues Matrix was created to interpret the priority ranking of the environmental issues and that Cameco (air emissions) had the third highest “environmental score” and tied for highest overall “environmental ranking” score (Genivar 2011). It should also be noted that the top four of the 11 categories are mandatory priority areas under the FNLMA (Genivar 2011).In regards to the off-reserve concern, the EMA Step One also states that:

> The consultation process also identified significant environmental concerns associated with off-reserve development/operations and their associated impacts on-reserve. The Cameco Uranium Refinery located immediately south of the reserve lands continues to be a major environmental concern to the community... There is a need to develop on-reserve regulations in consultation with off-reserve government agencies to address these environmental issues which previously had fallen through the ‘environmental gap’ due to the lack of federal applicable regulations that could not be enforceable on reserve lands. (p. 4-11)

Perceived risk of Cameco

Five of the six key informant interviewees stated that the environmental health risks of uranium contamination from Cameco were the most important concern of community members. Participant 1 explained that before Cameco (Eldorado at the time) "a lot of our community members were healthy, they didn't get sick, and I look at our community now and I see a lot of cancers coming up now, breast, lung, and cervical cancer in

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[38] Changes to the FNLMA in omnibus bill 185 in fall of 2012 no longer require an EMA. Cada, J. Personal Interview 2013. D. Denomme. Mississauga First Nation.

[39] The categories are: 1. Solid Waste Disposal, 2.Sewage Treatment Management, 3.Environmental Emergencies, 4. Fuel Storage Tank Management and Mold Management in households, 5. Community Drinking Water Supply Protection and Drinking Water Treatment, 6. Environmental Impacts associated with Community Development, 7. Existing Abandoned Water Well Decommissioning and Environmental Impacts associated with Commercial Development, 8. Environmental Impacts relating to forestry operations and river/lake contamination, 9. Aggregate operations impacts, and, 10. Fisheries, 11. Abandoned mine decommissioning. Ogamauh annag Consulting (2012). Environmental Management Agreement, Step 2, Milestone One, Final Report (draft).

our women". When asked when she noticed an increase in cancer, Lucy Ann Trudeau, MFN Assistant Health Director explained:

> Probably a few years after the Cameco dust release. I'm an outsider but I've lived just west of the community for the last 25 yrs and from an outsiders perspective you can actually see the difference in the cancer rates and the numbers of people that are affected by cancer. I've always been involved with Fist Nations health and environment and you can see the increase in numbers that have been affected by cancer and in particular on West St... You have to question what the effect or long-term impacts of even that dust release were on things that are grown in the ground. Like a lot of people rely on berry picking and small game, big game. And all of that stuff comes from the earth and we're eating it. So it's like are we continuing to ingest stuff that's slowly killing us or causing people to have cancer.

Keith Sayers, Lands and Resources Manager, explained that there have been MFN members who have worked at Cameco and died of cancer but the empirical evidence linking Cameco and cancer does not exist. As reported by Participants 1 and 3, some community members believe that they can "see" an increase in cancer and that it is related to Cameco. Jim Cada, Director of Operations for MFN, however reported being weary of the anecdotal evidence and supports initiatives to collect data, such as the current air monitoring program. His involvement with Cameco began as a field technician for Northland Engineering in the early 1980s, he has also reviewed the 1972 pre-operational study, and has always remained informed of Cameco's operations. Regarding the dust release of 1990, he explained that:

> Rosalie Bertell had come and tested the water and the uranium was way above acceptable levels. We basically started doing a monitoring program, we had the drinking water program where we were getting bottled water and delivering it all and it became an operational nightmare. At least on a monthly basis we were doing 32-step chemical testing and every third month we would test for uranium and heavy metals. None of the tests ever came anywhere close to the numbers that Rosalie had gotten in her samples. You know uranium doesn't just go away so I just have questions about that. We spent a lot of money doing testing for three years and then finally said let's do something about the system and we ended up getting the filtration unit due to the high concentrations of iron and manganese. (J Cada, Director of Operations)

Jim Cada recognizes that Cameco is a major issue for much of the membership but reported that he personally does not consider it “as huge of an issue” as it is for some.

One of Sue Chiblow’s (Environmental consultant for MFN) main concerns with Cameco is the fact that, like other industry, the majority of their environmental monitoring is performed internally. Similarly, Keith Sayers, Lands and Resources Manager, explained that the main concern of the community right now is Cameco and "how they discharge from their plant. They have an effluent pipe going into the river but nobody really knows what they were putting into the river. They say it's just clean water recycled back into it but you don't know".

Based on participant comments, the relationship between Cameco and MFN is complex. On one side, many members are skeptical of Cameco’s safety and report that they do not trust that they are properly protected or will be properly informed of environmental health risks. On the other, Cameco employs a number of MFN members and provides funding for various initiatives in MFN. Examples of participant comments regarding the relationship between Cameco and MFN included: “When they do have spills we're not really notified. We don't get any information in regards to when something has happened at the refinery….they don't inform the communities and don't consult and let us know what's happened” (Participant 2); “Cameco greases a lot of palms” (Participant 1), and “you don’t bite the hand that feeds you” (Participant 3).

Current management of environmental health risks associated with the Cameco refinery

Cameco is located “off-reserve” and is regulated by the Canadian Nuclear Safety Commission under their *Uranium Mines and Mills Regulations.* This means that at this time, even with the FNLMA and subsequent Land Code, MFN laws do not apply to Cameco. Regardless, MFN continues to be proactive in the management of all of their traditional territory to ensure its protection. There is currently no empirical data available to

suggest Cameco is negatively affecting the environmental health of MFN residents. Data gathering programs in MFN have begun such as an air monitoring program in 2012[40](Mississauga First Nation 2013) and the MOECC has a permanent soil sampling plot, but data is not available at this time. The reported increase in chronic disease, specifically breast and cervical cancer in women, has not been linked to uranium contamination, but again, that research has not been conducted.

Results: Framework Analysis

This section presents the results of the case study analysis of the factors influencing environmental health management in the Mississauga First Nation and their relationship with the Cameco site. The analysis draws upon key-informant interview and document data. The three core framework elements developed in Chapter 3 (environmental health jurisdiction and responsibility, participation in environmental health decision-making, and access to environmental health resources) were used to direct, but not limit data collection and analysis. Two additional core framework elements emerged from the data during analysis that did not fit the existing themes. They are included in the presentation of case study results below.

When present in the data gathered, conflicting data for any one framework element was judged based on the source (present in single or multiple sources), frequency (number of participants expressing that view), strength of argument (clarity and weight of evidence present in the comment or document) and its relevance to the framework element being assessed. Conflicts and conflicting data are presented in the results of the

[40] It should be noted that the Ontario Ministry of the Environment and Climate Change initiated a high volume sampling program in the community of Blind River in 1982. Environment Ontario (1989). Studies of the Terrestrial Environment and Ambient Air Quality in the Vicinity of the Eldorado Resources Ltd. Refinery at Blind River, Ontario 1981-1987**:** 1-22.

framework analysis and when possible, potential explanations for conflict or disagreement on a framework element are identified as to why conflicting ideas were expressed by participants.

The results of the analysis for each framework sub-element starts with an overview of the analysis for that element. The overview also includes a summary table evaluating the importance of the issue (Important/Not Important) and the type of impact the issue (Positive/Negative) has on environmental health management in MFN as well as the level of confidence (Low, Med, High) in the accuracy of these evaluations (see Chapter Two for description of scoring system used). Each overview section is followed by a more detailed presentation of the data for that sub-element and the specific strengths and challenges related to that issue in MFN.

Core Framework Element #1: Environmental health jurisdiction and responsibilities

a) Clarity in division of responsibility between federal and provincial governments

Overview

Table 8. Summary of Importance, Type of Impact, and Level of Confidence for the Clarity in Division of Responsibility between Federal and Provincial Governments

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Negative	High
Case Documents	Important	Negative	High
Overall Score	Important	Negative	High

The data collected from the case documents and key informant interviews, suggests that the manner in which environmental health jurisdictions and responsibilities are divided among federal and provincial governments greatly affects how MFN manages environmental health. The majority of the participants and various community documents (e.g. MFN Environmental Management Agreement) suggested that there is a significant lack of clarity in how these jurisdictions and responsibilities are divided, having negative impacts on

the type and amount of funding received, the kinds of programming offered, and the environmental protection of reserve lands from industries located both on- and off-reserve, all of which affect how environmental health is managed in MFN. When asked if there were positive aspects to the division of jurisdictions and responsibilities, the only responses were related to the steps MFN has taken to improve the clarity of this division (i.e. become part of the *First Nations Land Management Act* and develop a Band Constitution). The consistency with which this lack of clarity and its negative impacts on environmental health management were noted by participants and in case documents, suggests a high level of confidence that it accurately represents one aspect of environmental health management in MFN and that it has negative consequences.

Data

When asked if there is a clear division of responsibility for environment and health matters in the community among federal, provincial, and First Nations governments, Lucy Ann Trudeau, Assistant Health Director in MFN, said:

> I think there's always going to be finger pointing and the feds will say oh that's a provincial matter and the province will say that's a federal matter but ultimately the federal crown has the fiduciary responsibility for all things First Nations whether it's health, housing, economic development, it's the crown's responsibility. The Crown's responsibility goes to Health Canada and Health Canada has divided themselves into umpteen different little subunits and everybody says well that's your responsibility.

Participant 1 also discussed the controversy over the division of responsibility by saying “The feds and the province never agree on anything anyways and they are always battling about who's going to take responsibility and we're stuck in the middle.... they never communicate and or take responsibility and it's always been like that”.

In terms of dealing with the environmental health effects of off-reserve industry in First Nations, Lucy Ann Trudeau, Assistant Health Director, explained that Canada and Ontario:

> …are both laissez-faire about what the impacts of industry are. Canada says well that's [Cameco] outside our jurisdiction and we're sitting there saying well it might be provincial jurisdiction but it's having a direct impact on us because it's right there. The feds won't do anything until something major happens but they won't be proactive in any initiatives or funding.

Provincial legislation typically does not apply to First Nations lands and most sectors of the environment are provincially regulated. As stated in the MFN Environmental Management Agreement – Step 1, the issues of jurisdiction and the limited federal regulatory framework that applies to First Nations lands means that members living on-reserve "do not benefit from the same level and types of environmental protection provided to off-reserve residents. The implications of this "regulatory gap" may be significant and include undesirable environmental impacts, risks to human health and the undermining of economic development" (Genivar 2011, p. 1-1).

Strengths

When asked about the strengths of the clarity of the division of responsibility for environmental health matters, most of the responses were related to the strengths of being part of the FNLMA and how it increases the jurisdiction and responsibility of MFN to manage environmental health matters. By being part of the FNLMA, Keith Sayers, Lands and Resources Manager explained that it is easier to have jurisdiction over environmental matters because "we know who community members are and as we all know when we have a figure of authority coming into a community there's going to be resentment. This way everyone knows who we are… the trust is there".

Another strength of jurisdiction and responsibility for environmental health management will be the forthcoming Band Constitution, a major part of MFN's governance structure(Mississauga First Nation 2012a). The document states that:

> The Constitution will be the document that outlines the authority of MFN to govern its territory and make laws for the betterment of the membership. The Constitution will empower MFN to make laws and policies that are tailored to the values of the membership and issues facing the community. The constitution signals to various levels of government that MFN is ready to take a significant step toward self-government. (p. 33)

Challenges and Strategies

Since gaining more capacity via their environment unit to do environmental health work, one of the challenges discussed by participants was the need to increase community education related to environmental health issues in order to minimize rumours of environmental health risks. Strategies used to increase knowledge of environmental health facts were for MFN to have its own environmental monitoring programs, such as the recent air monitoring program to establish a user friendly environmental database: "The biggest thing is having something like a database, with the new server, where we have something where somebody can go in and look at some of these environmental things" (J Cada, Director of Operations).

Another challenge of the jurisdiction and responsibility of environmental health management in MFN is to meet environmental needs while ensuring the importance placed on each issue is scaled appropriately. As Cada explained, one reason for this has to do with the Additions To Reserve (ATR) policy and how adding 'reserve land' is dependent on the environmental conditions of that land: "So the ATR policy said if you think it's a huge problem and you want to address it then that's got to be cleaned up before we look at anything else" (Director of Operations). To address this challenge, he tries to "...balance what we can live with and whether it's an issue that really needs to be addressed, let's address it ourselves".

In regards to addressing current or potential issues from Cameco[41], Assistant Health Director, Lucy Ann Trudeau, explained that the biggest challenge is that there is not a "go-to" document outlining the law in regards

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[41]Cameco is regulated by Canadian Nuclear Safety Commission under their *Uranium Mines and Mills Regulations.* Ogamauh annag Consulting (2012). Environmental Management Agreement, Step 2, Milestone One, Final Report (draft).

to industry in close proximity to First Nations. One of the strategies used to address this lack of a "go-to" document of legislation is MFN's Community Emergency Plan. While nothing specific about Cameco is in the Plan, Trudeau explained that MFN is part of Cameco's own emergency plan and that MFN leadership would be aware of the emergency protocol and from that point, the MFN Plan outlines how to inform the community about any hazards.

The most common response among participants when asked about the challenges of jurisdiction and responsibility of environmental health issues were the monitoring of lands and enforcement of the new Land Code laws. A major strength of having a Land Code is the ability to enforce laws on reserve land, but there are many challenges in the logistics of enforcement. One of the first challenges that the participants predicted for the upcoming implementation of the Land Code was the time it will take to obtain community "buy-in". As Participant 2 explains "Part of the challenge is people actually buying into it… currently there is no land-code structure... how do we let people know that this is not acceptable when people have been able to do it for eons"? Beyond obtaining community buy-in and implementing local enforcement, another challenge is "...and having the courts recognize our laws and say yes they will enforce them" (J Cada, Director of Operations).

Suggested strategies to address the challenges of enforcement included having someone such as a Conservation Officer monitor the lands, though current financial constraints are a limiting factor (K Sayers, Lands and Resources Manager). As mentioned in the EMA Step 2 – Milestone One document, "the community input and on-going dialogue will be a key to the success of the regulations and to the monitoring/enforcement of the regulations" (Ogamauh annag Consulting 2012, Section 4.1); Sayers, Manager of the Lands and Resources Department explained that staff try to engage with members away from the office and out in the community about the issues and try to educate people as to the ramifications of their actions on the environment. Sue

Chiblow, the Environmental Consultant for MFN, explained that another strategy relates back to the development of the Land Code laws which will be inclusive of "the different regulations and best practices that are out there and then also looking at our historical laws or traditional laws and process and we're going to take the best and apply it... we need to use education before legislation".

b) Clarity in division of responsibility between 'health' and 'environment'

Overview

Table 9. Summary of Importance, Type of Impact, and Level of Confidence for the Clarity in Division of Responsibility between "Health" and "Environment"

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Negative	Med
Case Documents	No data available	No data available	No data available
Overall Score	Important	Negative	Med

As discussed above, there is a lack of clarity in how jurisdiction and responsibility are divided among federal and provincial governments for environmental health matters. Further complicating this division is the labelling of environmental health issues as either "health" or "environment" issues. Based on the participant responses, this labelling encourages environmental health matters to be managed separately as either health issues or environmental issues, furthering the disconnection between people, place, and health in the design and administration of services and programs. This issue was discussed at greater lengths by members of the Health Department than the Lands and Resource Department for reasons that Health Canada offers funding for such things as water testing and environmental contaminants monitoring to First Nations Health Departments, which means the health staff duties cover both "health" and "environment" services. The Lands and Resources Department does not however have the role of providing "health" services in addition to their environmental

work. There is a medium level of confidence that this is an important issue with negative implications on how environmental health is managed in MFN.

Data

Assistant Health Director, Lucy Ann Trudeau, explained the disconnection between health and environment in Health Canada funding:

> In terms of funding, what's come down from Health Canada environmental health is specifically environment, like the physical environment and the contaminants and like testing water, and soil health but nothing for impacts of environment on health. So they are two very separate items… our funding through health looks after our health but then we're having to look at you know, how did you get to that point?

She went on to explain that "We're [the Health Dept] pretty much on our own in terms of what we want to do for environment. It's based on our own level of expertise and what we think we need to be doing for it".

Basically, the only mandatory funding provided to First Nations from the federal government labelled as 'environmental health' is through Health Canada and the responsibility of working with the Health Canada Environmental Health Officer (EHO) is assigned to First Nations' Health Departments. This is a good example of how the division of environmental health into "health" and "environment" lacks clarity; in MFN the community health nurse[42] is assigned to work with the EHO, including dealing with drinking water and septic testing results, and addressing dog-bite concerns, duties not assigned to off-reserve community health nurses (Canadian Public Health Association 2010).

[42]In many communities the Community Health Representative is the liaison with the Environmental Health Officer.

Strengths

MFN Health Director Linda Ambeault explained that one of the strengths related to the division of responsibility for environmental health as either "health" or "environment" matters gives MFN Health staff somewhat more freedom to develop programming to meet community needs, relying on their creativity and resourcefulness. Another strength that participants listed was that if community members become ill from an environmental hazard or if there was an environmental emergency, the community would work together to address the issue regardless of typical day-to-day responsibilities (K Sayers (Lands and Resources Manager), Participant 1).

Challenges and Strategies

The way in which environmental health issues are divided into "health" and "environment" issues through federal funding among the various Band departments, as Sayers explained, creates a challenge in figuring out who is responsible for what. One of the strategies MFN has used is to transfer the Health Canada Green Plan funding from the Health Department to the Lands and Resources Department because it is more logical for the Green Plan students, given the nature of the work, to be supervised by the Lands Department (K Sayers). There is also the challenge of communication among internal departments; Ambeault explained "We need something internal so that we have better communication among our departments because we would like to hear news from the Lands and Resources department instead of Health Canada about the community for example". One of the strategies she has suggested to the Band to improve internal communication is connecting all of the departmental units on one intranet server to increase the efficiency and ease of communication.

Core Framework Element #2: Participation in Environmental Health Decision-Making

a) Existing opportunities for participation in legislation, policy, and program development and review

Overview

Table 10. Summary of Importance, Type of Impact, and Level of Confidence for the Existing Opportunities for Participation in Legislation, Policy, and Program Development and Review

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Negative	High
Case Documents	Important	Negative	Med
Overall Score	Important	Negative	High

MFN participation in decision-making regarding the development and review of environmental health laws, policies, and programs encompasses the consultation by the Crown with MFN and also the consultation by MFN with the Crown. Participant responses and case documents noted that the opportunities to participate in decision-making are generally minimal while the feedback that is obtained from First Nations during consultations has little impact on the decisions made. Given the pervasive discussion of this topic during interviews and in MFN's Comprehensive Community Plan, there is a high level of confidence of the importance of this sub-element in the framework as well as of the negative impacts of this issue on the management of environmental health in MFN.

Data

Assistant Health Director Lucy Ann Trudeau, who worked in the NSTC's environmental unit in the 1990s, explained that there was much more consultation in the 1990s:

> It's not the same level of consultation that it was back in the 90s. Back then it was like you know, we have to consult with you, and you, and you, so because of your intervener status we're going to allow you some money for funding so you can hire your own panel of experts, you can hire YOUR own, and then come together in this massive hearing.

Trudeau explained further that now the Crown expects communities to bring forward their concerns to be evaluated by a panel of experts when communities do not always have the resources to provide the needed empirical data.

MFN Environmental Consultant Sue Chiblow explained that she was under the impression that the Crown does not think that First Nations have the capacity to address their concerns and instead relies on academics to provide information to address the issues, which is "...more of a top down research approach as opposed to what is actually happening in the community". In addition, she expressed frustration with the governments' consultation process in that First Nations are required to provide feedback when there is a lack of transparency on how and if it will be used.

Looking specifically at First Nations participation in decision-making regarding the review of program opportunities offered to First Nations through federal and provincial governments, Chiblow explained that there is a lack of consultation in deciding what the program objectives should be:

> The community doesn't get to pick what their priority is in environmental health. The government dictates to them what it is... It's here's a pot of money and here's what you have to do with it and if you don't want to do it, then you don't get the money.

The MFN Comprehensive Community Plan (2012) similarly lists the "lack of consultation by government when changes are made to existing programming" as an important issue requiring attention.

Strengths

Sue Chiblow, MFN Environmental Consultant, explained that while industry tends to listen to First Nations' feedback more earnestly than do federal and provincial governments, one strength is that the MOECC has made improvements in recent years and is "…probably leading all of the governments and blazing the trail

on how to consult with people". Chiblow also noted that government decisions regarding funding and programming priorities are typically based on national and regional surveys that may not reflect the needs of communities but that the recent First Nations Biomonitoring Initiative (Assembly of First Nations 2013) "actually took what the community wanted from an environmental health perspective... that will be helpful for lobbying the government for change. So those types of things need to happen more where the community actually has more an input" (MFN Environmental Consultant).

Another strength is that amendments to the FNLMA were in included in the omnibus Bill-185 in 2012. As Director of Operations, Jim Cada explained, one of the original requirements before law making powers were granted to a First Nation was to have an Environmental Management Agreement (EMA) between Environment Canada, AANDC, and the First Nation; signing the EMA was something which no First Nation had achieved in 14 years. With the Bill-185 amendments, EMAs are no longer required before law making powers are granted.

Challenges and Strategies

When asked about the challenges of participating in decision-making, Lucy Ann Trudeau, Assistant Health Director, expressed the challenge of dealing with environmental health issues affecting First Nations and surrounding municipalities that are being re-tabled by government when, in the past, First Nations had fought vehemently to stop them. As she noted, "The work we do as a First Nation, they don't always take it to heart or listen at the provincial level". One of the strategies mentioned to address such issues was to increase the organization and coordination of a regional association like the Tribal Council to increase the ability of First Nations to address shared environmental health concerns.

b) Level of community consultation within First Nations for environmental health initiatives

Overview

Table 11. Summary of Importance, Type of Impact, and Level of Confidence for the Level of Community Consultation within First Nations for Environmental Health Initiatives

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Positive/Negative	High
Case Documents	Important	Positive/Negative	Med
Overall Score	Important	Positive/Negative	High

Based on the case documents and key informant interviews, there is strong evidence to suggest that the consultation processes within MFN for environmental health initiatives is an essential part of their management system. The various processes and protocols leadership has for consulting with and getting feedback from MFN membership was noted to be highly effective by interview and document sources. The challenges noted by participants and documents were all in regards to the need to increase the number of members involved in the consultations but the consultation processes themselves were noted as having positive impacts. Given the presence of this topic in community documents such as MFN's Comprehensive Community Plan and the high frequency with which it was discussed by participants, there is a high level of confidence that the consultation process is an important reality of environmental health management in MFN with both positive and negative implications.

Data

MFN has developed a Comprehensive Community Plan which has provided an opportunity for Mississauga to "reflect on its past and present, while shaping its future... the Plan provides a clear direction to steer the Band toward its Vision[43] through approaching change in a way that is community-based, project driven

[43] The Vision chapter outlines MFN's long-term direction as chosen by MFN membership and the Vision Statement is as follows:

and locally focused" (Mississauga First Nation 2012b). The Vision chapter describes the long-term direction of the Band as chosen by community members throughout the Planning process which will inspire new project ideas, policies and ongoing actions(Mississauga First Nation 2012b). The Plan guides decisions at leadership, departmental and community levels and is based on the idea that MFN can shape its own future:

> We can watch change happen to us and react, trying to cope, or we can choose to be active participants in shaping our own future. This requires having a clear sense of where we want to go, as well as a strategy about how to get there; thinking about every project, program and routine in an interconnected way and taking action now. (p. 9)

Most participants noted that at the community level, members are concerned and interested in environmental health matters, especially the risks of uranium contamination from Cameco. Keith Sayers, Lands and Resources Manager, explained the motivation for community interest as: "I think just the fact of being healthy. Clean air, clean water. Non-toxic edible product, fish, berries etc. Everyone just wants to have a clean environment that they won't get sick from". When asked about the nature of community interest and support for environmental contamination initiatives Sue Chiblow replied "It's huge here because of Cameco. It's very huge and they have specific things that they want done. They give us guidance and recommendations on which issues to focus on. The community helps us prioritize" (MFN Environmental Consultant).

Walking In Balance
A socially and culturally healthy community where individuals have the opportunity to prosper and to achieve their full potential spiritually, emotionally, mentally, and physically, through generous and unselfish support for one another while pursuing balance and harmony within, with each other, and with Mother Earth. Mississauga First Nation (2012b). Chapter 2 Vision, where the community is going. DRAFT Mississauga First Nation Community Plan**:** 49.

Strengths

The community itself has chosen to focus on environment issues and spend money pursuing these efforts, regardless of external programming and funding. Lucy Ann Trudeau, Assistant Health Director stated:

> I think this First Nation is very lucky to have their own environmental unit within the lands department because that's very unusual for a lot of First Nations and to have the qualified staff that they do is the biggest strength that we have out of this. There is a little bit of funding available but a lot of it is reliant upon our own sources of funds and that's the initiative that this First Nation has taken to actually say that this is a priority and this is where we're going to spend our money.

Sue Chilbow, MFN Environmental Consultant, explained that the "Chief and Council are very proactive and they're very aware and they listen to the community members on what the community wants... It is a very good internal consultation process".

Challenges and Strategies

The MFN Comprehensive Community Plan (2012) lists one of the root causes of the challenges affecting MFN is the "Lack of motivation to get involved and take action" (Mississauga First Nation 2012a)and while all participants noted that there was a high level of community interest in environmental health matters, some participants commented that interest and participation are different. Health Director, Linda Ambeault said "I find that people say they are interested but do not take action on matters. There is apathy in attending consultations". Trudeau further explained that community members assume the Health Department is "taking care of them". This creates a challenge because input from the community, as measured through participation in consultation is needed to meet program funding requirements: "that's a deliverable that is sometimes hard to meet because people assume and know that we're doing what we're doing but we need to have that feedback as well. And to get that feedback is difficult sometimes" (L Trudeau, Assistant Health Director). Strategies to

encourage participation in community consultations are to use incentives such as food and door prizes (L Trudeau (Assistant Health Director), Participant 1).

Keith Sayers, Lands and Resources Manager, also discussed the challenges of getting people to participate in consultations for the Lands and Resources Department. One of the reasons was that "Sometimes the response is that the administration office is going to do what they're going to do so why even bother voice our concern, you know that's the attitude within the community". Strategies used to address this are to "try to instil in them that it's their community and we need their input", and to make house calls to gather as much community input as possible from people who do not or cannot participate in the consultation meetings (K Sayers, Lands and Resources Manager).

The concern over the risk of uranium contamination from the Cameco refinery has consistently shown to be among the top environmental health concerns for MFN members (Henderson Paddon & Associates Ltd. 1997 , Genivar 2011, Ogamauh annag Consulting 2012) but Cameco's off-reserve status means it is not affected by the MFN Land Code. One of the strategies MFN has is to manage all of the lands of their traditional territory regardless of reserve status (K Sayers, Lands and Resources Manager). Another strategy is lobbying and educating the government through the FNLMA Lands Advisory Board and through a lobbyist firm MFN has hired. Jim Cada, Director of Operations, noted however that "they [the firm] get some discussion and they can probably do a lot more but I think the bottom line is that a lot of it has to come from the community".

Core Framework Element # 3: Access to Environmental Health Resources

a) Access to federal and provincial programs (external resources) for environmental health

Overview

Table 12. Summary of Importance, Type of Impact, and Level of Confidence for the Access to Federal and Provincial Programs (External Resources) for Environmental Health

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Negative	High
Case Documents	No data available	No data available	No data available
Overall Score	Important	Negative	High

Federal and provincial funding and programs for environmental health are an essential component of environmental management in MFN. Unfortunately, the challenges in accessing the programs and funding greatly overshadow the strengths of the funding and programs being available as reported by a number of participants. Although MFN was noted to have an excellent track record with funding agencies, the characteristics of the funding itself creates problems, notably being short-term competitive funds with narrow specifications and small amounts of money. Given that every key informant discussed the negative implications that the realities of accessing federal and provincial programs have on the management of environmental health in MFN, there is a high level of confidence that it has an important and negative impact on environmental health management in MFN.

Data

Jim Cada, Director of Operations, and Lucy Ann Trudeau, Assistant Health Director, have experience working with the North Shore Tribal Council's (NSTC) former environment unit, and explained that the 'environment' was a bigger funding priority in the 1990s than it is today. Trudeau stated:

> Back in the day the NSTC had a really active environment unit… we were really active in looking at environmental concerns, different programs and putting ourselves in the midst of different hearings just to represent the First Nations concerns… I don't see that as a priority on a different level, like on a more regional level... And we still need to get to that point and it still needs to be a funding priority. And all the money is in health but not specific to environment so I think that government needs to bring that back and fund those types of initiatives.

Strengths

When funding is obtained, environmental health research is conducted and the results are used as stepping stones for more research, demonstrating that MFN is proactive in terms of environmental health initiatives. As Jim Cada, Director of Operations, explained "Identifying that we need to address it gives us our ammunition to say look we're doing it ahead of time instead of waiting for ten years for it to really become an issue". The MFN Comprehensive Community Plan states that MFN has as "excellent" track record with funding agencies(Mississauga First Nation 2012a).

Challenges and Strategies

Many of the challenges listed by participants in regards to federal and provincial programming and funding were related to the competitive nature of the proposal-based funding, the narrow specifications of the program, the small sums of money, and the typically short-term funding periods. The combination of these factors creates situations where the cost involved in preparing funding proposals may not outweigh the benefits of receiving the funding. When asked about the funding challenges, Jim Cada, Director of Operations said: "I think the only thing is there is the amount of funding that they do make available and it's peanuts for what you really need. Especially if you want to get those results". Similarly, Keith Sayers, Lands and Resources Manager, explained that the main challenge of having the Land Code is having the needed capacity and financial resources, even with the new larger budget. MFN maintains the attitude however that regardless of the budget, "things have to get done and there is the hope that the financial constraints don't inhibit us from completing these tasks".

The Health Department faces similar challenges in terms of accessing environmental health funding. Lucy Ann Trudeau, Assistant Health Director, explained the situation by saying

> They [Health Canada] grant us a little bit of money and I'm saying A LITTLE BIT of money per year to do the monitoring as well as some environmental training through the Green Plan for some students but overall, very little money to actually ensure that the environment is looked after but we're doing what we can to ensure good health for the First Nation... I think in the health [unit] we look at things on our own and we kind of don't get funded specifically for environment.

To address these challenges, she noted that the health staff work with other departments when possible and have the attitude of doing what is necessary to take care of the health of the community regardless of what external funding is received. Similarly, Participant 1 within the health department said that the Health Department staff is "pretty resourceful, I mean if we don't have it, we'll find another program that will support it. We always share a lot of the resources that we do have among our own department".

The participants involved with Health Canada's First Nations Environmental Public Health Program said that one of the biggest challenges in addressing environmental health issues is the limited time the Environmental Health Officer spends in MFN (L Trudeau (Assistant Health Director), Participant 1, Participant 3). To address this challenge, the Health Department attempts to find innovative ways to provide environmental health programming by relying on the vast knowledge and experience of the staff.

Lucy Ann Trudeau, Assistant Health Director, also noted that in addition to not always having the needed personnel to write the proposals, the narrow specifications of the environmental contaminants program create an added challenge in trying to fit the needs of MFN into the program. One strategy she envisions for the future is to see a broader perspective of activity funded by an organization other than MFN for environment: "I think that organizing or coordinating portion that a regional authority would do for all First Nations is missing. We do have similar concerns all along the shore besides uranium".

The competitive nature of accessing federal and provincial funding for environmental health matters is problematic as it does not foster a sense of community and unity among First Nations. As Sue Chiblow, MFN

environmental consultant, explained: “It keeps communities almost pitted against one another where they don't want to share ideas in fear that another community will take away their funding. It's so dysfunctional and it doesn't really help the communities at all”. To address this challenge, she explained that MFN shares the information with them the Chiefs of Ontario that those resources can be shared with other communities.

Accessing the provincial environmental health programming available to First Nations through Ontario Public Health Units in local municipalities is another challenge. Linda Ambeault, Health Director, explained that, in the past, Public Health Units have not been encouraged to network with First Nations Health Departments but that this situation is slowly changing with Public Health Unit funding being hinged on working with First Nations. Even still, while the Comprehensive Community Plan (2012) states that one of MFN’s strengths is that they have a good working relationship with surrounding municipalities, the participants within the Health Department acknowledged that they do not often network with the Public Health Units of the local municipalities because there is the sentiment that there exists “two separate worlds and they [the municipalities] assume that we're looking after our people and we assume they’re looking after their own” (L Trudeau, Assistant Health Director).

b) Community staff, funding, and support (internal resources) for community environmental health initiatives.

Overview

Table 13. Summary of Importance, Type of Impact, and Level of Confidence for the Community Staff, funding, and Support (Internal Resources) for Community Environmental Health Initiatives

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Positive	High
Case Documents	Important	Positive	Med
Overall Score	Important	Positive	High

Based on the responses, there was a common belief among participants that internal resources are an essential part of environmental health management in MFN. The success of their environmental health management relies on the vast knowledge and expertise of their Band staff of both the programming and of the community's needs, the trust between leadership and membership, and the community support for environmental health initiatives. The challenges listed by participants were in regards to the lack of employment opportunities to keep people in the community and the fact that resources could be better shared with neighbouring communities. Based on the fact that the importance of community resources in environmental health management in MFN was discussed by multiple key informants and in MFN's Comprehensive Community Plan, there is a high level of confidence that the issue of internal resources is an important aspect of environmental health management in MFN with positive implications.

Data

Internal resources are described below as tangible resources such as Band staff and community funding as well as intangible resources such as the community's vision and the attitudes toward supporting environmental health initiatives. Through consultation with community members, MFN leadership has made the decision to place an impetus on addressing environmental health matters in the community. This means that they have chosen to allocate community funds on environmental health initiatives, an important commitment given the lack of available external resources. There are other important community resources that have positively affected how environmental health is managed, including: the presence of the environment unit, the willingness of Band staff to seek external advice and guidance and to form partnerships, the effectiveness of

program delivery by highly skilled staff, and the close and trusting relationships between Band staff and membership.

Strengths

One of the most frequently discussed strengths regarding MFN environmental management strategies was the fact that MFN has an environment unit within the Lands and Resources Department (J Cada (Director of Operations), K Sayers (Lands and Resources Manager), L Trudeau (Assistant Health Director, Participant 1). Having a "strong" Lands Department and sufficient[44] resources available for growth were also listed as the "strengths to build on" in the MFN Comprehensive Community Plan(Mississauga First Nation 2012a). Keith Sayers, Lands and Resources Manager, notes that having the environment unit has meant that there is an increased capacity for writing funding proposals, conducting research, and for assisting members in performing environment-related tasks.

Environment Unit and Lands and Resources staff are trusted figures within the community, which is a major strength in how information is received and accepted by the membership explained Jim Cada, Director of Operations, and Keith Sayers, Lands and Resources Manager. The environment staff also has many outside contacts and is not averse to seeking advice. As Sayers noted: "It goes back to the trust. A lot of our members

[44]The Comprehensive Community Plan also acknowledges that one of its roles is to help prioritize the use of "scarce" financial, human and community resources. Mississauga First Nation (2012a). Introduction. DRAFT Mississauga First Nation Community Plan**:** 56.

won't call MOE[45] but they'll come in and get some advice here and if we can't do it we'll look at the MOE or elsewhere" (K Sayers, Lands and Resources Manager).

In the Health Department, Director Linda Ambeault said that one of the biggest strengths is the effectiveness of program delivery to the community by health staff. The Comprehensive Community Plan (2012) reiterates the strength of the Health Department by stating that Health and Social services programs are "highly respected throughout the North Shore"(Mississauga First Nation 2012a). Assistant Health Director Lucy Ann Trudeau and Participant 1 noted that the Health staff work well as a team to provide the best programming possible to the community. With minimal funding for environmental health issues, the health staff is very creative and resourceful in striving to promote environmental health programs (L Ambeault (Health Director), L Trudeau (Assistant Health Director)). Participant 1 said that sharing resources among staff is also an important strength in the Health Department as is what Trudeau explained to be "a wide variety of experience within the staff, within our level of government to bring forward a really good, well-rounded thought... we are proactive in regards to environment with the resources that we have" (L Trudeau, Assistant Health Director).

Challenges and Strategies

Like many First Nations, MFN has the needed human capacity within their membership, but the challenges lie in finding employment on-reserve and competing with the salaries offered by off-reserve employers. As Sue Chiblow, MFN Environmental Consultant explained "We have community members that have PhDs and other environmental degrees and we can't bring them home to work because there's no way we can compete for a salary compared to a university, industry or government". Health Director Linda Ambeault expressed a similar concern and said: "We can't keep people here. They have to decide they want to be here for

[45]Ministry of the Environment now called Ministry of the Environment and Climate Change

other reasons than money and promotions". The Comprehensive Community Plan (2012) also states that one of the most common root issues for MFN is that they are unable to maintain the most skilled and educated Band members and there is a lack of educational and employment opportunities for Band members(Mississauga First Nation 2012a).

Sue Chiblow, MFN Environmental Consultant, explained that MFN is currently brainstorming ideas to draw community members back to the community once they have completed their training and education off-reserve[46]. Chiblow further discussed the possibility of working with the Band Education department and explaining to the youth that "these are the types of jobs we are looking to have in five to ten years from now. So they'll have a choice in what careers they want and also know if they'll be able to work in the community."

With limited funding, the idea to share resources and expertise with neighbouring First Nations is something that is discussed among communities but is limited by the need to gain support from respective Councils. Lands and Resources Manager Keith Sayers explained: "everybody says yes it's a good idea, however we still need to get our support from our respective Councils to do that… it's just formulating a plan or agreement to say OK we'll help you in a certain area and vice versa". The MFN Comprehensive Community Plan reinforces the idea that there are many opportunities for partnerships for education, economic development and other types of initiatives across the North Shore(Mississauga First Nation 2012a).

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[46] The CCP states that lack of housing is another reason Band members move off-reserve and that 37% of on-reserve Band members are under the age of 19, enhancing the need for employment, training and housing over the next twenty years. Mississauga First Nation (2012a). Introduction. DRAFT Mississauga First Nation Community Plan**:** 56.

New Framework Elements

Based on the case study analysis, two additional core elements affecting environmental health management emerged from the data as well: Communication of Environmental Health Information, and Political Leadership. As seen with the original three core framework elements, they are discussed independently, but are strongly connected to each other and to the original three elements. As these two elements emerged during the data analysis, specific questions were not asked about their strengths, challenges, and strategies during the key informant interviews. The organization of the presentation of these elements therefore does not follow the same "strengths, challenges and strategies" format as previous elements.

Core Framework Element #4: Communication of Environmental Health Information

a) Communication among First Nations leadership, membership, and federal and provincial governments.

Overview

Table 14. Summary of Importance, Type of Impact, and Level of Confidence for the Communication among First Nations Leadership, Membership, and Federal and Provincial Governments

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Negative	Med
Case Documents	Important	Negative	Med
Overall Score	Important	Negative	Med

Communication between Band departments and leadership, between Band departments and membership, and between Band departments and federal and provincial governments is an important factor negatively affecting environmental health management in MFN. The interview and case documents data supports the need for better communication in order to harmonize planning and reporting initiatives among Band departments and between MFN leadership and federal and provincial governments. This data also suggests that the exchange of

environmental health information between leadership and membership could be improved. The evidence to support the importance of this new sub-element within the framework was based on how pervasively it was discussed by participants throughout their responses to other elements. In addition, the vast majority of participant responses and important case documents highlighted the need for improved communication. There is a medium level of confidence that this issue has an important and negative impact on environmental health management in MFN.

Data

Examining communication between Band departments and leadership, the MFN Comprehensive Community Plan (CCP) lists the "lack of communication among programs" as an important issue to explore under the "Governance and Communication" section. As explained in the document, the CCP is an opportunity for Band staff and leadership to harmonize their various planning and reporting initiatives into one comprehensive document, encouraging staff and leadership to "think across departments" during this process(Mississauga First Nation 2012a). The Plan also explains that some of the key issues facing MFN may not be the responsibility of one sole department, but rather the responsibility of all departments.

Some participants such as Health Director Linda Ambeault and Lands and Resources Programs Manager Keith Sayers discussed how there is a need to improve communication among Band Departments. As explained by Sayers, the Lands and Resources Department and its environment unit work with other departments to address environmental health needs in the community but that "one of the issues we've felt internally is not knowing who's doing what". For example, the Green Plan program[47] available through Health Canada, which the MFN Health Department has had a history of successfully obtaining, was transferred to the environment unit for the first time in 2013: "If they have a GreenPlan program it would be more logical for them [the students] to

[47] Funding for water testing done by students during summer months.

work with us. Then we know what they're doing and we can help supervise them so we're doing that this year" (K Sayers, Lands and Resources Manager). Health Director Linda Ambeault discussed the need for better inter-departmental reporting and said it would be more efficient to receive updates and reports from other departments instead of waiting for the reports from federal departments. She explained that this process could be facilitated if Band Departments were connected to an intranet server or other such telecommunications service.

In regards to accessing resources, one of the important challenges is that Band departments and federal and provincial government representatives lack discussion of their various initiatives, resulting in overlaps of services (L Ambeault, Health Director). For example, until recently, Public Health Units in Ontario have not been encouraged to network with First Nations Health Departments, partly explaining why MFN members do not readily access provincial health programs[48].

The issues surrounding MFN leadership and membership communication, the CCP states that "A major part of governance is the ability of the leadership and organization to report to its membership... Various different Communications to membership can be easily organized around the Plan to make it easy for Band members to know what the Band is working on and how it connects to long-term priorities"(Mississauga First Nation 2012b, p. 44).In addition to the need to increase communication of Band priorities to membership, participants explained that there is a need for protocols to inform membership regarding immediate events. For example, Health Director Linda Ambeault explained that for certain environmental health matters there are no existing protocols to inform community members of potential risks, such as for unsafe recreational swimming waters. Similarly, some participants explained that membership is likely unaware of Cameco's emergency plan or how MFN would be involved during an emergency except through the direction of MFN leadership.

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[48] Other reasons previously discussed include the preference of MFN members to seek on-reserve services due to the comfort and familiarity of the social and cultural environments.

Core Framework Element #5: Role and Influence of Leadership

a) Environmental health priorities of federal, provincial, and First Nations leadership.

Overview

Table 15. Summary of Importance, Type of Impact, and Level of Confidence for Environmental Health Priorities of Federal, Provincial, and First Nations Leadership

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Positive/Negative	High
Case Documents	No data available	No data available	No data available
Overall Score	Important	Positive/Negative	High

The impact that priorities of political leadership have on environmental health management is significant in terms of the federal, provincial, and MFN leaderships' effect on legislation, funding and research objectives, and in created delays or hiatuses of MFN projects. Based on participant discussions, the influence of leadership on changing legislation and determining funding and research priorities has created both favourable and unfavourable effects on environmental health management in MFN. Given the overarching decision-making power of political leadership in general and that this issue emerged during the case analysis due to the frequency with which it was discussed by participants, there is a high level of confidence that it is a critical reality of environmental health management in MFN, having both positive and negative implications.

Data

In terms of changes to environmental legislation, Jim Cada, Director of Operations, explained that the Jobs and Growth Act, 2012 (omnibus Bill C-45) created by the current Canadian Government, while heavily critiqued for weakening environmental protection and reserve land rights by environmental experts, made two specific amendments to the First Nations Land Management Act which have benefitted MFN during their Land Code development process. The first was eliminating the need for an Environmental Management Agreement

between First Nations and the Crown before law making powers are granted to First Nations. The second was a favourable change to the community ratification voting process.

Looking at the effects of leadership on funding priorities, Assistant Health Director, Lucy Ann Trudeau explained that in the early 1990s there was greater focus on and more funding for environmental health matters for the North Shore Tribal Council (NSTC) First Nations than there is now:

> I think the funding from back in the day shifted as well because back then we were getting a lot of funding from the province. I remember working with Bud Wildman and the NDP guys and the more "green" kind of people. So there was a lot more funding back then and we were able to actually do a lot more work and when the government shifted back to PC and Liberal there was a political digression from environment to something different.

Participant 1 commented on the priority changes during that time and said that the NSTC's focus "... shifted and everything started popping up as health". Participant 1 went on to explain that the Tribal Council has a very large health unit and that "their main focus is on the health of the community and environmental issues are lacking".

The services and programs delivered through the MFN Health Department are decided in large part by Health Canada, whose priorities are in part directed by the agendas of the political parties in power. In regards to deciding which programs are needed in First Nations, MFN Environmental Consultant Sue Chiblow commented that "Governments have developed different little panels where they get First Nations to come in and give them some advice but... once it gets to the top, it depends on what the flavour of the day is for that political party".

b) Changes in leadership and implications for funding and consultation processes.

Overview

Table 16. Summary of Importance, Type of Impact, and Level of Confidence for Changes in Leadership and Implications for Funding and Consultations Processes

Data Source	Importance of Issue	Type of Impact of Issue	Level of Confidence
Key-informant Interviews	Important	Negative	Low
Case Documents	No data available	No data available	No data available
Overall Score	Important	Negative	Low

As discussed above, the political agendas of those in power have a major impact on environmental health management in MFN. In addition to the impact of current agendas however, the process itself of electing new provincial, federal, and First Nations leadership affects MFN environmental health management. Two participants discussed the negative impacts that changes in provincial and federal leadership have had in terms of creating delays in funding start-dates, changes to multi-year funding, and breaks in consultation processes. Given that this topic was only discussed by two participants, the level of confidence for its overall importance and type of impact on environmental health management in MFN is low.

Data

Much of the environmental health funding received by MFN is short-term proposal-based funding, which is affected by changes in federal and provincial political leadership. Participant 1 explained the situation by saying: “When it comes time for election year we always have to wait and see who gets in because there're always projects on the go or we have proposals pending… we have to wait and see who gets in”. MFN Environmental Consultant Sue Chiblow similarly commented on the effects changes in political leadership has on the Crown’s consultation process with First Nations: "when an election happens there's a stop in the process. The public servants try to maintain their relationship and are honest and say that they don't know what's going to happen which is better than just saying no”.

The working relationship between MFN and Cameco is also affected by the changes in MFN leadership. As Participant 1 explained:

> I don't know how far they've managed to get in regards to that [the working relationship with Cameco] because there's been a shift in our leadership and as with any new government that comes on, people have to get used to dealing with somebody different and having to repeat everything all over again, every two years, where you've started, where you left off.

Table 17. Summary findings of framework element #1: Environmental Health Jurisdictions and Responsibilities

Framework Sub-Elements	Overall Scores			Strengths	Challenges	Strategies
	Importance of Issue	Type of Impact	Confidence Level			
Clarity in division of responsibility between federal and provincial governments	Important	Negative	High	Being part of the First Nations Land Management Act (FNLMA) gives MFN more control over lands despite lack of clarity in division of responsibility between federal and provincial governments. Forthcoming Band Constitution.	Increasing community education of environmental health issues.	Implement MFN's environmental monitoring programs. Create user-friendly environmental health database.
					Monitoring of lands and enforcement of the new Land Code laws.	Lands and Resources Department staff engage with members out in the community about the issues. Educate members as to the ramifications of their actions on the environment.
Clarity in division of responsibility between 'health' and 'environment'	Important	Negative	Medium	Lack of clarity gives MFN Health staff freedom to develop programming to meet community needs. Strong community support and cooperation in times of illness and environmental emergencies regardless of assigned duties.	Improving internal communication protocols among Band departments.	Connect all Band departments on one intranet server.
					Division of environmental health issues among Band departments via federal funding.	Transfer program funding (i.e. GreenPlan) from Health to Lands and Resources Depts.
					Limited time Environmental Health Officer spends in MFN.	Health Dept finds innovative ways to provide environmental health programming.

18. Table Summary of framework element #2: Participation in Environmental Health Decision-Making

Framework Sub-Elements	Level of Confidence of			Strengths	Challenges	Strategies
	Importance of Issue	Type of Impact	Confidence Level			
Existing opportunities for participation in legislation, program, and policy development and review	Important	Negative	High	MOECC has made improvements in recent years on their consultation processes. Amendments to the legislation that favours environmental management processes in MFN.	Dealing with environmental health issues affecting First Nations and surrounding municipalities that are being re-tabled by government.	Increase organization and coordination of a regional association like the Tribal Council to increase the ability of First Nations to address shared environmental health concerns.
Level of consultation within First Nations communities for environmental health initiatives	Important	Positive/Negative	High	MFN has chosen to focus on environment issues and spend money pursuing these efforts, regardless of external programming and funding. Efficient internal consultation process where Chief and Council are proactive and listen to feedback from community members.	Community member participation in consultations is sometimes lacking.	Use creativity and small incentives to increase participation in consultations. Try to instil the idea that the community belongs to the membership and their input is needed. Make house calls to gather as much community input as possible from people who do not or cannot participate in the consultation meetings.

Table 19. Summary of framework element #3: Access to Environmental Health Resources

Framework Sub-Elements	Level of Confidence of			Strengths	Challenges	Strategies
	Importance of Issue	Type of Impact	Confidence Level			
Access to federal and provincial programs (external resources) for environmental health	Important	Negative	High	MFN is very efficient with funding that is received and is uses the funding to proactively address environmental health issues. MFN has an excellent track record with funding agencies.	Competitive nature of the proposal-based funding, narrow program specifications, ineffective sums, and typically short-term funding periods.	Sharing resources among departments. Addressing environmental health issues with community funds Future sharing of resources among communities with shared concerns.
Community staff, funding, and support and vision (internal resources) for community environmental health initiatives	Important	Positive	High	MFN has an environment unit within the Lands and Resources Department. Effectiveness of program delivery to the community by health staff.	Not enough employment on-reserve to keep qualified individuals in MFN.	Currently discussing various approaches to encourage qualified members to return to MFN and to increase employment for future generations.
					Not having access to other communities' 'best practices' to improve health program delivery.	Health Dept relies on their own stats and staff's knowledge of community needs.

Table 20. Summary of framework element #4: Communication of Environmental Health Information

Framework Sub-Elements	Level of Confidence of			Strengths	Challenges
	Importance of Issue	Type of Impact	Confidence Level		
Communication among First Nations leadership, membership, and federal and provincial governments	Important	Negative	Med	MFN developed a Comprehensive Community Plan where communication issues are discussed.	Increasing communication among Band departments and programs.
					Harmonizing various planning and reporting initiatives among Band staff and leadership.
					Improving inter-departmental reporting to receive updates and reports from other departments instead of waiting for reports from federal departments.
					Increasing communication of Band priorities to membership to inform membership of immediate concerns.

Table 21. Summary of framework element #5: Role and Influence of Leadership

Framework Sub-Elements	Level of Confidence of			Strengths	Challenges
	Importance of Issue	Type of Impact	Confidence Level		
Environmental health priorities of federal, provincial, and First Nations leadership	Important	Positive/Negative	High	Changes to environmental legislation that favour First Nations. There is the potential for increased environmental health funding with a change of federal and provincial leadership.	Changes made to environmental legislation that negatively affects environmental health management. Changes made to health programming that negatively affects environmental health management. MFN's Tribal Council is heavily focused on health and less on environment.
Changes in leadership and implications on environmental health funding and consultations processes	Important	Negative	Low	Public servants make an effort to keep MFN informed during a change in federal or provincial leadership.	Pending approvals and continuation of short-term funding are affected by a change in leadership. MFN's working relationship with other governments and industry can be inhibited by MFN's leadership elections every two-years.

Summary of Framework Element Strengths, Challenges, and Strategies

The following section summarizes the most significant overall issues affecting the reality of environmental health management in MFN. First, the most important strengths, challenges, and strategies of each framework sub-element listed in Tables 17-21 based on the significance assigned to each by case participants and documents are discussed. Next, the most important overall strength and challenge of environmental health management in MFN are examined, as determined by their implications in the issues represented by multiple elements. Lastly, the importance of cross-element relationships and of the interconnected nature of the framework elements is discussed.

In regards to the issue of different organizations' and governments' jurisdiction over environmental health issues in MFN (**Framework Element #1, Environmental Health Jurisdictions and Responsibilities**; **Table 17**), it was found that there is a lack of clarity for environmental health matters among federal and provincial ministries which has important negative implications for MFN. The most significant strength discussed by case participants and in case documents was that MFN is part of the First Nations Lands Management Act (FNLMA). While being part of the FNLMA means more control and decision-making power over MFN lands, one of the biggest challenges listed by participants was increasing community education of environmental health risks in order to help the community make evidence-based decisions. Strategies discussed to address these challenges included implementing MFN's own environmental monitoring programs and creating user-friendly databases where community members can access data, such as the data from MFN's own monitoring programs. The other top challenge was having the needed resources to monitor lands and enforce regulations under the FNLMA. As

Participant 2 explained “Part of the challenge is people actually buying into it… currently there is no land-code structure... how do we let people know that this is not acceptable when people have been able to do it for eons”? Participants noted that having access to the needed resources to physically monitor the lands will be a challenge but strategies to make monitoring and enforcing easier include having the Lands and Resources Department staff engage with membership out in the community and educate them on the ramifications of their actions on the health of the environment and consequently the health of the community.

The lack of clarity in the division of responsibility for environmental health matters as either ‘health’ or ‘environment’ gave MFN Health staff some freedom to develop programming to meet community needs, relying on the staff’s creativity and resourcefulness. Band department responsibilities are often impacted by federal funding specifications, which, as Lands and Resources Manager Keith Sayers explained, creates the challenge of figuring out who is responsible for what. To address this, one of the strategies MFN has used is to transfer the Health Canada Green Plan funding from the Health Department to the Lands and Resources Department, who perform other similar duties.

When examining MFN’s opportunities to participate in environmental health legislation and program development and review (**Framework element #2, Participation in Environmental Health Decision-Making**; **Table 18**), the majority of participants noted an overall lack of genuine decision-making opportunities with other governments. The only strengths mentioned were that the MOECC has made recent improvements in the way they consult with First Nations and that there have been

favourable changes for First Nations made to the FNLMA as a result of First Nations representatives lobbying for change. One important challenge noted was that environmental health issues often get re-tabled when new provincial governments are elected: "The work we do as a First Nation, they don't always take it to heart or listen at the provincial level" (Lucy Ann Trudeau, MFN Assistant Health Director). Having a regional association like the Tribal Council to increase the ability of First Nations to address shared environmental health concerns was discussed as a strategy to address the "re-tabling" issue.

In terms of participation in community-based decision-making, one participant noted: "It's huge here because of Cameco. It's very huge and they have specific things that they want done. They give us guidance and recommendations on which issues to focus on. The community helps us prioritize" (Sue Chiblow, MFN Environmental Consultant). The most important strengths according to participants are that MFN has chosen to focus on environment issues and spend money pursuing these efforts regardless of external programming and funding, and that MFN has a very efficient internal consultation process where Chief and Council are proactive and listen to community members. The main challenge is getting members to participate in specific consultations that are needed as part of federal funding requirements or for community decision-making. Strategies to address this challenge are to encourage participation with small incentives such as door-prizes and to instil in the membership that MFN is their community and their voice is important.

In terms of MFN's access to environmental health resources such as federal and provincial services and funding (**Framework element # 3, Access to Environmental**

Health Resources; Table 19), the data suggests that there is an overall lack of accessible external environmental health resources, especially funding in MFN. The strengths listed by participants, despite this lack of resources, were that MFN uses what funding is received very efficiently and have an excellent track record with funding agencies. The most important challenges discussed were the competitive nature of the proposal-based funding, narrow program specifications, typically short-term funding periods, and, as Jim Cada, MFN Director of Operations explained: "The amount of funding that they do make available and it's peanuts for what you really need. Especially if you want to get those results". Strategies to address these challenges, MFN Band staff said that they share resources among Departments whenever possible, use MFN's own funds to address important environmental health concerns, and have future plans to share resources with other First Nations.

The most important strengths discussed in terms of internal resources included having an Environment Unit with the Lands and Resources Department in MFN. Keith Sayers, MFN Lands and Resources Manager, noted that having the environment unit has meant that there is an increased capacity for writing funding proposals, conducting research, and for assisting members in performing environment-related tasks. Health Director Linda Ambeault explained that their most important strength is how effectively the health staff delivers programs. An important challenge impacting MFN's internal resources is the lack of employment opportunities to retain qualified people in the community: "We can't keep people here. They have to decide they want to be here for other reasons than money and promotions" (L Ambeault, MFN Health Director). Ideas to

encourage qualified members to return to MFN and to create more employment opportunities for future generations are currently being discussed.

One of the new issues to emerge from the case study was the sharing of environmental health information among various stakeholders (**Framework element #4, Communication of Environmental Health Information; Table 20**) and the data suggests that there is a need for better communication between Band departments and leadership, between Band departments and membership, and between Band departments and federal and provincial governments in order to harmonize planning and reporting initiatives and to improve the exchange of environmental health information. Based on the case data, MFN's strength in communication is that the need for improved communication has already been highlighted in its recent Comprehensive Community Plan. Lands and Resources Manager Keith Sayers explained that "one of the issues we've felt internally is not knowing who's doing what" in terms of the various Band departments all working to address environmental health concerns. Participants explained that there is a need for protocols to inform membership regarding immediate events, such as unsafe recreational waters. Participants also explained that membership is likely unaware of Cameco's emergency plan or how MFN would be involved during an emergency except through the direction of MFN leadership.

The other issue to emerge from the case study is the impact of First Nations, federal, and provincial leadership on environmental health management in MFN (**Framework element #5, Role and Influence of Leadership; Table 21**), and the data suggests that the priorities of these leaderships have significant implications. As Sue Chiblow, MFN Environment Consultant explained, ultimately the decisions regarding

what programs First Nations are offered depends on "the flavour of the day" of the political party in power. The main strengths of this situation are that favourable changes to the FNLMA affecting environmental health management have happened and that there is the potential for increased funding depending on who is elected. On the other hand, the same legislation that made favourable changes to the FNLMA also weakened environmental protection and reserve land rights and there is always the chance that environmental health funding could be further diminished with new leadership. The case study data also suggests that the election process itself has implications for how environmental health is managed in MFN. Changes in provincial and federal leadership were noted to create delays in funding start-dates, changes to multi-year funding, and breaks in consultation processes. As explained by Participant 1, "When it comes time for election year we always have to wait and see who gets in because there are always projects on the go or we have proposals pending… we have to wait and see who gets in". Changes in MFN's leadership every two years was also discussed as having negative implications on working relationships with industry, such as Cameco.

Examining the framework presenting the evidence of MFN's strengths and challenges in addressing their environmental health issues as a whole, there are certain factors that are common across the five elements, highlighting their overarching importance to the case study. **Overall, the two most important factors were the strength of MFN's internal resources and the challenge of the lack of external resources based on their implications in various sub-elements throughout the framework**. MFN's internal resources, such as the expertise and dedication of Band staff and membership support of the use of MFN funds on environmental health

initiatives were specifically discussed in framework sub-element 3b) but were also a component the "strategies" listed for many other framework elements. For example, strategies to address the challenge of monitoring and enforcing the new Land Code (sub-element 1a) rely on the trust that the Lands and Resources staff continues to establish with community members. Similarly, strategies encouraging membership participation in community consultations (sub-element 2b) are based on the creativity of the Health staff and the ability of the Lands and Resources staff to effectively communicate with community members. The most important challenge to environmental health management as determined by the case study was the overall lack of external funding. Framework sub-element 3a) specifically discussed these issues in terms of not having specific federal funding for Band environment departments and the many drawbacks of the proposal-based funding, but external funding was also an important challenge in other sub-elements as well. For example, the debate among federal ministries as to who is responsible for what First Nations funding (sub-element 1a) has left many communities without needed funding. Another example is the lack of funding for First Nations to legitimately participate in environmental assessment consultations with federal and provincial governments (sub-element 2a).

As discussed above, certain aspects of the five elements are interconnected and share common threads. The evidence suggests however that **sub-element #5 a) Environmental health priorities of federal, provincial, and First Nations leadership** has the farthest reaching effect on the other elements. For example, the priorities of leadership have implications in determining **jurisdiction and responsibility** of environmental health matters, the level of involvement of First Nations representatives in

environmental health decision-making, the availability of **environmental health funding**, and the directives to **harmonize environmental health initiatives** among governments. The sub-elements that are less affected by the interconnected nature of the issues are those that represent the "internal" issues such as community-based decision-making (sub-element 2b) and community resources (sub-element 3b). This suggests that "external" issues like clarity of responsibility, participation in program objective decision-making, and access to federal funding have finite effects on MFN's environmental health management. The significance of the "internal" factors is also highlighted by the fact that the majority of the strengths and strategies of the elements were based in the decisions made and proactive steps taken by MFN to address the challenges created by the lack of jurisdictional clarity, the minimal opportunities to participate in decision-making, the lack of funding, the need for better communication, and the de-prioritization of environmental health in federal and provincial political agendas.

Conclusion

The aim of this chapter was to examine the realities of environmental health management in MFN and assess the importance of the core framework elements developed in Chapter Three to this management, the type of impact the elements have, and to determine the level of confidence of these assessments. In general, there was a high level of confidence that all of the core elements developed in Chapter Three, with the exception of 1 b) which had a medium level of confidence, are important aspects of environmental health management in MFN (see tables 17, 18, 19). The two sub-

elements, 2 b) and 3 b) that examine the issues of community-based decision-making and community-based resources, had positive implications for environmental health management. The other sub-elements, 1 a) and b), 2 a), and 3a), which examine the external issues of jurisdictional, decision-making, and resources all had negative implications for the environmental health management in MFN.

From the case study findings, the framework was adapted and improved to better represent the realities of environmental health management in MFN. As such, two new core framework elements emerged from the results of the case study analysis: 1) Communication of Environmental Health Information, and 2) Role and Influence of Leadership. The issue of communication surfaced when participants were asked about the challenges of community-based decision-making and the challenges of accessing external and community-based resources. The issue of the leaderships' political affiliations and agendas was raised when participants were asked about issues surrounding MFN participation in environmental health decision-making and issues surrounding the availability of federal and provincial funding. The level of confidence that these two new issues are important aspects of environmental health management in MFN are Medium, High, and Low for 4 a), 5 a), and 5 b), respectively (see tables 20 and 21).

Chapter 5: Discussion, Conclusions and Recommendations

Discussion

Re-examining the World Health Organization's definition of environmental health[49], we see that environmental health is not only about the environmental factors that affect health, but also the assessment and control of those factors. This is of great significance to understanding the strengths and challenges of the realities of environmental health policy and management in First Nations communities because the "assessment and control" of these factors has many social and political influences. For example, the types of assessments and the capacity to control are significantly impacted by the priorities and jurisdictions set by political leaders, the communication of these priorities to stakeholders, the opportunities for stakeholders to participate in decision-making, and the capacity of stakeholders' to access needed environmental health resources.

One of the overarching issues identified in the literature and found in discussion with participants in this study were the different ways health, environment, and environmental health are described. For example, a discussion paper of a First Nations Environmental Vision Statement published by the Centre for Indigenous Environmental

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[49]"Environmental health addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments. This definition excludes behaviour not related to environment, as well as behaviour related to the social and cultural environment, and genetics.". World Health Organization (2009). "Environmental Health." Retrieved January 2nd, 2009, from http://www.who.int/topics/environmental_health/en/.

Resources states that: "Nowhere has the clash of [mainstream Canadian and First Nations'] ideologies been more obvious and divisive than in discussions dealing with environmental matters" (Centre for Indigenous Environmental Resources 1996, Section 1 p. 2). Similarly, when looking at health through a 'determinants of health' framework, the Canadian list of health determinants does not recognize the interconnected nature of cultural and physical environments, which has been identified as a critical health factor for many Indigenous Peoples (Richmond and Ross 2009). Richmond and Ross also explain that it is critical to recognize that not all health policies and promotional strategies are effective for all populations and that understanding the social, historical, and political contexts that shape current health inequalities is essential. For example, when examining issues of environmental contamination due to pollutants such as mercury in fish, the Western logic used in consumption advisories such as 'avoiding fish consumption means avoiding exposure' does not protect the people who consume the fish for reasons of physical and cultural necessity (Roe 2003). These differences in ideologies are important when trying to understand the realities of environmental health management in First Nations because they lay the ground-work for how environmental health factors are assessed and controlled within the legislative, research, and funding frameworks affecting First Nations.

Indigenous views of health typically connect cultural, social, and economic benefits to the regular use of the land, whereas a typical Western view segregates land management and health policy (Johnston, Jacups et al. 2007). The document review for the framework development revealed that the constitutional divisions of jurisdictions and responsibilities for health, environment, and environmental health (as a branch of Public

Health) among federal and provincial governments overlapped with the complexities of jurisdictions and responsibilities for on-reserve matters has meant that services, programs, and funding for health and environment matters are inherently separate. Interview responses from the case study also revealed that the combination of the constitutional divisions of jurisdictions and responsibilities for health, environment, and on-reserve matters means there is no federal funding for Band Environment Departments and that the funding that is available to Band Health Departments ensures that health and environment issues are addressed separately and that there is minimal funding to address the impacts of environment on health.

The idea that traditional Indigenous philosophies and knowledge should be used to inform contemporary life is held by many Indigenous People today (Alfred 1999, Mihesuah and Wilson 2004). In addressing environmental health management issues, it has also been argued that 'natural law', which is partly described as the recognition of the interconnected and dependence of all of creation, must be one of the foundational principles of environmental health strategies (Centre for Indigenous Environmental Resources 1996). In fact, "many Aboriginal communities today are actively revitalizing their legal traditions and developing contemporary laws based on the values that informed and shaped their traditional approaches to the governance of human relationships and dispute resolution" (Borrows 2006, as cited in Alcantara and Whitfield 2010, p. 123) and some scholars identify environmental concerns as a main force in the resurgence of these traditions (Borrows 2002 as cited in Alcantara and Whitfield 2010). This was found to be true in the case study where participants discussed the use of MFN traditional laws in their Land Code and how the inclusion of these laws will likely be a

better fit within the community and help membership more easily adapt to the changes the Land Code will bring.

In the past, the success of sustainable development projects involving Indigenous Peoples has been closely linked to Tribal sovereignty and the practice of self-government (Assembly of First Nations Health & Social Secretariat 2006). Furthermore, when dealing with issues related to environmental protection, recognizing the right of Indigenous communities to self-government and for Indigenous governments to act as equal decision-making partners is essential (AFN 2005). This includes having full legislative control in Indigenous jurisdictions where Indigenous laws are supreme and where Indigenous governments determine the manner in which mainstream laws are incorporated into their jurisdictions (Centre for Indigenous Environmental Resources 1996). While some First Nations in Canada are moving toward self-governing agreements (Alcantara and Whitfield 2010) and even more are developing their own land codes to manage reserve lands (Alcantara 2008), both the document review and interview responses from the framework development suggested that the majority of decisions currently being made regarding on-reserve environmental health are largely based on federal and provincial laws, policies and programs. For example, documents from the Assembly of First Nations reviewed during the framework development explained the importance of the federal *Species at Risk Act* and *Canadian Environmental Protection Act* in regards to their application to First Nations lands. Similarly, the interviews with an Environmental Health Officer and the Director of the Environmental Public Health Division at Health Canada during the framework development revealed the overarching role that the provincial *Health Protection and Promotion Act* has in on-reserve health and

environmental public health services and inspections. The interview responses from case study participants also supported the idea that decisions related to environmental health management in MFN are largely based on federal and provincial legislation. As MFN is part of the *First Nations Land Management Act*, this was the federal legislation most commonly discussed in terms of its effect on environmental health management. Here it was revealed that even the law making powers granted as part of this Act are governed by provincial legislation.

There is an historic exclusion of Indigenous Peoples from decision-making in the environmental realm (O'Faircheallaigh 2007) and the demand for a greater role in scientific research and decision-making processes is being seen by Indigenous communities around the world (Corburn 2007). Arquette (2002) argues that despite treaties and other governing agreements, "Native Nations often are not respected or considered sufficiently competent to have meaningful participation in decisions that affect their Nations, lands, and resources" (p. 260). Interview responses from the framework development revealed the overall lack of consultation with First Nations for changes made to environmental legislation such as the *Canadian Environmental Assessment Act* as well as during the development of Bill S-11, the *Safe Drinking Water for First Nations Act.* It was also suggested by participants that the review of Health Canada's First Nations Environmental Public Health Program severely lacked community consultation. Similarly, the case study findings from interviews and documents also pointed to a lack of genuine consultation between the Crown and MFN for environmental assessments and for deciding health programming objectives. The case study interviews and document review also highlighted the importance that First Nations have effective

internal-protocols for decision-making, perhaps in response to the overall lack of opportunities for First Nations leaders to participate in external decision-making. For example, several participants discussed effectiveness of MFN's community consultation protocol between leadership and membership for environmental health decision-making. MFN has also developed a Comprehensive Community Plan (CCP) which is based on the assertion that MFN can shape its own future while the plan guides decision-making at the leadership, departmental, and community levels.

To achieve sustainable success, environmental health initiatives must respond to and be directed by Indigenous Peoples (Robinson, Smyth et al. 2005, Assembly of First Nations 2006, Assembly of First Nations Environmental Stewardship Unit 2009). Consultations and assessments as well as program development and review however all require Aboriginal communities to have the needed resources to obtain expert knowledge, empirical data, and the qualified human resources to match those of the Crown. Several of the case study participants noted the unfair expectation for the First Nation to find the resources to hire the needed experts to represent their perspectives.

The literature suggests that Indigenous communities often do not have access to the needed programs and funding to effectively address environmental health concerns (Centre for Indigenous Environmental Resources 2005, Robinson, Smyth et al. 2005, Mascarenhas 2007, Chiefs of Ontario 2009). As many participants from both the framework development and case study stages pointed out, there is no direct federal funding for environment departments in First Nations and that a major issue resulting from the lack of clarity surrounding federal responsibility is the lack of funding received for environmental health matters. For example, for issues such as drinking water,

participants in both the framework development and case study discussed the "finger-pointing" between Health Canada and AANDC for funding, resulting in First Nations communities not receiving needed funding or having safe drinking water.

The only specific federal environmental health program available that is not proposal-based is Health Canada's First Nations Environmental Public Health Program (EPHP), which, as participants from the framework development and case study stages revealed, has many limitations in meeting community needs such as extremely large workloads of the Environmental Health Officers, limited time in each community, and not having 24-hour access to report environmental emergencies. Participants from both stages also commonly criticized the federal and provincial proposal-based programs for their short-term funding periods, ineffective amounts of money, how they foster competitiveness instead of knowledge sharing among First Nations, and the fact that many communities do not have the human resources for proposal writing or to carry-out the proposed project. As MFN participants explained, the impetus is typically on the program managers for each Band department to find more funding and meet the community's environmental health needs.

In regards to off-reserve industry that directly impacts the environmental health of First Nations communities like Cameco, case study participants explained that the federal and provincial governments are both "laissez-faire" about the impacts and that unless there is a major incident, there are almost no proactive initiatives and First Nations receive minimal funding, raising issues of ecojustice and social justice for communities.

Lack of baseline health and environmental data for Indigenous Peoples is a widespread concern and there is a general consensus among researchers and Indigenous authorities that there is a similar lack of quality baseline health data for Indigenous Peoples in Canada (Assembly of First Nations 2006, Assembly of First Nations Environmental Stewardship Unit 2009, Union of Ontario Indians Anishinabek Health Secretariat 2009, National Collaborating Centre for Aboriginal Health 2010, Chiefs of Ontario 2011). There is also the opinion that the integration of research information remains inadequate and the approaches to First Nations environmental health research is inconsistent and lacks organization across government, academia, and the private sector; with this lack of coordination, research data is often unavailable for use in policy, intervention, and education (National Collaborating Centre for Aboriginal Health and BC Leadership Chair in Aboriginal Environmental Health 2007). In her interview for the framework developed, Phyllis Williams (Former Manager of the Curve Lake First Nation Health Centre), noted that the lack of data has a critical negative impact on the ability to address immediate concerns and to plan at the provincial, regional, and local levels. Similarly, MFN's current lack of environmental health data, is problematic for program planning purposes in the Health Department and because environmental health effects cannot be "proven", which, as Jim Cada (Director of Operations) noted, has led to some believing that community fears and concerns are potentially disproportionate to the actual risks.

The literature suggests that First Nations living on-reserve do not receive the same types of public health services as do other Ontarians(National Collaborating Centre for Aboriginal Health 2011). Although on-reserve residents can access these services off-

reserve, case study participants within the Health Department acknowledged that they do not often network with the Ontario Public Health Units of the local municipalities. Neither do MFN members often access the Public Health services in the municipalities; participants hinted at a social and cultural separation that ensures distance is maintained. These circumstances point to a disconnection between what provincial public health services are available to on-reserve First Nations and how MFN members are accessing these services.

As described by participants in the framework development, a small number of First Nations have agreements with their local Public Health Units under Section 50 of *the Health Protection and Promotion Act* (HPPA) and have formed partnerships to access the environmental health services offered through the Public Health Units. Participants involved in the Curve Lake First Nation agreement noted that these agreements are rare due to the cost to the First Nation but are seen as a beneficial partnership by those involved. Interview responses from the framework development and case study suggest that the overall limited access to environmental health resources from provincial and federal sources has meant that communities heavily rely on their internal resources. For example, important internal resources noted by participants during the framework development were having a community vision, support, and understanding of environmental initiatives and the steps needed to carry out the work. Similarly, the most important internal resource discussed by the case study participants was the people of MFN: the vast knowledge and expertise of Band staff and leadership, and the support of environmental health initiatives by membership.

It is widely acknowledged in the literature that environmental health management requires communication and partnerships for long-term success (Kreuter, DeRosa et al. 2004, Langton, Rhea et al. 2005, Robinson, Smyth et al. 2005, Union of Ontario Indians Anishinabek Health Secretariat 2009). One of the reasons for this is that environmental health initiatives are vulnerable to global effects[50] and therefore joint efforts to address them are required (Centre for Indigenous Environmental Resources 1996, Six Nations Council Environment Office 2007). Another reason is that effectively addressing environmental health issues means simultaneously addressing various issues in the political, social, cultural, and economic realms:

> Environmental health policies and initiatives will combine both human and environmental health considerations into all aspects of development. This is particularly vital concerning potential impacts to areas such as: bio-diversity, wildlife, and fisheries, including water, soil, and air quality. In addition, policies and initiatives will include the protection and preservation of traditional economies, medicines, burial grounds and historical gathering places as well as maintenance of individual and collective identity, balance, and cohesion.(Centre for Indigenous Environmental Resources 1996, p.12).

The case study interviews and documents revealed that the communication between Band departments and federal and provincial governments, among Band leadership, and between Band departments and membership, has proven to be an important factor needing improvement in environmental health management in MFN. For example, when asked about the emergency plans for Cameco, Health Department

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[50]For example, during the 2005 CCME review of the CEPA, it was recommended that federal activities and activities on Aboriginal lands be subject to the same standards as activities an adjacent provincial lands to prevent transboundary environmental effects that could pose a risk to provincial lands. Canadian Council of Ministers of the Environment (2005). Review of the Canadian Environmental Protection Act (CEPA), Canadian Council of Ministers of the Environment**:** 5.

participants explained that Cameco was not included in the Community Emergency Plan because Cameco has a separate plan. Some participants were unaware of what the Cameco plan contained or how it involved MFN, except that MFN leadership were likely aware of the contents of the Cameco plan. Given that most participants said that they and many other community members do not believe that MFN is properly notified of accidents or emergencies at Cameco, not knowing the contents of the emergency plan could be a contributing factor to the community's concern over the Cameco risk. The MFN Comprehensive Community Plan (CCP) lists the "lack of communication among programs" as an important issue to explore. As explained in the document, the CCP encourages Band staff and leadership to harmonize their various planning and reporting initiatives into one comprehensive document, encouraging staff and leadership to "think across departments"(Mississauga First Nation 2012a).

As Jack et al. (2010) explain, environmental health policies are highly political and have varied impacts on people, organizations, economies, and geographic areas. Through minimal academic literature was found on the topic, the case study revealed that the agendas of federal, provincial, and First Nations political leadership have both critical positive and negative impacts on First Nations environmental health policy and management in regards to legislation, research, and funding priorities. For example, participants explained that the environment was a major funding priority in the early 1990s in the North Shore Tribal Council area due, in part, to the provincial funding First Nations received from the political party in power at that time. When new parties were elected, the same types of environment funding were no longer available and now one of the most important challenges facing MFN is the lack of federal and provincial funding

for environmental health issues. As one case participant explained, decisions regarding programs and services are dependent on the "flavour of the day" of who is in power. Also discussed by case study participants were project delays and negative impacts on working relationship created by the federal, provincial, and MFN election processes.

A Framework for the Review of First Nations Environmental Health Management Issues

The conceptual framework that was applied to the case study was developed based on a literature review of the legislative, policy, and social issues surrounding environmental health management in Indigenous communities in Canada and in Ontario First Nations in particular, as well as semi-directed interviews with environment and health experts from Ontario First Nations, national and regional Aboriginal Political Organizations, and Federal and Provincial governments. The framework was then used to develop interview questions for the case, analyze the data, evaluate the strengths and challenges of the case, and make recommendations for improvements or strategies to overcome current challenges. The case study application of the framework also provided the opportunity to 'ground truth' and further develop and adapt the conceptual framework, illustrated in this dissertation by the addition of two new core framework elements (#4 and 5). The following is an evaluation of the framework elements based on its application in the case study.

Core framework element #1, Environmental health jurisdictions and responsibilities, represented an especially important issue whose interview questions revealed many important factors in understanding the particularities of MFN's

environmental health management, such as the bureaucratic challenges of having a Land Code but not having its laws respected "on-the-ground" by federal representatives and how the division of environmental health into "health" and "environment" creates gaps and overlaps in the programming that MFN Band departments can offer. It is important to note however that based on the responses received to the questions associated with the legal strength of the environmental legislation, not all of the health and environment experts interviewed had specific knowledge of the legislation and its application on-reserve, which is a likely scenario in other communities.

The interview questions related to the core framework element # 2, participation in environmental health decision-making, elicited essential responses explaining the consequences of limited First Nations participation in legislation and program development and review. The participants revealed that government research, policy, and program frameworks used in First Nations are relatively unaffected by consultation processes with First Nations. What is more, the funding that is received to address environmental health issues is often not allocated in ways that reflect community priorities. The responses to this question also helped deepen the understanding of the important connections between jurisdiction, resources, and decision-making.

The questions related to framework element #3 regarding the availability of external resources elicited many important responses from participants which not only explained the many challenges of accessing resources, but also further explained the connection between funding and jurisdiction issues discussed in core element #1.

Examining the framework development and case study interviews, it was seen that the questions surrounding the core elements of jurisdiction and responsibility, participation in decision-making, and access to external resources, elicited quite similar responses among different First Nations. In contrast, the answers to the questions surrounding internal/community-resources, varied much more among responses. The first set of questions related to the issues surrounding the nature of community support for environmental health initiatives for core framework element #3, access to environmental health resources, is likely the most critical in understanding the unique characteristics of a community. Throughout the literature review, framework development, and case study, it was found that the most important factor in deciding the success of a community in how they are able to address environmental health issues is the people in the community. This includes the unique characteristics of the community members, Band staff, and Chief and Council, from their knowledge, experience, and expertise, to their drive to support environmental health initiatives, to their shared community vision. It is essential to keep in mind however that having the resources to retain key people in a community is affected my many 'external' factors, two of the most important being financial resources and employment opportunities.

During the case study analysis, two new core framework elements emerged from the data. The first was 'communication of environmental health information' which examined the issues surrounding communication among Band departments, membership, and First Nations and federal and provincial leadership. Communication proved to have both positive and negative implications for environmental health management in MFN and the limited First Nations-specific environmental health literature available suggests

that it is in other communities as well. This is an important topic to include in the framework because it has the potential to reveal unique characteristics about the strengths and challenges of a community's environmental health management.

The other core framework element that was added as a result of data emerging from the case study was 'Role and influence of leadership'. This element was included because case study participants discussed at length how the federal, provincial, and First Nations political leadership and their respective priorities affect environmental health legislation, funding priorities, and working relationships with industry and other governments, in turn affecting how environmental health is managed in MFN. This element represents, for the most part, factors that are external to First Nations decision-making and therefore examining the community-based strategies used to address associated challenges would likely be helpful for other communities facing similar circumstances.

Overall, the framework was useful in examining the realities of environmental health management in the case community. The framework, improved through its application and adaptation in the case study would likely be helpful in understanding the strengths, challenges, and strategies used to overcome the challenges of the environmental health management processes in other FN communities as well. One of the risks of using the framework is that the specific knowledge needed to answer questions about environmental health legislation and participation in decision-making at the federal and provincial levels was not held by many of the health and environment experts interviewed. One of the implications is that the number of responses elicited

from these questions might be fewer than from other questions, requiring compensation through additional interviews or other forms of data collection like document review.

Without these types of questions however the analysis of the realities of environmental health management would be incomplete and therefore the scope of the framework could help to ensure that answers to these questions are sought. Another risk of using the framework is that it requires participants to discuss the challenges in their communities, which based on this research, some participants were understandably hesitant to do. One of the benefits of the framework however is that it also heavily focuses on the strengths and strategies of community processes. The inclusion of questions related to community-based decision-making, resources, and communication also means that there is the potential that participants can answer based on work-related knowledge and their personal experiences as community members.

One of the most important contributions the framework developed in this research makes to environmental health and Indigenous bodies of literature is that it provides an organized way to examine the realities of environmental health management in First Nations communities that is not currently found in the literature. In particular, the framework combines factors that are external to a community with those that are internal, which are often discussed separately in the literature. In addition to bringing together and organizing the important factors discussed in the literature, the framework also identified two new framework elements (Communication of environmental health information, and Role and Influence of Leadership) that can have, based on the case study findings, significant impacts on environmental health management in First Nations but are infrequently discussed in the literature. Lastly, the framework focuses on concrete

examples of strategies developed by communities used to address the challenges created by factors internal and external to the communities themselves. This is important as many participants in both the framework development and case study stages of the research noted the need for better knowledge sharing among communities, whether directly or through regional organizations.

Conclusions

Health and environment are inseparable and everyone's health is affected by the environment, and everyone's actions affect the environment. What appears to get lost in environmental health management is the fact that the impacts that we have on the environment and the impact that our environments have on us cut across sectors and systems, meaning that environmental health problems cannot be solved without considering the political and social factors contributing to their creation, as well as the strengths and limitations of those same factors affecting potential solutions. There is a current need to harmonize the strategies used to address environmental health problems across research, policy, and practice in sectors such as health care, environmental protection, education, economic development, and governance. There is little, if any, doubt that environmental hazards are a major health threat worldwide and marginalized populations, including First Nations, tend to be exposed to greater environmental risks. Not only is this a major issue of immediate environmental injustice for those affected, but it is a long-term problem for the earth and all living things. Canadians are in the position where they have no explicit legal right to a healthy environment, either through the

Charter *of Rights and Freedoms*(1982), or through provincial rule like the Ontario Environmental Bill of Rights. Upholding Constitutionally recognized Aboriginal and Treaty Rights to protect our shared environment is in everyone's best interest.

In the literature, environmental health management is typically discussed as either "health", as in environmental public health (emphasis on public health) or "environment", as in the health of the environment. There is limited literature that ties together the assessment and control of environmental factors that affect health, which in a Canadian context, means examining the realities of environmental health management that span from the strengths and limitations of public health care to the application of environmental protection laws in First Nations. While not exhaustive of every factor affecting environmental health management in First Nations communities, this research examines the social and political realities inclusive of "health" and "environment" sectors that affect environmental health management, making this research unique in this way.

More specifically, this research has sought to explore how the relationship between health and environment is being respected through environmental health management in Indigenous communities in general and in Ontario First Nations in particular. There is much evidence in the literature suggesting that the relationship between people, place, and health, which is essential for many Indigenous communities, is inadequately respected within the research, policy, and program frameworks affecting environmental health management in these communities. The literature also affirms that many Indigenous communities are developing effective strategies to address their environmental health concerns despite the limitations of the imposed frameworks. This research ultimately sought to answer the following research question: **What are the**

current strengths and challenges in First Nations environmental health policy and management? This question was answered by reviewing the literature, developing a conceptual framework for environmental health management in Indigenous communities and then applying this framework to a case study with Mississauga First Nation.

The five core framework elements related to environmental health management in First Nations communities developed throughout this research were: environmental health jurisdictions and responsibilities, participation in environmental health decision-making, access to environmental health resources, communication of environmental health information, and the role and influence of leadership. While each of these factors is unique in its strengths and challenges, there are many common threads and changes in one area have effects on the others. These five elements proved to have critical impacts on the environmental health management in the Mississauga First Nation case study, and while it is likely that they would be useful in understanding the realities of other First Nations communities, there is no "one-size-fits-all" framework to capture the uniqueness of each First Nation. When discussing what strategies participants used to overcome the challenges associated with each core element, participants expressed a common desire to have access to a database of First Nations best practices and lessons learned regarding the strategies used to overcome the obstacles associated with environmental health management. While identifying the underlying factors affecting environmental health management is likely useful for the policy sector, identifying and sharing community strategies might be the most practical and valuable application of this framework.

Recommendations for Action

The following are recommendations for action based on the framework development and case study findings. Recommendations are specific to the case of key environmental health management issues faced by Mississauga First Nation. Generalization of the findings to other First Nations in Ontario or other contexts should be made with caution as they are context dependent.

Table 22. Recommendations for Action

Core Framework Element	Recommendations for Action	
	Federal and Provincial Governments	**Mississauga First Nation**
Environmental health jurisdictions and responsibilities	Federal and Provincial governments must clearly define the environmental health jurisdictions for which each has the authority to regulate including areas such as on-reserve Public Health that are currently un-regulated at the Federal and Provincial levels. "Finger-pointing" between federal and provincial governments must stop as this perpetuates the lack of clarity regarding which ministry is responsible for which area of environmental health funding in First Nations communities. Clearly defined environmental health responsibilities of each government must be established. This will allow Federal and Provincial representatives to understand and be accountable for fulfilling their responsibilities.	Continue to manage and monitor all traditional territory regardless of the lack of clarity in Federal and Provincial environmental health jurisdictions and responsibilities. Network to establish good working relationships with local Public Health Units to address any social barriers inhibiting MFN members from accessing provincial services

	First Nations must be informed of Federal and Provincial responsibilities in order to take advantage of the services being offered by both levels of government. The environmental health regulatory gap between Federal and/or Aboriginal and Provincial lands must be addressed in a way that gives First Nations authority to protect the environmental health of their lands.	
Participation in environmental health decision-making	Consultations with First Nations by Federal and Provincial governments must be designed and implemented in a manner that result in processes for legislation, policy, and program development and review that are deemed effective and meaningful by First Nations. Environmental Assessments conducted by Federal and Provincial governments with First Nations must be deemed effective and meaningful by participating First Nations and fully respect any assessment protocols established by the First Nations.	Develop and implement strategies that reflect MFN's shared vision for environmental health and harmonize community-decision making to meet short and long-term goals. Foster membership participation in program consultations by promoting cultural perspectives of health and/or environmental health programs.
Access to environmental health resources	Make funding opportunities from Federal and Provincial governments more accessible and relevant by: ▪ Increasing length of funding periods for longer term projects; ▪ Increasing the amount of money that is available for longer term projects; ▪ Allowing more flexibility for First Nations to decide priority funding; and ▪ Allowing more flexibility for	Capitalize on the vast knowledge and experience of Band staff to help address the challenges of accessing adequate federal and provincial resources. Encourage creative use of human and financial resources and resource-sharing partnerships with other First Nations and municipalities. Document best practices and

	First Nations to decide program areas. Increase the number of Environmental Health Officers in communities either hired by Health Canada or by First Nations. Increase funding for research that examines the connection between health outcomes and environmental impacts. Create and implement clear communication strategies for jurisdictions and responsibilities regarding environmental health initiatives between Federal, Provincial, and First Nations leadership to ensure successful initiatives. Federal and Provincial programs and services must be designed to meet the needs of First Nations environmental health issues as determined by First Nations.	strategies for addressing environmental health policy and management challenges and share with interested communities.
Communication of environmental health information	Ensure Federal representatives in the field are informed about the status and respectful of the implementation of First Nations' governing agreements like the *First Nations Land Management Act* Land Codes. Create and implement clear communication strategies among Provincial Ministry representatives and First Nations leadership and Band staff.	Develop effective internal communication strategies to improve communication among Band departments, leadership, and membership. Create database to allow community members and Band staff access to environmental health data with plain-language interpretations of the data.
Role and Influence of Leadership	Increase meaningful consultation with First Nations regarding environmental health priority areas. Implement a process to lessen the	Develop and implement strategies to increase regional coordination of leadership to share resources and expertise to address shared

	effects of the Provincial and Federal election process on proposal-based funding to First Nations.	environmental health concerns.

Recommendations for Future Research

1. As the framework was tested in only one case study community, and shows promise for future research in this field, it is recommended that the case study stage of this research be replicated and the framework be used to examine the realities of environmental health policy and management in other First Nations communities. Testing the framework in other communities would increase the confidence level of the framework's relevance and utility in assessing the strengths and challenges of environmental health policy and management for First Nations. It is also recommended that the research be replicated in First Nations communities that are similar as well as different from Mississauga First Nations in the following ways:

- Geographic location: within Ontario and in other provinces/territories
- Population size
- Governing agreements
- History of exposure to environmental health hazards
- Prioritization of environmental health within the communities' short-term and long-term goals

2. Participant discussions and document reviews from both stages of this research revealed that there is a need for better knowledge sharing among First Nations in regards to successful and effective strategies used to manage environmental health. It is therefore recommended that future research include examining the strategies or best practices on how to:

- Obtain and maintain program funding instead of project funding alone
- Develop a shared community vision and gain community support for future environmental health work
- Effectively prioritize environmental health concerns
- Increase education and employment opportunities on-reserve in the areas of environmental health

In order to learn from the experiences that have been accrued to date by different First Nations, it is recommended that this research identified above be conducted with consideration for data from First Nations with varying environmental health management approaches including:

- Various types of self-governing agreements
- Specific environment units/departments,
- Specialized partnerships for delivery of services and programs
- None of the above environmental health management approaches

3. Based on the findings of this research, gaining the support of community members for environmental health initiatives is critical for their success, especially given the wavering support currently received from external sources. This research also suggests that effective communication among leadership and membership and within leadership is needed to gain this community support. Minimal literature regarding community communication strategies was found and it is therefore recommended that future research examine:

- Communication strategies within First Nations for environmental health topics
- Effectiveness or ineffectiveness of these communication strategies
- Impacts of these strategies on environmental health management

4. The findings from the case study revealed that the impacts of the political agendas of Federal, Provincial, and First Nations governments as well as the impacts of the election processes themselves on environmental health management can be significant. However, this topic is infrequently discussed in the Indigenous environmental health literature. Recommendations for future research therefore include:

- Examining specific examples of how political agendas have positively and negatively impacted environmental health management in First Nations
- Exploring strategies to take advantage of the positive impacts
- Exploring strategies to mitigate the negative impacts

5. Participants from both stages of this research discussed the important contributions First Nations representatives have made in terms of making positive changes in environment and health legislation, policy, and programming despite the lack of genuine opportunities to participate in this decision-making. Minimal research documenting the impacts of First Nations' actions on changing environment and health legislation, policy, and programming was found and thus it is recommended that future research examine:

Specific cases documenting the role of First Nation representatives in the process of influencing or changing environmental health legislation, policy, and/or programming

Personal Reflection

From the start of this endeavour I have felt completely and truly lucky to have had the good fortune of engaging in this work, and to have received the overwhelming support that I did. I have never had such an opportunity to challenge myself to be a better listener and a better thinker and for these gifts, I am immensely grateful. Before starting this journey, my academic passion was health, specifically food and nutrition, and branching out into the unfamiliar worlds of environmental health, qualitative research, political studies, and First Nations traditions, governance, and cultures was exhilarating (and no doubt overwhelming at times). I have a better understanding of these topics now but there were many times throughout the researching and writing of this work that I questioned my abilities to genuinely understand the subject and most importantly, to express the ideas in a respectful and helpful manner. I am learning that words are powerful and easily perpetuate untrue and obstructive messages. I am a product of my

culture and education in mainstream Canada and I know now that I must scrutinize every idea that I express for hurtful words that I am only beginning to recognize are there. The responsibility to do this is mine, but the kindness and patience of the many people whom have taught and corrected me have been vital to my learning and to this research.

As I started to really learn about this topic, I was shocked at the seemingly endless barriers that must be overcome or side-stepped in order to make positive change in environmental health management practices and policies in First Nations communities. I was also surprised at how infrequently the determination, perseverance, and creativity of the individuals and communities coming together to make these positive changes are discussed in the literature. My interest in health, which now includes environmental health, has expanded into wanting to better understand the people and communities who are central to positive change-making.

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Appendices

Appendix A

Environmental Health Management: Case Study of Mississauga First Nation

Research Agreement

Feb 2013

Daneen Dénommé agrees to conduct the named research project with the following understandings:

1. The purpose of this research project, as discussed with and understood by the community of Mississauga First Nation is: to conduct a case study of the strengths and challenges of addressing environmental health issues and providing environmental health services in the community. Strategies used to address any challenges will also be examined.

2. The scope of this research project as discussed with and understood in the community, is: to collect data about the strengths and challenges of addressing environmental health issues and providing environmental health services within the context of jurisdiction and responsibility, federal programs and funding, First Nations' participation in decision-making, and community resources.

3. The methods to be used, as agreed by the researcher and the community, are: in-depth one-on-one interviews conducted by the researcher with key people involved in addressing environmental health issues and service provision. Review of relevant community documents by researcher include, but are not limited to, community histories, summaries of baseline environmental data and environmental health research, workplans developed with Environmental Health Officers, and environmental health program evaluations.

4. Information collected is to be shared, distributed, and stored in these agreed ways: Interviews will be digitally recorded and transcribed by the researcher. All data will be stored on a password protected laptop installed with True-Crypt encryption software. A final report will be distributed after approval from the community members. The researcher will also provide the data in a format that is most helpful to the community at the discretion of the community. All efforts will be made to incorporate and address local concerns and recommendations at each step of the project. At the end of the project, the researcher will participate in community meetings to discuss the results of the analysis with community members.

5. Informed consent of individual participants is to be obtained in these agreed ways: Participants will sign an Informed Consent Form (Appendix A) after reviewing it with the researcher. A copy of the consent form will be left with the participant where the contact information of the researcher can be used at any time, should the participant wish to contact the researcher(s) for additional information.

6. The names of participants and of the community are to be protected in these agreed ways:

Only the researcher and her supervisor will have access to the data provided by the participants. Before distribution of the final report, or any publication or contact with the media, the community will be consulted once again as to whether the community agrees to share this data in that particular way. The names of participants will not be used in any publications unless consent is given.

7. Project progress will be communicated to the community in these agreed ways: Monthly updates via email to Chief and Council and community advisor; the MFN community flyer and the MFN website.

Funding, benefits and commitments

Funding

The researcher has received funding and other forms of support for this research project from: Canadian Institute of Health Research (CIHR) and the Indigenous Health Research Development Program (IHRDP)

The funding agency has imposed the following criteria, disclosures, limitations, and reporting responsibilities on the researcher: CIHR must be listed as a funding agency on all publications and presentations and a summary of findings must be submitted to the IHRDP upon completion of the dissertation.

Benefits

The researcher wishes to use the data collected for her benefit in the following ways: use in PhD dissertation, in articles submitted to peer-reviewed journals, and in conference presentations. Approval from community leaders will be sought prior to publication or presentation of findings.

The benefits likely to be gained by the community through this research project are: to have access to information on the experiences and strategies of other communities that could potentially help improve how environmental health issues are addressed and how services are provided; be provided with recommendations on how to implement changes to improve environmental health management and service provision; be provided with a list of relevant literature.

Commitments

The community's commitment to the researcher is to:

- Recommend capable and reliable community members as key informants for interviews.
- Provide researcher access to needed documents.
- Keep informed about the progress of the project, and help in leading the project toward meaningful results.

The researcher`s main commitment to the community is to:

- Inform the community about the progress of the project in a clear, specific, and timely manner.
- Report to the community on final report.
- Make specific recommendations to MFN in relation to actions that can be taken to improve environmental health.
- Have a final meeting with MFN to deliver all documents and data.

The researcher agrees to interrupt the research project in the following circumstances:

- If community leaders decide to withdraw their participation.

Signed by:

Date: April 09 '13	Date: Community:
(Signature of Researcher) Name: Daneen Deronmé Position: Researcher	(Signature of Community Representative) Name: James Chor Position: Director of Operations

Appendix B

Letters of Informed Consent

Environmental health practices in Indigenous communities

Letter of Informed Consent

Interview Participation

Research Study: Environmental Health Management Practices in Indigenous Communities: a case study with the North Shore Tribal Council First Nations

In signing this informed consent form I am agreeing to participate in a research study on environmental health management practices in First Nations communities. This study is being conducted by Daneen Dénommé, an Indigenous Studies PhD student at Trent University, Peterborough, Canada. She will be supervised by Dr. Chris Furgal, Trent University. The data collected in this study will be included in Daneen Dénommé's PhD dissertation.

The aim of this study is to understand how environmental health issues are currently being addressed in First Nations communities, what the strengths and challenges are, and what improvements can be made. The ultimate goals of the study are to provide participating communities with recommendations for the improvement of their environmental health management practices and to communicate the lessons learned from the research to environment and health research and policy communities in Ontario and Canada.

I will participate in one digitally recorded interview of approximately 60-90 minutes in length. The interviewer will be Daneen Dénommé and it will be held in a location of my choice. I understand there is no foreseen risk in participating in this study and I have the right to stop participating in this study at any time I choose. I do not have to answer questions that make me uncomfortable or that I feel are inappropriate.

I understand that the matter of anonymity is my choice. I also understand that the researcher will only quote and identify me in the published dissertation with my permission. The interview will be stored in a password-protected computer and in a secured office that can only be accessed by the researcher, Daneen Dénommé.

My participation in this study is completely voluntary. I have the right to withdraw at any time and refuse to answer any questions. Should I exercise my right to withdraw I will decide at that time if the researcher may use the information I have provided to that point. My withdrawal will not hold any negative consequences for me, and will be done so without prejudice.

I will be given a copy of my interview transcript and will have the opportunity to make changes/corrections to my interview transcript prior to any analysis or use of the data in

publication and will be given a copy of the final thesis document at the completion of the project.

If I have any questions or concerns in regards to my participation in this study I can contact the researcher, Daneen Dénommé, her supervisor Dr. Chris Furgal, or the Trent University Research Ethics Committee with the contact information that has been provided to me.

I provide consent to the following:

____ I agree to have my interview digitally recorded.

____ I agree to allow the researcher to identify me as a research participant in the Acknowledgements of any publication or report arising from this study.

____ I wish to remain anonymous and not be identified in any aspect of the written material resulting from this study.

____ I agree to allow the researcher to use direct quotes from my interview in the study, after my review and approval of any quotes in their final context.

____ I agree to allow the researcher to attribute any quotes from my interview to me personally, using my name, in the written reports resulting from this project, after my review and approval of the presentation of the quote in its final context.

____ I have read and understood the above information and agree to participate in the aforementioned study.

Name: _____ Date: _____

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Environmental Health Management in First Nations Communities: A Case Study with the Mississauga First Nation

Letter of Informed Consent for Interview Participation

In signing this informed consent form I am agreeing to participate in a research study on the strengths and challenges of environmental health management and service provision in Ontario First Nations. This study is being conducted by Daneen Dénommé, an Indigenous Studies PhD candidate at Trent University, Peterborough, Canada. She will be supervised by Dr. Chris Furgal, Trent University. The data collected in this study will be included in Daneen Dénommé's PhD dissertation.

The aim of this study is to understand how environmental health issues are currently being addressed in First Nations communities, what the strengths and challenges are, what strategies are being used to address any challenges, and what improvements can be made. The ultimate goals of the study are to provide participating communities with recommendations for the improvement of their environmental health management practices and to communicate the lessons learned from the research to environment and health research and policy communities in Ontario and Canada.

I will participate in one digitally recorded interview of approximately 30-60 minutes in length. The interviewer will be Daneen Dénommé and it will be held in a location of my choice. I understand there is no foreseen risk in participating in this study and I have the right to stop participating in this study at any time I choose. I do not have to answer questions that make me uncomfortable or that I feel are inappropriate.

I understand that the researcher will only quote and identify me in the published dissertation with my permission. The interview will be stored in a password-protected computer installed with TrueCrypt encryption software office that can only be accessed by the researcher, Daneen Dénommé.

My participation in this study is completely voluntary. I have the right to withdraw at any time and refuse to answer any questions. Should I exercise my right to withdraw I will decide at that time if the researcher may use the information I have provided to that point. My withdrawal will not hold any negative consequences for me, and will be done so without prejudice.

I will be given a copy of my interview transcript and will have the opportunity to make changes/corrections to my interview transcript prior to any analysis or use of the data in publication and will be given a copy of the final thesis document at the completion of the project.

If I have any questions or concerns in regards to my participation in this study I can contact the researcher, Daneen Dénommé, her supervisor Dr. Chris Furgal, or the Trent University Research Ethics Committee with the contact information that has been provided to me.

I provide consent to the following:

____ I agree to have my interview digitally recorded.

____ I agree to allow the researcher to identify me as a research participant in the Acknowledgements of any publication or report arising from this study.

____ I agree to allow the researcher to use direct quotes from my interview in the study, after my review and approval of any quotes in their final context.

____ I agree to allow the researcher to attribute any quotes from my interview to me personally, using my name, in the written reports resulting from this project, after my review and approval of the presentation of the quote in its final context.

____ I have read and understood the above information and agree to participate in the aforementioned study.

Name: _____ Date:_____

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Appendix C

Case Study key-informant backgrounds

Sue Chiblow

Sue Chiblow has been the Environmental Consultant for Mississauga First Nation for two years and primarily works on developing the MFN Environmental Management Plan. She has past experience working in the Health Department at MFN and was the Environment Coordinator at the Chiefs of Ontario for twelve years.

Keith Sayers

Keith Sayers has been the Lands and Resources Programs Manager for MFN since 2009. He is responsible for overseeing the Lands and Resources Program Unit, some of which covers the development of natural resource plans for forestry, fish, and wildlife. Past experience includes being a Senior Forestry Technician and GIS Operator with the North Shore Tribal Council.

Jim Cada

Jim Cada has been the Director of Operations for MFN for five years. He is responsible to oversee all operations and has nine managers reporting to him. Previous experience includes 20 years as Band Manager/Administrator and Lands Negotiator. He has also worked as acting Lands Manager and Field Technician in Tyendinaga.

Linda Ambeault

Linda Ambeault has been the Health Director for MFN for 15 months. She manages the Health and Social Services Department and responsibilities include obtaining funding and

delivering programs. Linda has past experience as the Director of Operations at Algoma District Services Administration Board.

Lucy Ann Trudeau

Lucy Ann Trudeau has been the Assistant Health Director for MFN for four years. She is responsible for overseeing the day to day operations of the Health Centre including the health staff, para-professionals, and programming staff. Lucy Ann is also responsible for submitting community-based reports via the Community-based Reporting Template (CBRT) to Health Canada. Past experience includes Lands Manager in another First Nation, Acting Environment Director for the North Shore Tribal Council, and Case Coordinator for the Ontario Hydro Demand and Supply Hearings in the early 1990s.

Rita Wilson

Rita Wilson has been the Community Health Nurse for MFN for four years. Some of her responsibilities include administering programs, promoting health through education, and being the community liaison for the Environmental Health Officer via Health Canada's First Nations Environmental Public Health Program. Past experience includes long-term care nurse manager in MFN and Serpent River First Nation.

Appendix D

Environmental Health Management in First Nations Communities: A Case Study with Mississauga First Nation

Daneen Dénommé

Case Study Interview Guide

Participant Identifiers (background)

1. What is your current job position? Briefly, what are your responsibilities?

2. How long have you held this position(s)?

3. Do you have knowledge of or experience with environmental and/or health matters not related to your current job? Is so, please explain.

4. How do you describe/define environmental health? (Probe: is it the health of the environment or how the environment affects health?)

5. What, if any, are the major environmental health issues in the community?

6. What has been/was/is your current relation to the issue of environmental contamination from Cameco (uranium refinery)?

Jurisdiction and Responsibility

1. Clarity (or lack) of who has responsibility for environment and health issues
    a. Is there a clear division of responsibility (so who is supposed to do what) for environment and health matters in the community among federal, provincial, and First Nations governments? Explain.
    b. What are the strengths or challenges related to the level of clarity of responsibility? (probe: does the community have access to resources from the federal government? What environment and health services/resources does the community receive from the provincial government?)
    c. For any challenges or barriers identified, does the community have any strategies to overcome these challenges? If yes, what are they? (probe: Does

the community have the internal capacity to support its needs? Does the community form partnerships with other communities, Aboriginal organizations, or government agencies)

2. Legal strength of legislation
    a. Are there laws or regulations that address the issue of uranium contamination? How does existing legislation affect how environmental contamination is addressed in the community (probe: As applied to the community, what is the legal status and strength of existing federal and provincial legislation for the contamination of the water, air, soil?)
    b. What opportunities or challenges are created by the existing legislation? (probe: Does the strength of existing legislation affect remediation processes? explain)
    c. For the challenges identified, does the community have any strategies to address or overcome these? If yes, what strategies are used to address these challenges (probe: Are by-laws enacted? How does the EHO work to improve remediation?)

3. Scope of the regulations-making authority of the Indian Act

    a. Does the Indian Act have any connection to or affect on how uranium contamination matters can be addressed in the community? Please explain.
    b. What, opportunities or challenges does the Indian Act create in addressing environmental contamination matters in the community? (probes: Does it affect the regulation-making process or by-law enactment in the community? Does it affect public health?)
    c. For the challenges identified, does the community have any strategies to overcome or address these? What, strategies are used to overcome these barriers (probe: How are regulations enforced? Through public education and persuasion? How are public health matters being addressed? Are partnerships formed with communities, Aboriginal Orgs (e.g. Chiefs of Ontario), government agencies (e.g. Ontario Water Wastewater Certification Office), or provincial departments (e.g. MOHLTC)?

4. What is the difference between law making with and without the FNLMA Land Code?

5. Are there any other issues surrounding jurisdiction and responsibility in regards to how environmental contamination is addressed in the community that you think are important to discuss or for me to know about?

Aboriginal participation in decision-making

1. Nature of consultation/ First Nations involvement in decision making.

    a. In your experience, what is or has been the nature of consultation with First Nations for the development and review of environment and health laws, policies, and programs dealing with environmental contamination, specifically uranium contamination?
    b. What, if any, are the challenges created by the consultation process with First Nations for the development and review of environmental health laws, policies, and programs? (probes: How does First Nations participation (or lack of) affect the cultural acceptability/appropriateness of regulations, policies, and programs?)
    c. What, if any, strategies are used to address these challenges? (probe: Do Aboriginal organizations and community members educate government and lobby for legislative change?)

2. Are there any other issues surrounding Aboriginal participation in decision-making in regards to how environmental contamination is addressed in the community that you think are important for me to know?

Access to Resources

1. Existence and funding for environmental health programs for First Nations communities.
    a. What programs dealing with uranium contamination are accessed by the community? How are they funded? Are there any program opportunities or restrictions that could affect community access to the funding? (probe: Contaminants programs, drinking water system operator training?)
    b. What challenges or opportunities are created by the nature, accessibility, and funding of the programs? (probes: Do mandatory programs like the EPHP meet community needs? What are the strengths and challenges of the EPHP? Does the community have access to non-mandatory federal programs? If so, which one(s)? If not, why not? Do these programs meet community needs?
    c. For any challenges identified, has the community developed any strategies to address these challenges? (probe: Are partnerships with other communities, Aboriginal organizations, or government agencies formed?)

2. Are there any other issues surrounding programs and funding in regards to how environmental contamination is addressed in the community that you think are important to discuss or for me to know about?

3. Nature of community support for environmental health work

    a. What is the nature of community interest and support for environmental contamination initiatives, such as research, public education, or remediation?
    b. Does community interest and support affect environmental contamination initiatives? (probe: does it affect its sustainability and success?)
    c. What are the opportunities or challenges created by the nature of community interest?
    d. For any challenges identified has the community identified any strategies to address these challenges? Can you please explain them (probe: provide tangible results to community to increasing community trust and support? Ensure cultural values are represented and respected in environmental health work? Educate community members about environmental health concerns?)

1. Availability of resources for environmental health work in community
    a. Does the community have access to needed resources for environmental contamination initiatives, such as research, public education, or remediation?
    b. Does the availability resources affect environmental contamination initiatives? If so, how? Please explain. (probe: does the access and allocation of resources affect the type of environmental health work being done?)
    c. For any challenges identified has the community developed any strategies to address these challenges? If yes, what are they? Please explain. (probes: Does the community form partnerships with Aboriginal organizations to collect data, conduct research, and lobby government? Are community members advancing environmental agendas be acting on interests/concerns in their personal lives? Does the community secure its own funding, partner with universities, or access non-mandatory government programs?)

2. Are there any other issues surrounding community resources in regards to how environmental contamination is addressed in the community that you think are important for me to know or understand?

Concluding General Question

1. What do you think are some of the most important strengths in how the community currently addresses its environmental health issues today? Are there any we have forgotten to discuss?

2. What do you think are some of the most important challenges are in how the community currently addresses its environmental health issues today? Are there any we have forgotten to discuss?

3. Environmental health is defined differently depending on the source. In your experience, does the manner in which it is defined raise issues for environmental health management and service provision in the community?

4. The scope of issues included under the "environmental health" umbrella varies depending on the source. Has this ever created barriers in terms of accessing resources?

5. If I am trying to learn about how the community is able to address environmental health issues like uranium contamination is there anything else that we have not spoken about that we should discuss or that I should learn about?

6. Are there any documents that you think would be helpful for me to read? (histories, reports, evaluations)

7. Is there someone you think I should talk to?

Appendix E

Framework Development Interview Questions by Participant Group

First Nations and Indigenous Political Organizations Environment Department Representatives

1. What is your position within the department?
2. How long have you been working in this department?
3. Can you provide a short history of the department, specifically why and when it was developed?
4. What are your responsibilities?
5. What are some of the environmental issues that you are working on?
6. Where does your funding come from?
7. Are you involved in partnerships with Indigenous political organizations, governments, or First Nations?
8. How does the work that you do get used by First Nations communities?
9. Are you involved with any environmental legislation? In what capacity?
10. Can you comment on the status of Aboriginal participation in environmental legislation and policy development?
11. Are there any First Nations that you think are unique in how they are approaching environmental issues?
12. Do you work with the Health Canada First Nations Environmental Public Health Program?

First Nations Health Representatives

1. What is your job title?
2. How long have you held this position?
3. What are your responsibilities in this position?
4. What, if any, are the major environmental issues or concerns in your community?
5. What is being done, if anything, to address these issues in your community?
6. Do you work with the First Nations Environmental Public Health Program (EPHP)? If so, in what way?
7. Do you think the program's objectives being met?
8. Are the day-to-day environmental health needs of the community, such as safe drinking water, food, housing/buildings, garbage and solid waste disposal being met? If so, how? If not, why?
9. What is the procedure for reporting environmental concerns in communities? Is it effective?
    a. What do you think it would take to make the necessary improvements to the way the environment is being addressed or managed in your community?
    b. Is there a plan for making change and improvements?
10. Is there a community that you think is a good role model in how they are approaching environmental issues?
11. Are there other strategies that you think are important for success?
12. Do you think environmental issues get enough attention and funding?

13. Do you have partnerships with any other communities or political organizations on environmental issues? If so, in what manner and is it beneficial to your community?

Indigenous Political Organizations Health Representatives

1. Can you provide a short history of the department, specifically why and when it was developed?
2. What is your position within the department?
3. How long have you been working in this department?
4. What are your responsibilities?
5. What, if any, are the environmental health issues that you are working on?
6. Do you work with the First Nations Environmental Public Health Program (EPHP)? Is so, how?
7. Are you involved in partnerships with other Indigenous political organizations, governments, or First Nations?
8. How does the work that you do get used by First Nations communities?

Provincial Government Reps (Ministry of Health and Long-term Care)

1. What is your position within the department?
2. How long have you been working in this department?
3. What are your responsibilities?
4. Can you explain what the Province of Ontario's specific responsibilities are in regards to First Nations health services?
5. What factors affect the relationship between local public health units and First Nations communities across Ontario (i.e. location, need, funding, rapport etc)? How are the services that are delivered by local public health units to First Nations living on reserve paid for?
6. What are some of the most common types of health services provided to First Nations by the Ontario Government? What, if any, are the environmental health services?
7. Does the Ontario Government take any part in Health Canada's First Nations Environmental Public Health Program? If so, in what ways? Can you explain how the funding for this program works?

Provincial Government Reps (Medical Officer of Health)

1. How long have you held this position?
2. What are your responsibilities?
3. From what I understand, when First Nations communities enter into a Health Protection and Promotion Act (HPPA) Section 50 agreement, they are to act as municipalities and take on those responsibilities. Does this mean they are subject to all of the HPPA requirements, for example, enforcement of the Act?
4. From what I understand, there is a minimum standard for the services and programs that Ontario public health units must provide and then there is flexibility in what additional services and programs can be provided. Can you speak to this?
5. Do the municipalities and First Nations within the Peterborough Health Unit generally receive the same services or are they tailored to each? How are they paid for?
6. Are the minimum standard services and programs optional for the municipalities to decide if they want them or not?

7. I know there are certain mandatory federal programs like the Environmental Public Health Program and there is overlap with this program and the work that public health inspectors do through public health units. How do you address this overlap?
8. Part 3 section 11 of the HPPA deals with complaints regarding health hazards related to occupational or environmental health. Who is notified of these hazards when the First Nations are considered to be under federal jurisdiction?

Federal Government Representatives (Environmental Public Health)

1. What is your position within the department?
2. How long have you been working in this department?
3. What are your responsibilities?
4. What is the history of the Environmental Public Health Program (EPHP)? When did it start and why?
5. What was in place before it?
6. Has there been a program evaluation of the EPHP? How is the success of the program measured?
7. From the EPHP website, there are currently nine program areas. How was it decided to include these program areas? What is the rationale for choosing these 9 areas?
8. On the EPHP website, the program is described as having the flexibility to deliver the activities that meet each community's needs by adding additional activities to those offered in the 9 program areas. How common is it that additional activities be added?
9. How many EHOs are currently working in Ontario First Nations communities? For those EHOs who cover more than one community, how is the workload of the EHOs divided among communities? What factors affect how the inspections are prioritized?
10. How many First Nations communities in Ontario hire their own EHO? Does this money come from federal sources or is it raised by the communities? When communities do hire their own EHOs does the EPHP still get used or are other programs/services developed in the communities?
11. What standards and regulations are used when the EHOs do their inspections?
12. Why can't the regulations be enforced?
13. Is the process of making 'recommendations' to Chiefs and Band Councils effective?
14. Does the program include a documented process for reporting environmental health concerns by community members?
15. What are the strengths and challenges of the EPHP?
16. How could the EPHP be improved?

Federal Government Representatives (Environmental Health Officers)

1. How long have you been working as an Environmental Health Officer (EHO)?
2. What are your responsibilities as an EHO for the First Nations communities?
3. Is the work that you do all under the Environmental Public Health Program?
4. How many communities do you inspect?
5. How does workload get divided among communities?
6. Whom do you work with within the communities?
7. What health regulations do you follow when you're doing inspections? How is this decided?

8. Can you talk about regulation enforcement on reserves?
9. Are there any other major differences between the work of a Public Health Inspector and the work of an EHO?
10. Is there a comparable role in First Nations to the Ontario Boards of Health? Who fills this role?
11. Can you explain how the EPHP is funded?
12. Is there anything that would make your job more effective?
13. Do you ever work with the political organizations like the Assembly of First Nations or the Chiefs of Ontario?

Appendix F

MFN Community Documents

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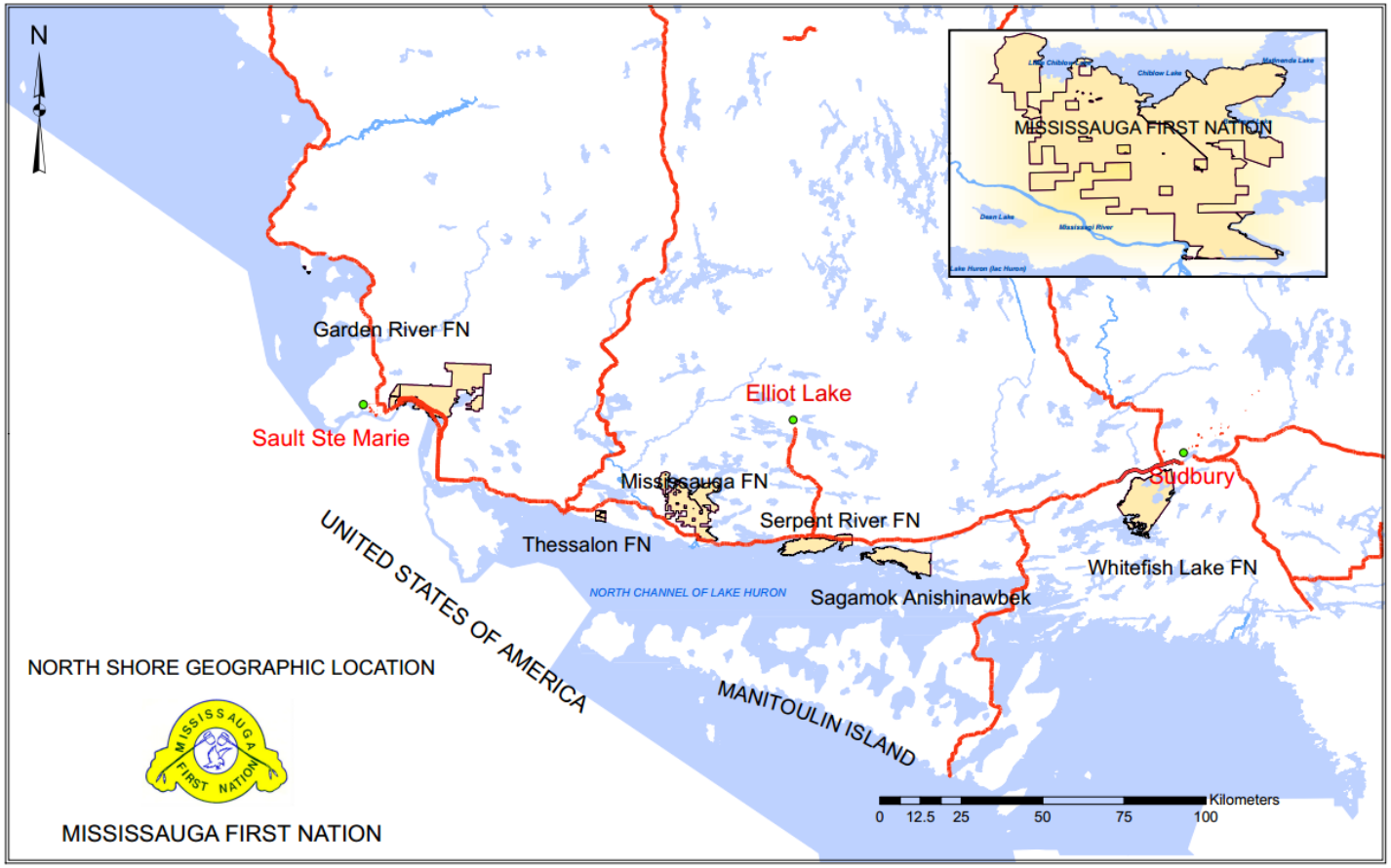
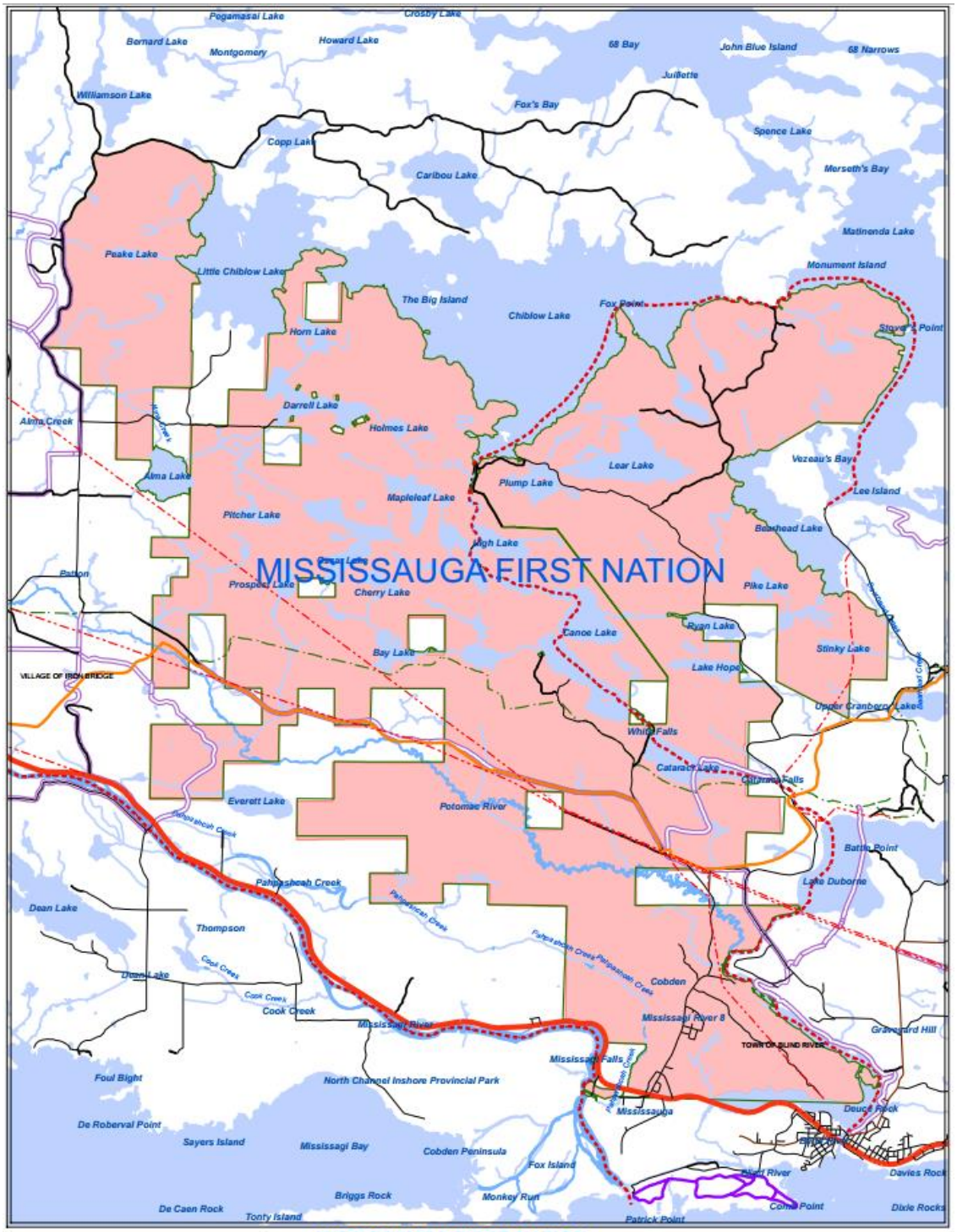
Appendix G

Map of Mississauga First Nation location



Appendix H

Map of Mississauga First Nation reserve land



MISSISSAUGA FIRST NATION

Appendix I

Case Study Timeline of Events

This timeline is meant to highlight specific events important to the case study. It is not exhaustive.	
Year	**Event**
1970s and earlier	MFN members set up summer camps on what is now Cameco property
1978 (Sept)	Environmental Impact Statement for an Uranium Hexafluoride Refinery Blind River prepared by James F. MacLaren for Eldorado Nuclear Limited for the Atomic Energy Control Board.
1978 (Oct)	Chief Camille Chiblow of MFN sends letter to Minister of Energy, Mines, & Resources stating that speaking on behalf of the people he represents, he strongly favours that the Eldorado Refinery be located in Blind River due to the current lack of employment.
1978 (Nov)	Chief Chiblow sends letter to Environmental Assessment & Review Board stating that MFN approves and would welcome Eldorado
1978 (Dec)	Chief Chiblow sends letter to Environmental Assessment & Review Panel in Blind River stressing the need for industry in Blind River and asks about qualifications for prospective employees and whether how long training would last. The reply was that the needed qualifications would be grade 10 or 35 yrs old with experience and training lasts between 2 weeks and 3 months.
1979 (Feb)	Report of the Environmental Assessment Panel on Eldorado Uranium Hexafluoride Refinery was released.
1979 (March)	Chief Chiblow sends letter to Environment Canada stating high unemployment as one of the reasons to consider Blind River area as location for refinery.
1979 (Nov)	Province of Ontario Review of the Eldorado Nuclear Limited Environmental Impact Statement for the Federal Environmental Assessment and Review Panel Hearings released.
1979	Government of Canada announces a new 18,000 tonne UO_3 refinery will be built in Blind River to encourage industrial development in this region of Ontario
1980	Site applications filed with regulatory agencies, development agreements negotiated, public information meetings held and site preparation completed.
1980 (approx)	An Evaluation of Cultural Resources on the Eldorado Resources Ltd. Property near Blind River, Ontario by ArcheologieIllimetee Inc. concluded that "it is of cultural significance that a refinery has been placed on an area of the delta that did not encourage Amerindian or early settler habitation”

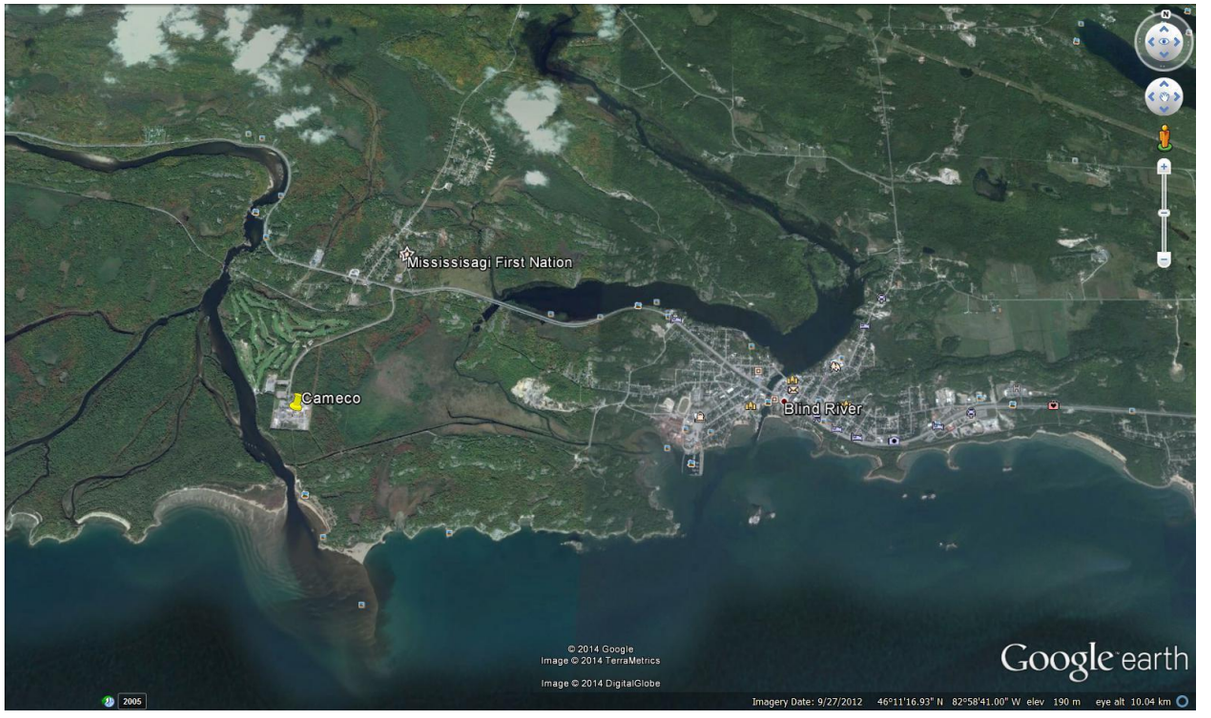
1980 (Sept)	Application to the Atomic Energy Control Board for Site Approval, Blind River Refinery prepared by Eldorado Nuclear Ltd. for new site approx 2.5 km northwest of original proposed plant site.
1981 (Jan)	Preoperational Environmental Monitoring, Blind River Site, prepared by Senes for Eldorado Ltd.
1981	Pre-operation Environmental Monitoring Blind River Refinery First Quarterly Report concluded that the majority of the results obtained during the first quarter were in the ranges expected for the environment that is being monitored with some exceptions.
1981	Site and construction approvals received from the Atomic Energy Control Board for Eldorado.
1981	A letter from W.J. Stinson who was the Blind River refinery manager to the new MFN Chief, Irvin Niganobe, states that preference will be given to local people for all of the job opportunities as long as qualifications are met. The required qualification listed in this letter for non-tradespeople was a grade 12 or equivalent and three to six months of training.
1981 (Oct) through 1982	Preoperational Studies of the Terrestrial Environment in the Vicinity of the Eldorado resources Refinery at Blind River. This report summarizes the available data from the terrestrial component of the preoperational studies initiated by the MOE. The report states that the values for the eleven analyzed elements indicated normal concentrations and that the data could be used to determine future effects of emissions on terrestrial environments.
1982 (Aug)	MFN, Serpent River First Nation, Spanish First Nation submitted a joint proposal to study the impacts of resource development on their respective First Nations. Some of the goals of the MFN study were to ensure safe air and drinking water from effects of the refinery, to collect baseline community health data, to ensure that the health of MFN members working at the refinery is adequately protected, and to enable MFN to maximize social benefits while minimizing losses associated with the operation of the refinery.
1984	Terms of Reference for an Environmental Impact Assessment and Socio-economic Impact Assessment of Eldorado Ltd. by MFN. This document states that a 1984 community survey found that "the band members have indicated that they had no real say in whether the plant should exists".
1984	Construction and commissioning of the Blind River refinery (Eldorado) completed
1985	A letter from S. Radcliffe, Project Engineer, Environmental Contaminants Division, Environment Canada states there is no need for the "Environmental Impact Assessment of Eldorado on the Mississauga Band" study proposed by MFN in 1984.
1989	Studies of the Terrestrial Environment and Ambient Air Quality in the Vicinity of the Eldorado Resources Ltd. Refinery at Blind River, ON 1981-1987 by MOE concluding that soil and vegetation uranium concentration has increased since 1983 but are within the normal concentration ranges.
1990 (May 16-17)	Accidental release of 178 kg of yellowcake by Eldorado.

1990	International Institute of Concern for Public Health (Dr. Rosalie Bertell) conducted a preliminary investigation in MFN and concluded that the combined effect of uranium in drinking water, soils and vegetation on the reserve, as indicated by preliminary testing, poses a potential health risk to band members.
1990	Correspondence from Cameco (Eldorado) regarding dust release concluding that there was no risk to MFN or surrounding inhabitants.
1990 (October)	Correspondence by Dr. F. Lapner at the Children's Hospital of Eastern Ontario concluded that blood and urine samples of children collected during Bertell Study did not provide evidence for any medical condition.
1990 (November)	Medical Evaluation of Health Effects of Blind River Uranium Release 16 and 17 May 1990 by Bureau of Radiation and Medical Devices Medical Advisor concluded that rain and wind conditions would have made it extremely unlikely that any radioactive dust came in contact with people in the region and that the methodology used in the Bertell Study was flawed and conclusions invalid.
1990 (November)	Report on the Investigation of the Major Release of Uranium Dust to the Atmosphere at Cameco's Blind River Refinery, 16-17 May, 1990 by Supervisor and Project Officer of Uranium Processing Facilities Section Uranium Facilities Division concluding that risk of harmful impacts to humans, soil, and vegetation were very low.
1991	Atomic Energy Control Board report states that the dust release was within regulatory limits.
1990s (prior to 1996)	Environmental Issues Inventory Phase II by Henderson Paddon Environment Inc. recommending action be taken to monitor air-borne uranium due to risk posed to MFN.
1992	Biomonitoring with Moss Monitors in the vicinity of the Cameco Uranium Refinery at Blind River, Ontario by MOE. Samples taken in 1987 indicate sites within 800m of refinery were most heavily impacted by uranium deposition.
1992	Soil, Vegetation and Air Quality Sampling in the Vicinity of the Cameco Uranium Refinery Blind River, Ontario May 1990 by MOE concluded that phytotoxic effects were not expected to result from soil and vegetation uranium concentrations.
1994	Construction began on a $10 million processing plant within Cameco to convert liquid byproduct to calcined material.
1996	Cameco processing plant commissioned, producing recyclable calcined uranium-bearing byproduct from the refining process. The new process reduces the volume of byproduct by almost 75%.
1996	MFN entered into the Framework Agreement on First Nation Land Management with Canada.
1997	Mississauga First Nation Phase III Environmental Issues Inventory of Selected Sites by Henderson Paddon Environment Inc. Risk of uranium contamination concern was not in top five concerns investigated.
1999	Cameco produced 9,605 tonnes of UO_3 in 2000 compared to 11,360 tonnes.
1999	Phytotoxicology Technical Memorandum by Ministry of the Environment indicate uranium in soil had increased over sampling timeframe of 18 yrs and was highest in samples taken closes to Cameco (no sampling done in MFN).
2000	Cameco received safety awards from the Industrial Accident Prevention Association and Human Resources Development Canada.

2000	Cameco received safety awards from the Industrial Accident Prevention Association and Human Resources Development Canada for a new record of 10 years without a lost-time accident.
2001	Cameco achieved a safety milestone with a record 11 years without a lost-time accident.
2002	Cameco achieved International Standards Organization (ISO) 14001 certification for environmental management systems.
2003	Mississauga First Nation Land Code process begins.
2005	Cameco signs agreement adding uranium conversion capacity.
2005	MFN Land Use and Resource Management Plan by Henderson, Paddon and Associates Ltd. The primary purpose of the land use plan is to provide guidance for land use decisions.
2007	Canadian Nuclear Safety Commission grants Cameco five-year licence renewal.
2009 (June)	Mississauga First Nation Land Code ratified and adopted.
2011 (July)	Environmental Management Agreement - Step 1 identifies and prioritizes the environmental issues MFN would like to address in the regulatory or law making regime (Cameco is primary off-reserve environmental concern but does cannot fall under MFN's regulatory regime).
2012	MFN Environmental Management Agreement Step Two Milestone One submitted.
2012 (August)	MFN air monitoring program started.

Appendix J

Map showing location of Cameco in relation to Mississauga First Nation



Appendix K

Map showing original proposed site of the Cameco refinery