Strengthening the Integration of Traditional Knowledge in Environmental Impact Assessment

An analysis of Inuit place names near Steensby Inlet, NU

by

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Abstract

Environmental impact assessments are a key policy tool in the mitigation of eco-systemic and cultural risk due to resource development. They are of increasing importance as climate change creates demand for the expansion of northern resource development. In the North, innovative approaches are needed to ensure that Inuit values and concerns are reflected in environmental and economic decision-making. In the eastern Arctic, the Nunavut Impact Review Board has recognized the importance of both scientific and traditional knowledge to this task. Inuit place names are a form of traditional knowledge that has rarely been leveraged in environmental assessment despite their indication of historical land-use, ecological resources, and areas of cultural value. Through a case study of the Mary River iron mine project near Steensby Inlet, NU, this thesis examines the potential contributions of an analysis of Inuit place names to the scoping phase of environmental impact assessment.

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Table of Abbreviations

AANDC	Aboriginal Affairs and Northern Development Canada
CLEY	Ministry of Culture, Language, Elders and Youth
CPCGN	Canadian Permanent Committee on Geographical Names
GCRC	Geomatics and Cartographic Research Centre (Carleton University)
GEM	Geo-mapping Energy and Minerals
GIS	Geographic Information Systems
GNBC	Geographical Names Board of Canada
IHT	Inuit Heritage Trust
ILUOP	Inuit Land Use and Occupancy Project
ITK	Inuit Tapiriit Kanatami
INAC	Inuit and Northern Affairs Canada
IQ	Inuit Qaujimajatuqangit
MRIKS	Mary River Inuit Knowledge Study
NCRI	Nunavut Coastal Resource Inventory
NIRB	Nunavut Impact Review Board
NLCA	Nunavut Land Claims Agreement
NLUIS	Nunavut Land Use Information Series
NRCAN	Natural Resources Canada
NRI	Nunavut Research Institute
NTS	National Topographic Series
PGIS	Participatory Geographic Information Systems
QIA	Qikiqtani Inuit Association
SIT	Spatial Information Technologies

TCPS2	Tri-Council Policy on Ethical Conduct for Research Involving Humans
TEK	Traditional Ecological Knowledge
TK	Traditional Knowledge
UTM	Universal Transverse Mercator
UNCLOS	United Nations Convention on the Law of the Seas

Introduction

The Canadian Arctic is undergoing unprecedented changes, in respect to climate, resource development and the role of Inuit values in governance. It is widely accepted that a warming global climate regime is having widespread impacts on the northern environment, causing a rapid retreat in ice coverage, increasingly prolonged ice-free seasons, and changes in animal habitat and health. While prompting a variety of concerns, these changes also present new opportunities for the expansion of oil and gas development, new mining operations and more efficient global shipping routes. In Nunavut, a territory inhabited by an Inuit majority, there is a unique recognition that traditional knowledge should be considered alongside Western scientific knowledge when evaluating the environmental and social impacts of resource development. Defined as a "cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission" (NIRB, 2007, p. 7), traditional knowledge has been integral to the livelihood of Inuit since time immemorial. A form of traditional knowledge, Inuit place names are largely descriptive and provide a broad qualitative record of geographic features and ecology. Unlike place names found elsewhere in Canada, Inuit place names record the locations and characteristics of fishing grounds, mammal and bird habitats, sea-ice features and culturally significant places. This research will test the hypothesis that due to their descriptive nature, Inuit place names can support environmental impact assessment – helping to identify ecological habitats and areas of cultural value. Place names have rarely been used for this purpose.

In particular, this thesis will focus on the Mary River iron ore mine, presently being constructed in Nunavut by the Baffinlands Iron Mines Corporation. The mine is anticipated to become one of the largest mining operations of its kind, once operating at peak production (Baffinland Iron Mines Corporation, 2012c). The environmental assessment for this project was approved by the Nunavut Impact Review Board and Minister of Aboriginal Affairs and Northern Development Canada (AANDC) in December, 2012 (NIRB, 2012). I will examine whether place names were used to inform the final impact assessment for the Mary River project. If not, a case study will systematically examine the potential contributions of Inuit place names in the vicinity of the project site. Two ecological resource inventories will provide evidence of species and habitats found near the mine site: the Northern Land Use Information Series, published by Indian and Northern Affairs Canada (now AANDC) in conjunction with Environment Canada between 1972 and 1987; and the Nunavut Coastal Resource Inventory, published by the Government of Nunavut in participation with Indian and Northern Affairs Canada in 2008. I will explore and highlight the connections between these ecological resource inventories, and the location and descriptive translations of nearby place names.

The impacts of climate change are of immediate and growing concern in the Arctic. The most recent data from the United Nations indicate that eleven of the past twelve years have been the warmest on record since 1850, and average Arctic temperatures have increased by twice the global average in the past hundred years (United Nations, 2012). Inuit provide testimony to these changes, citing degradation of ice at the floe edge; changes in the behaviour of seals and polar bears; a decline in the

quality of animal furs; and environmental contamination of traditional foods (Kunuk & Mauro, 2010; Laidler et al., 2011; Gearheard et al., 2011). There is also concern over the safety of hunters and individuals traveling across sea ice. Inuit and environmental proponents are concerned about the impact that these trends will have on the Arctic environment, and the lifestyle and safety of northern residents. While climate change in Canada is widely seen as an environmental concern, some also perceive new development and economic opportunities.

The mandate of Aboriginal Affairs and Northern Development Canada (AANDC) is to foster the development of Aboriginal communities and interests, and support economic development in northern Canada. New funding commitments for Aboriginal mining grants and skills programs by the federal government, increased exploratory licensing for mineral, oil and gas resources, and anticipated increases in the volume of marine traffic through Arctic passages, are tangible indication of the type and trajectory of development. The dual mandates of AANDC indicate growing pressures on northern communities to expand and support resource-based economies. In the eastern Arctic, the Nunavut Impact Review Board (NIRB) mitigates the interests of development proponents and Inuit communities, to facilitate informed environmental planning and decision-making. NIRB's environmental impact assessment process provides opportunity to voice concerns, and present evidence of the potential impacts and opportunities of prospective developments. An ability to identify baseline measures of ecological impact, assess socio-cultural impacts, and track changes over time, is fundamental to this task. The need to consider traditional knowledge in environmental assessment reflects the complexity of Inuit interactions with the land and environment.

An integral part of Inuit livelihood, traditional knowledge complements scientific assessments well, helping to provide baseline ecological measures and identify potential risk, while reflecting community values.

Inuit place names reflect a cultural approach to the environment, and patterns of land use. Inuit place names are established through repeated use, communicated orally between generations and used on a regular basis as people travel and hunt. Importantly, place names also provide access to environmental knowledge which has been established over generations of experience on the land. As Peplinski (2000) notes, in Inuit culture, "[p]lace names are [part] of an oral history…[n]ames for places provide specific information about animal migration patterns, calving and nesting sites, environmental hazards and other aspects of the environment" (pp. 35). Inuit place names are often connected to journey narratives, and describe the landscape, points of reference and resources. This contrasts with European place names which are most often commemorative – memorializing explorers, their ships and patrons (Peplinski, 2000, p. 5). Aporta (2009) notes that Inuit trails "entangled with individual and collective memory of previous trips, as well as with environmental information of different sorts and place names in the Inuktitut language" extend across the Arctic and connect "communities to their distant neighbours, and to fishing lakes and hunting grounds in between" (pp. 132). The sharing of geographic information via place names has helped establish these names and fostered their longevity over many generations. Within the context of environmental assessment, however, the value of place names is often overlooked. When used, place names are often used as a way of locating and communicating a geographic location in local terms. This indicates a limited

understanding of how Inuit place names are relevant to environmental assessment, and suspends an opportunity to expand the role which Inuit place names play in validating indicators of environmental and cultural impact.

This thesis will be organized in nine chapters, each developing and testing the central hypothesis. Chapter one will introduce the contexts of resource development in Canada in terms of environmental change, economic potential, and Indigenous rights. These issues are of particular interest in Nunavut, where the Nunavut Impact Review Board mandates consideration of Inuit cultural values and traditional knowledge in its environmental decision-making. Chapter two will outline the environmental impact review process that guides resource development in Nunavut. Particular focus will be paid to the mandate of the Nunavut Impact Review Board to make decisions about environmental development that are informed by traditional knowledge and an Inuit world-view. The third chapter will introduce Inuit place names as a form of traditional knowledge connected to ecology and the northern landscape. Inuit place naming practices will also be contrasted with the place names of a Euro-Canadian tradition, found both in the Arctic and elsewhere across the country. This discussion will be linked closely with chapter four, an examination of historical and contemporary policies that have influenced the adoption of Inuit place names on government maps. Chapter five will highlight alternative efforts to record place names through mapping that emphasizes community and Indigenous perspectives. These themes will be coalesced in chapters six and seven which will respectively present a case study integration of Inuit traditional knowledge in the Mary River impact assessment, followed by an analysis of the ecological accuracy of place names in the vicinity of the proposed mine site. The eighth

chapter will discuss the findings in relation to the central hypothesis and present implications for future study, before a ninth and concluding chapter.

Inuit place names have the potential to help non-Inuit gain a better understanding of local knowledge, facilitate interactions between consultants involved in environmental impact assessment and community members, and importantly, provide clues for a historical record of land use and environmental patterns. There has been an increased effort by the Nunavut territorial government to survey and map Inuit place names for future generations. As more resources are garnered to document this facet of Inuit cultural knowledge, there is opportunity to better understand its characteristics and connections to contemporary issues. Through a broader acknowledgment of the relationship between Inuit place names, ecological resources and land use patterns, place names might become a valuable tool when assessing development impact and environmental change.

Chapter 1: Climate Change and Resource Development

Climate change has emerged as one of the defining issues of the 21st century. Increases in mean annual temperature, declines in sea ice cover, and oil, mineral, and natural gas discoveries have positioned the Arctic as the next likely frontier for natural resource investment and development. It is estimated that permanent sea-ice has, until recently, locked billions of dollars in undeveloped natural resources within the Arctic (Byers, 2009, p. 10). Environmental impact review processes have been implemented in Canada to mediate interests and activities relevant to environmental decision-making. This process is of heightened importance in the Arctic, where ecological systems are particularly sensitive and many communities rely on mixed land and cash-based economies. While the ability to mitigate these impacts is of great concern, especially within northern communities, recent federal legislation and policy seem to be aimed at creating an attractive political framework for economic investment and resource-based development in the North. In the eastern Arctic, the Nunavut Impact Review Board (NIRB) was created to address these challenges, and Nunavut remains one of few jurisdictions that has legislated the inclusion of traditional knowledge in discussions of resource development. Nunavut, is also the largest and most northern Canadian territory, home to an 85% Indigenous population (Wenzel, 2004, p. 239). This chapter will contextualize Arctic environmental assessment within national and international discourses, while discussing the importance of Indigenous perspectives in northern environmental decision-making.

Significance of a Changing Climate

Decades of greenhouse gas emissions have begun to alter the Arctic climate regime and environment in distinct ways. During the 18th session of the Conference of the Parties (COP 18) of the UN Framework Convention on Climate Change in Doha, Qatar, members convened to discuss impacts, mitigation and adaption to climate change. The working definition for climate change during these discussions was "a change in the state of the climate that can be identified...by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer" (IPCC, 2012, p. 5). One of the outcomes of COP 18 was a documentation of the unprecedented effects of climate change and predictions of the wide ranging impacts that this shift will continue to have on human life. In Canada's North, Inuit have attested to the amplitude of these changes as they alter multiple facets of northern livelihood. Increasingly unpredictable weather, for example, has begun to impact human safety, animal behaviours, and environmental patterns.

In the 2010 film *Inuit Knowledge and Climate Change*, northern Canadian residents speak of changes to the environment within their lifetimes. Weather forecasting has become more difficult with stronger, less predictable winds, the temperature is not as cold as it has been in previous years, and there are more consecutively warm summers (Kunuk & Mauro, 2010). Many of the observations noted in the film are supported by the work of numerous researchers (Laidler et al., 2011; Gearheard et al., 2011; Krupnik & Jolly, 2002). Sea ice is now less extensive and thinner than it has been historically. It is estimated that "between 1979 and 2006, annual circumpolar sea ice extent shrank approximately 3.6% per decade (8.4% per decade for

September sea ice extent)" (Laidler et al., 2011, p. 94). The thickness of sea ice is "estimated to have thinned to nearly half the thickness in 2008 (...) based on decreasing replenishment of multi-year ice cover (...) and younger perennial pack ice" (Laidler et al., 2011, p. 94). These changes are the result of rising average temperatures which have increased by approximately 3ºC in the past four decades (Byers, 2009, p. 8). In September, 2012, the lowest Arctic sea-ice extent in modern times was observed. Summer sea-ice extent in the same year was half the 1980 to 2000 average.

Accelerated losses in water, snow, ice cover and permafrost conditions are also producing "cascading effects to biodiversity, ecosystems and human living conditions in the Arctic and around the World" (Arctic Council, 2012, p. 1). These changes are having an impact on the ways Inuit relate to the environment including:

> the reliability of traditional weather and sea ice prediction techniques; longer transitional stages (i.e., freeze-up and break-up process); shifts in marine wildlife habitat, health and behaviour; local livelihoods; and food security (...) An erosion of land-based knowledge and skills among younger generations of Inuit is also recognized as exacerbating the potential implications of sea ice change, particularly in terms of travel safety and harvesting success. (Laidler et al., 2011, p. 95)

These impacts are likely to be amplified in coming years, as the average global temperature is expected to continue to rise. While there are tremendous concerns about the impact that a warming environment will have on multiple global systems, opportunity is seen in a warming Arctic as well. These opportunities are mostly connected to economic development and resource exploitation.

Rights Resources at Stake

In a 2007 speech to an audience in British Columbia, Prime Minister Harper identified the Arctic as a region of growing importance within the global and Canadian economy:

> The ongoing discovery of the North's resource riches – coupled with the potential impact of climate change – has made the region an area of growing interest and concern. Canada has a choice when it comes to defending our sovereignty over the Arctic. We either use it or lose it. And make no mistake, this Government intends to use it. Because Canada's Arctic is central to our identity as a northern nation. (as cited in Dodds, 2010, p. 371)

While the 'use it or lose it' catchphrase has been heavily criticized because of its potentially negative impact on perceptions of Inuit land use and occupancy of the Arctic, the opportunities the Prime Minister seeks to seize are elucidated when the content of the speech is put in context. The United States Geological Survey estimates that "30% of all undiscovered natural gas is in the Arctic region as well as upwards of 13% of all undiscovered oil reserves" (Standing Committee on National Defense, 2010, p. 9). In the context of a warming Arctic climate regime, shrinking Arctic sea ice extents and increasing pressures on global oil and gas reserves, this estimate has extraordinary economic significance. Already, oil and gas companies have begun to invest billions of dollars in exploratory licensing, and greater infrastructural capacity is being developed in the form of northern deep-water ports and enhanced Coast Guard and Arctic Ranger programs (Byers, 2009, p. 10). A seasonally ice-free Arctic would also facilitate the establishment of shipping routes through the disputed Northwest Passage. Such a route would reduce the distance travelled between East Asia and the Atlantic seaboard by

7000 km (Byers, 2009, p. 11). In recent years, Canadian policy on the national and international stages are moving towards taking advantage of these opportunities.

Presently under international law, coastal states have jurisdiction over seabed and marine activities within 200 nautical miles of their shoreline. In recent years, with the ratification of Article 76 of the United Nations Convention on the Law of the Seas (UNCLOS), coastal states can extend their jurisdiction beyond 200 nautical miles if they can demonstrate that a natural extension of the continental shelf exists. By mapping the seabed, signatories seek not only to resolve issues of territoriality, but also to maximize their control over the seabed and its resources (Dodds, 2010). In this pursuit, Canada recently submitted claim to a territory equal to approximately 20% of the nation's surface area (Boswell, 2012, para. 1). As non-state actors in this process, Indigenous peoples are at significant risk of being marginalized and dispossessed of their right to ownership, use, development and control over resource development in the Arctic. These rights have been gained through international law, land claims and self-government processes (Inuit Circumpolar Council, 2011; Nicol, 2010; United Nations, 2008). Recent repeals and proposed amendments to Canadian environmental law have also caused concern.

Bill C-45, the second part of the Conservative Party omnibus finance budget, passed in December, 2012, implemented significant amendments to the Fisheries Act and the Environmental Assessment Act, and eliminated the Navigable Waters Protection Act. Changes to the Environmental Assessment Act apply new rules to the types of projects requiring environmental assessment, and the length of the assessment process. Changes to the Fisheries Act redefine the term 'Aboriginal fishery' – one of

three types of fisheries which subject waterways to fisheries protections. Furthermore, the replacement of the Navigable Waters Protection Act significantly reduces the number of lakes and rivers protected from alteration under federal law (McGregor, 2012). These measures are being presented as a way to streamline regulation and "improve prospects for economic growth" (Environment Canada, 2012, para. 7), but critics of the changes including Green Party Leader, Elizabeth May, say that the changes are a continuation of "the destruction of environmental protections from the first omnibus budget bill, C-38" (McDiarmid, 2012, para. 8). The reliance of Inuit and many Aboriginal communities on coastal habitats has raised further concerns about the grounded impact of these legislative changes.

Speaking on behalf of the Assembly of First Nations, Chief Shawn Atleo has said that "First Nations have not been engaged or consulted on any of the changes to the environmental resource development regime proposed within Bill C-38...If enacted, it will increase the time, costs, and efforts for all parties and governments, as First Nations will take every opportunity to challenge these provisions" (Plecash, 2012, para. 17). Terry Audla, president of Inuit Tapiriit Kanatami commented that "Inuit have an important role in asserting Canada's Arctic sovereignty, and would need to be involved in any decisions to develop the region's untapped hydrocarbon reserves" (Plecash, 2012, para. 23). In the eastern Arctic, the Nunavut Impact Review Board will play a crucial role in the process by representing the concerns and economic interests of communities, with the development of a broader resource-based economy.

The Nunavut Impact Review Board (NIRB) has been established through legislation as a mechanism for the oversight of environmental development. Inuit

Qauijimajatuqangit – Inuit values, knowledge and principles – has been instituted as a guiding model for NIRB, providing a culturally appropriate framework by which environmental impact, harm, and stewardship are assessed. Chapter 2 will introduce a broader discussion of the role and mandate of NIRB, and the role of Inuit traditional knowledge within its assessments. The chapter will also highlight the characteristics, implementation, and role of Inuit traditional knowledge in northern environmental assessment.

Chapter 2: Environment Impact Assessment and Traditional Knowledge

Under the terms defined in many land-claim and self-government agreements, and protected by the Constitution, the Government of Canada has a responsibility to Aboriginal communities to engage in consultation, or in some cases request consent prior to environmental decision-making (VanNijnatten & Boardman, 2002, p. 10-11). The 1993 Nunavut Land Claims Agreement (NLCA) resulted in the creation of a number of Boards whose mandate is to administer environmental policy within the territory and assess the impact of those projects. The Nunavut Planning Commission, Water Board, Wildlife Management Board and Impact Review Board provide a framework through which decisions related to natural resources and environmental development are managed. Protected by articles within NLCA, these institutional vehicles facilitate Inuit participation in the development of policy and action (Valiante, 2002, p. 11). Unlike any other Canadian jurisdictions, environmental assessment in Nunavut is not executed under federal law, but rather is almost exclusively the purview of the Nunavut Impact Review Board (NIRB) (Rusk, Granchinho & Barry, 2009, p. 257).

Created under Article 12 of the Nunavut Land Claim Agreement, the NIRB "is an institution of public government created (...) to assess the potential impacts of proposed development in the Nunavut Settlement Area prior to approval of the required project authorization" (NIRB, n.d., para. 1). As national policy provides increasingly attractive conditions for resource-based investment in the Arctic, NIRB will have a significant role in balancing community and corporate development interests. Article 12 describes five primary functions of the NIRB:

a) to screen project proposals in order to determine whether or not a review is required;

b) to gauge and define the extent of the regional impacts of a project, such definition to be taken into account by the Minister in making his or her determination as to the regional interest;

c) to review the ecosystemic and socio-economic impacts of project proposals;

d) to determine, on the basis of its review, whether project proposals should process, and if so, under what terms and conditions, and then report its determination to the Minister; in addition, NIRB's determination with respect to socio-economic impacts unrelated to ecosystemic impacts shall be treated as recommendations to the Minister; and

e) to monitor projects in accordance with the provisions of Part 7. (Nunavut Tunngavik Inc., 2010, p. 99-100)

Recommendations established during the screening and review process are reported to a decision-making authority who decides how the NIRB recommendations will be implemented. Often this authority is the Minister of Aboriginal Affairs and Northern Development Canada (Rusk, Granchinho & Barry, 2009, p. 260). These recommendations are developed through a six-step process [1] of environmental assessment. NIRB is distinctive, being one of few environment assessment boards in Canada which stipulate the inclusion of traditional knowledge in the decision-making process (Rusk, Granchinho & Barry, 2009, p. 276). This requirement echoes the broader efforts of the Government of Nunavut to ensure that the cultural values and perspectives of the population – a majority of which is Inuit – is tangibly integrated in the structure of territorial governance.

[1] A detailed description of the process of environment assessment is provided by the Nunavut Impact Review Board (2007), and Rusk, Granchinho & Barry (2009).

Inuit Qauijimajatuqangit

Inuit Qaujimajatuqangit (IQ) has been legislated as a central philosophy in the governance of the territory through the Bathurst Mandate and the negotiation of the 1993 Nunavut Land Claim Agreement – a land claim settlement giving resource and decision-making rights to Inuit within the settlement region. Influenced by the Nunavut Land Claims Agreement and established through the Nunavut Act in 1999, the Government of Nunavut made it a priority to "reflect Inuit culture by incorporating Inuit cultural values into its structure and operations" (Wenzel, 2004, p. 240). One of the first priorities of the government was to identify the breadth of what constitutes IQ, and clarify the values, knowledge and principles that are to comprise the core of policy-making and governance (*see* Table 1). The Nunavut Social Development Council (NSDC), first responsible for defining Inuit Qaujimajatuqangit described IQ as "all aspects of traditional Inuit culture including values, world-view, language, life skills, perceptions and expectations" (NSDC as quoted in Wenzel, 2004, pp. 241). IQ is an approach to decision-making, that is informed by Inuit cultural traditions and cultural knowledge. NIRB applies five central principles in fulfilling its central mandate: credibility, fairness, respect, public participation, and Inuit Qaujimajatuqangit (IQ). The inclusion of IQ is unique among other environmental assessment and impact review processes in Canada.

Principle	Meaning
Pijitsirniq	Serving; use power to serve others
Aajiiqatigiingniq	Consensus seeking; respect differences
Pilimmaksarniq	Skills and knowledge acquisition; improve skills through practice
Piliriqatigiingniq	Cooperation; work together in harmony for common purpose
Avatimik Kamattiarniq	Stewardship; treat nature holistically for actions and intentions have consequences
Qanuqtuurunnarniq	Problem solving; creative improvisation
Papattiniq	Guardianship of what one does not own
Qaujimanilik	Respect knowledge or experience
Surattittailimaniq	Hunt only what is necessary and do not waste
Iliijaaqaqtailiniq	Harvesting without malice
Sirliqsaaqtittittailiniq	Avoid causing animals unnecessary harm
Akiraqtuutijariaqanginniq Nirjutiit Pijjutigillugit	No one owns animals or land so avoid disputes
Ikpigusuttiarniq Nirjutilimaanik	Treat all wildlife respectfully

Table 1: *Principles and Precepts of Inuit Qaujimajatuqangit (*Wenzel, 2004, pp. 241)

NIRB at its core recognizes the importance of IQ in evaluating the social and environmental concerns related to resource development. Considerations throughout the process include:

> respecting other (*sic*), relationships, and caring for people; development of skills through practice, effort and action; working together for a common cause; fostering good spirit by being open, welcoming and inclusive; serving and providing for family and/or community; decision-making through discussion and consensus; being innovative and resourceful; and

> respect and care for the land, animals and the environment. (NIRB, 2013 [a], p. 6)

In using IQ as a framework, NIRB is guided toward culturally-appropriate decisions regarding environmental stewardship, and the impacts of resource development on society and the environment. An inclusion of traditional knowledge is particularly important to the decision-making framework and public participation model of environmental assessment adopted by NIRB.

Traditional Knowledge and Traditional Ecological Knowledge

Having a diverse and detailed understanding of the environment and land use patterns is essential in evaluating potential development project impacts. Traditional knowledge is defined by the NIRB as the "cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission" (NIRB, 2007, p. 7). As a body of knowledge accumulated through personal and cultural experiences, traditional knowledge includes a wide and dynamic range of knowledge about culture, environment, spirituality and other aspects of value to a particular community. NIRB places emphasis not only on the inclusion of IQ principles when discussing potential impacts to wildlife, harvesting practices and communities, but the responsibility of development proponents to "demonstrate how they are integrating local knowledge and scientific knowledge into their project design to manage potential environmental and social impacts (NIRB, 2013 [b], p. 7).

The inclusion of the words 'evolving' and 'adaptive' is important to the definition adopted by NIRB. One of the criticisms of the term 'traditional knowledge' is that the qualifier 'traditional' implies an archaic and unchanging body of knowledge – often held

in opposition to 'modern' and or 'scientific' modes of inquiry (Widdowson & Howard, 2006; Usher, 2000; Peplinski, 2000). Gearheard et al. (2011) describe *igliniit* – trails routinely travelled – both as physical transportation networks, but also "relational networks in which food sharing, family relations (visiting between camps or communities), storytelling and knowledge exchanges (teaching and learning travel and hunting skills) take place" (p. 43). As sites of traditional knowledge exchange, they demonstrate the transformative nature of traditional knowledge. Inuit hunters in a modern context, for example, combine both historical and contemporary "artifacts (and techniques) from the use of a *qamutiik* (sled), sled dogs, harpoons, to snowmobiles, high powered rifles, and GPS" (Gearheard et al., 2011, p. 44). On the trail, a new 'ecology of technology' is demonstrated and cultivated as "old and new devices and techniques integrate and supplement each other" (Gearheard, et al., 2011, p. 44). As experiential and technological transitions occur within Inuit culture, traditional knowledge reflect these changes. Traditional knowledge is continually evolving through the observations and life experiences of individuals.

The term traditional knowledge can apply to a diverse body of knowledge, from the spiritual, to the ecological, social or cultural. Aspects of traditional knowledge relating to ecology are of particular interest in environmental assessment. Though there is no universally accepted definition for the purposes of this research I will consider traditional ecological knowledge (TEK) as a subset of traditional knowledge referring "specifically to all types of *knowledge about the environment* derived from the experience and traditions of a particular group of people" (Usher, 2000, p. 185). Environmental assessments involve identifying contemporary and historical use of land

and resources, and the potential adverse impacts that a particular development may have. These goals make TEK of particular relevance (Hanna, 2009; Usher, 2000). The use of TEK provides "a broader and deeper understanding of local environmental processes, at a finer and more detailed geographical scale, than conventional scientific knowledge can offer" (Usher, 2000, p. 187).

If 'ecological' is narrowly defined as "branch of biology in the domain of western science" however, TEK is an equally problematic term as 'traditional' (Berkes, 1993, p. 3). As with other forms of traditional knowledge, TEK is developed through a combination of experience, past knowledge, observation and life experience. TEK emerges, in part, through empirical observations of events and phenomena, but also through generalized observations based on experiences over a long period of time. It is also gained through observation based on personal experience, and reinforced through shared experience, stories, oral history and teachings of others (Usher, 2000, p. 186). This stands in contrast to the Western scientific paradigm within which knowledge is verified through methods that are systematic and empirically measurable. In developing TEK, there is a more general emphasis on the observation of trends, conditions and variation, enabling information to be verified and reinforced through trial and error, rather than primarily empirical measurement (Usher, 2000, p. 187). Wenzel (2004), gives the example of prevailing seasonal wind direction which may be established in traditional knowledge through "not generally verifiable observations about environmental-ecological information and processes" (p. 244). These latter elements of the TEK epistemology have led some to dismiss TEK, and more broadly traditional knowledge, as "simplistic hypotheses, vague and unsubstantiated opinions and

unsystematic data...unacceptable [and] unscientific premises" (Widdowson & Howard, 2006, p.7). TEK, however, has been a foundation of both indigenous and non-indigenous livelihoods for generations, and has potential to enrich and complement Western scientific paradigms in important ways.

As Brown and Fast (2012) note, there are significant limitations to scientific inquiry, particularly in northern climates. Most scientific investigation takes place by southern researchers during a limited field season under ideal weather conditions and constrained by logistics, budget and time. In ecological studies, Inuit traditional ecological knowledge of the region, wildlife habitats, seasonal occupancy, feeding, behaviour and migration, are able to fill significant gaps missed during shorter periods of study (Brown & Fast, 2012, p. 1). For example, during the environmental assessment process for the Meadowbank Mine project, initiated in 2010, a traditional knowledge workshop was held with participants from the community of Chesterfield Inlet to extend and supplement the capacity of assessors. Community elders were able to identify "such features as cabins, travel routes, shipping hazards, fishing areas, hunting areas, spiritual areas, archaeological sites, important environmental areas, burial sites and place names" (Nunami Stantec, 2010, p. 2-3). The integration of these data in the environmental assessment process – one often driven by a Western scientific paradigm – can extend the ability of review boards to predict and mitigate the impacts of development projects. This workshop-driven approach to traditional knowledge integration is not with its critiques, however.

As illustrated in the Meadowbank Mine assessment process, Aboriginal peoples are often invited to participate environmental impact assessment at its consultation

phase. By this time, however, “the project framework has already been constructed around a Western world view, with little room for Indigenous modification” (McGregor, 2009, p. 90). A criticism of such an approach is that it positions traditional knowledge as “a supplementary body of information which does not threaten the fundamental assumptions” and approaches of environmental management and assessment (Nadasdy, 1999, p. 5). Furthermore, a lack of meaningful participation of Aboriginal peoples throughout the entirety of the assessment leaves traditional knowledge that challenges, or is seen to be irrelevant to, the broader agenda of a project, vulnerable to exclusion from the assessment (McGregor, 2009, p. 81; Nadasdy, 1999, p. 4).

To be considered ‘valuable’ or ‘relevant’ to impact assessment, traditional knowledge must also be “expressed in forms that are compatible with the already existing institutions and processes of scientific resource management” (Nadasdy, 1999, p. 5). The research frameworks associated with traditional knowledge integration in environmental impact assessment frequently reduce traditional knowledge to a catalogue of information with little consideration of the central philosophies which guide the production of traditional knowledge (McGregor, 2009, p. 76). Traditional ecological knowledge, however, is developed with an acute concern for the impacts of environmental interactions on “personal safety, access to marine wildlife, the ability to travel, and notions of personal/cultural identity” (Laidler, 2006, p. 429). As will be discussed in Chapter 5, traditional knowledge cannot be separated or fully understood outside of its cultural contexts. Consultants in northern environmental assessment often lack expertise in the interpretation of traditional knowledge (McGregor, 2009, p. 85), leaving traditional knowledge to remain acknowledged, but not of equal consideration in

the environmental assessment process. As opportunities are sought to ameliorate these criticisms, this research will investigate the role that Inuit places names, a form of traditional ecological knowledge, might play in this process.

Chapter 3: Inuit Place Names

Toponyms, or place names, are used in most cultures to provide locational reference in geographical space. Without place names, communicating where one is located and where one is headed would be a much more complicated task. Place naming practices develop differently in varied cultural contexts, however. In a European Western tradition, naming is often commemorative, whereas in other cultural contexts, place naming can serve as a way to communicate memories, emotions and stories, as well as geographical and environmental knowledge. Inuit place names are a wealth of knowledge related to the environment and ecology, over locations that have great importance to the communities that use them. They also reflect longstanding patterns of land use and occupancy. As a detailed record of ecological resources and land use patterns, Inuit place names have potential value in the environmental assessment process. The purpose of this chapter is to introduce the unique characteristics of Inuit place names, and their use in Inuit culture.

Descriptive Naming

Place names are an integral way in which traditional knowledge has been embodied within Inuit culture for generations. For individuals who had not learned to travel and find their way in the context of traditional knowledge, the Arctic can be a dangerous place, as well-known routes and resources would be unknown. Historically, travel was complicated by the unreliability of compasses at northern latitudes, the expanse of the horizon, and maps which show geographic features that for many months of the year are covered by snow and ice – “mirages are commonplace, and

whole ranges of mountains can appear where there are none" (Goehring, 1990, p. 64-65). In this context, Inuit have developed methods of orientation and a unique environmental awareness in order to travel and live safely. Hunters now often rely on global positioning systems (GPS) to guide navigation, however, extreme weather conditions, or operational glitches can render this technology unreliable (Aporta & Higgs, 2005, p. 729). On land, Inuit traditionally orient themselves by "understanding wind behaviours, snowdrift patterns, animal behaviour, tidal cycles, currents and astronomical phenomena" (MacDonald as quoted in Aporta & Higgs, 2005, p. 731). Individuals who have learned to navigate in northern conditions become aware of and attuned to "as many visual and tactile clues defining place and location as are provided in any other physical environment" (Goehring, 1990 p. 66). Place names are an important element of the Inuit approach to geography.

Inuit geographic knowledge is oral, and "Inuit use precise terminology to describe land and ice features, wind directions, snow and ice conditions, and place-names" (Aporta & Higgs, 2005, p. 732). Inuit have named and described their landscape in a way that is connected to a network of place names and trails, traversing most of their territories (Aporta, 2009). Narratives are an important part of the way that this knowledge is transmitted:

> Inuit travelers do not usually teach and learn trails as isolated and discrete entities. The memory of the trail is entangled with individual and collective memory of previous trips, as well as with environmental information of different sorts as place names in the Inuktitut language. (Aporta, 2009, p. 132)

Place names complement trails by providing "specific information about animal migration patterns, calving and nesting sites, environmental hazards and other aspects

of the environment" (Peplinksi, 2000, p. 35). In this context, place names are an important tool in Inuit empowerment and provide wider connection to traveling, hunting and cultural knowledge (Collignon, 2006, p. 187). Nuttall (1992) argues that place names are multidimensional and part of a memoryscape which, through storytelling, tells about land and sea use (p. 54). Events – both contemporary, historical and mythical – become an integral part of the construction of place, and in some cases are "mnemonic devices, triggering a collective memory of an event that has significant for the community" (Nuttal, 1992, p. 54). In contrast to the commemorative focus of most Euro-Canadian toponyms, Inuit toponyms are a rich repository of descriptors and narratives which, among other things, facilitate travel and hunting, cultural exchange, and reflect cultural value.

Goehring (1990) describes three classes of names that often exist within Aboriginal and Inuit toponymy. The first, descriptive names, express physical attributes of a place (p. 75). Examples of this are Pingurjuaq meaning 'big hill' or Qurlungnilik meaning 'has waterfalls' (Inuit Heritage Trust, 2002). The second type, associative names, is linked to objects, animals or things that exist or have existed at a place (Goehring, 1990, p. 75). Examples of this include Sapugaarjuit, 'a place where fish were trapped' and Kiggavialik, 'the place where falcons have their young' (Inuit Heritage Trust, 2002). The final category identified comprises names which commemorate a specific event or incident at a site (Goehring, 1990, p. 75). An example of this is Iviksukuni, named after a person who drowned there (Inuit Heritage Trust, 2002).

Inuit Heritage Trust (IHT), also highlights the descriptive nature of Inuktitut names:

> Inuit place names describe physical or cultural features in the landscape. Across the territory, examples and variations abound of Qikiqtarjuaq (big island) and Tasiujarjuaq (big lake) but so do names which describe fishing lakes and rivers and tidal pools 'where the char go to digest their food", walrus haul outs, spring camping areas (seal hunting), caribou hunting areas, hazardous areas (currents), as well as a multitude of other illustrative names. (Inuit Heritage Trust, 2008, para. 3)

In analyzing 1007 places names in the Cambridge Bay, Ulukhaktok, Kugluktuk and Umingmaktok regions of Nunavut and the Northwest Territory, Collignon (2006) found that 60% of named features were located inland (lake features, waterways and landforms) as opposed to a marine environment (coastline, island, or sea channel) (p. 195). The majority of place names collected in Collignon's study were literal or analogical descriptions of the feature, specific geographic terms, or descriptions of regular activities (Collignon, 2006, p. 198).

The cultural context of these names, has significant importance to their interpretation (Collignon, 2006, p. 197-198). Cultural context can transform a literal translation of 'where the ice piles up', for example, to a place which is translated as 'hard to cross' "because this is what people think about immediately when they hear the toponym *Nilak*" in its broader context (Collignon, 2006, p. 197). Even the most literal description, for example *tatiik* - the two lakes, "reminds people of the importance of fishing...and the regular occupation of a camp site over several generations" (Collignon, 2006, p. 200). Place names not only describe the geography of an area, they also reflect patterns of land use and cultural value, all of which are important in assessing the impact of a development project.

Evolving Place Names

Like other forms of traditional knowledge, place naming is evolving and adaptive, reflecting and responding to changes that have occurred to Inuit lifestyles. Beginning officially in 1957, the Canadian government instituted large-scale changes in the land-use and kinship-based settlement patterns of Inuit. During the 1950s and 1960s, Inuit "were moved from their extended family camps on the land, where they had lived for many centuries, to aggregated settlements run by *Qallunaat* government officials" (Kral et al., 2011, p. 427). Joanasie Karpik, an Inuit hunter, describes this relationship: "In our camps, prior to moving to settlements, activities were dictated by weather and environment. Hunters had this awareness of the environment within them. It was a way of life when we lived in traditional camps" (Kunuk & Mauro, 2009 min 9:31). Kral et al. (2011) refer to resettlements as "the most rapid and extreme social change in Inuit history" (p. 427) – changes which deeply transformed patterns of lifestyle and land-use. This era of government-instituted change resulted in modified diets, decreased hunting, and lifestyle changes as Inuit transitioned from "extended family groups and semi-nomadic hunting practices to the establishment of new settlements and a modern wage economy" (p. 427-428). Toponymy has also changed to reflect new patterns of land-use.

Müller-Wille and Weber Müller-Wille (2006) underscore both the continuity and changing landscape of Inuit toponymy, in their efforts to contrast the place names surveys of Franz Boas in 1883 to the NUNA-TOP toponymic surveys of the 1980s and 1990s. Müller-Wille and Weber Müller-Wille (2006) highlight a variation in the geographical distribution of place names over time, noting that many of toponyms collected by Boas were concentrated around whaling stations and campsites he

frequented, as well as major travel routes (p. 227). In contrast, Inuit relocations and Inuit habitation in communities – and particularly in Pangnirtung – had resulted in the concentration of known toponymy around the site during more contemporary surveys (Müller-Wille & Weber Müller-Wille, 2006, p. 227). When consulted, Inuit experts on local toponymy around the community of Pangnirtung, on the eastern part of Baffin Island, "knew and confirmed many of [Boas'] names, indicating that the names had a continuum, but there were variations and lacunae in their contemporary knowledge" (Müller-Wille & Weber Müller-Wille, 2006, p. 226-227). Similarly, Collignon (2006) found that between 58 and 76% of place names collected in a previous survey (Jenness in 1914-1916, Rasmussen in 1923-1924 and Métayer in 1958) remained in use during her own survey in 1992 (p. 202).

Climate change too will likely impact the connections between Inuit place names and the environment they describe. As evidenced by both historical and contemporary testimonies, the tensions created by geographic and temporal change can be remarkable. Qikiqtaarjuk, is the name of what is now the northeastern peninsula of Igloolik Island (Aporta, 2003, p. 325), but its meaning is 'small island', referring to a time when the sea level was high enough to separate that land from the larger island of Igloolik. Regional memory places this transition within the past four hundred years – due likely to isostatic rebound (Eber, 2008, p. 21) – but the toponym continues to be used in the present. Michael Byers provides an account of the intersections of environmental change and toponymy in the opening chapter of *Who Owns the Arctic: Understanding Sovereignty Disputes in the North*:

> When I visited Auyuittuq National Park in August 2007, park manager David Argument pointed to rapidly retreating glaciers, melting permafrost

> and strikingly green tundra. Ironically, in a park whose Inuktitut name means “land that never melts,” dozens of hikers were evacuated the following summer when high temperatures created an extreme risk of flash floods. (Byers, 2009, p. 8-9)

In the forty years intervening its naming and Byers’ visit, the impacts of rising Arctic temperatures have changed the relationship between the place name and the environment it describes. There has been an increased effort by the Nunavut territorial government to survey and map these place names for future generations. As more resources are garnered to document this facet of Inuit cultural knowledge, there is opportunity to better understand its characteristics and connections to contemporary issues.

Chapter 4: Place Naming in Canada

In a contemporary context, the federal government gives on-going consideration to the equitable adoption of indigenous-language toponyms in Canada. The Geographical Names Board of Canada (GNBC) secretariat has stated that "[t]he process of designating names for landscape and seascape phenomena permits the country, the provinces, and the territories to exercise their prerogatives in managing and protecting this aspect of their culture and heritage" (GNBC, 2001, Preface). Despite their richness and historical continuity, Inuit toponyms were largely excluded from the body of official Canadian toponyms for many decades due to discriminatory policies. Place naming practices and policies have shifted throughout time to complement broader federal policies, often to the detriment of Indigenous place naming. Naming policies in the 1930s played an important, but often overlooked, role in building Canada as a sovereign and northern nation. As Indigenous groups gained more equitable consideration in federal policy, place naming practices reflected this progress. The purpose of this chapter is to explore historical policy on Inuit place naming, current practices and lasting impacts. By acknowledging the cultural value of place naming, the GNBC enables the mobilization of toponymy to redress colonial legacies and have maps reflect the full spectrum of Canadian identity.

Historical Canadian Policy on Inuit Place Names

The need for a centralized place naming authority was realized in 1897 when "resource mapping beyond the frontiers of settlements and extensive immigration made it an urgent matter to manage the country's geographical names" (GNBC, 2013). In the

years after Confederation, the Canadian territory grew rapidly, presenting challenges to cartographers including: “duplication of names, erroneous translation, corruption and misapplication of names, ignorance of the meaning, and carelessness in copying maps and documents” (Geographic Board of Canada, 1899, p. 9). In contextualizing the historical circumstances surrounding geographical naming in the Canada, it is also important to recognize the work of Geographic Board of Canada as part of a discursive process, “creat[ing] myths” to “assist in the maintenance of the territorial *status quo*” (Harley, 1988, p. 132).

When title to the archipelago north of the Canadian mainland was transferred to Canada from Britain in 1880 there was a perceived political risk that the United States would claim title to the archipelago if British title were abandoned (Grant, 2010, p. 174). Canadian claims to sovereignty within the Arctic archipelago were significantly challenged by the explorations of American, Norwegian and Danish parties through the early part of the 20th century, and by poorly defined transfer details (Grant, 2010, p. 155-166). During this time, a number of schemes were implemented by the Canadian government to establish proof of effective occupation[2]. Expeditions throughout the Arctic archipelago, sovereignty patrols and the northern expansion of police posts in the North were designed to establish proof of effective Canadian occupation within the region (Grant, 2010, p. 193-246). Relocation schemes, which began in the 1920s and saw Inuit moved temporarily, and later permanently, to assist in HBC trapping activities and help assert Canadian sovereignty (Bonesteel, 2006, p. 28). Often overlooked in the process of sovereignty-building, however, is the role of toponymy. Motivated over time by more

[2] Shelagh Grant (2010) provides a thorough summary of Canadian sovereignty-building in chapters 7 and 8 of *Polar Imperative: A History of Arctic Sovereignty in North America*.

than concerns of place name misapplication, formalized geographical naming aided Canada's claims of effective occupation and secure governance over new territory.

In the words of Dr. André Lapierre, French-speaking community representative to the Geographical Names Board of Canada, “to name is to appropriate, to take control of the landscape, to possess it, and inhabit it through language...and eventually become part of identity and culture” (Lapierre, 2009, p. 25). Helander (2009) has argued that, in the Norwegian context, historical policy and cartographic practices “produced deliberately nationalistic representations, [by] silencing the original toponymy and effectively de-culturalizing the [Indigenous] landscape” (p. 257). By erasing evidence of historical indigenous presence and land-use, the map became a tool of Euro-Canadian conquest, control, and hegemony. In the Arctic, most toponyms came to “feature the names of explorers, their sponsors, their sovereigns, and their ships” rather than the toponyms used by Inuit throughout their presence in Canada (Peplinksi, 2000, p. 5). The minutes of the Geographic Board of Canada during the years following the transfer of the Arctic archipelago from Britain to Canada provides evidence of this process.

By the 1930s, the Geographic Board of Canada – the government branch responsible for toponymy, now the Geographical Names Board of Canada – was well-established, and its members had a growing list of principles and procedures to be followed in the adoption of geographical names. Few of these principles dealt specifically with the use of Indigenous names on maps, but with increased Euro-Canadian exploration in the Arctic, and an increase in the production of maps post-WWII, the Executive Committee was increasingly called on to consider Indigenous names. On April 12, 1932, a particularly influential decision was made regarding the use

of Inuit names on maps following the submission of a list of Inuit toponyms by J.D. Soper, who had led an Arctic exploration:

> [H]aving been transmitted to the Executive Committee, and to Mr. Jenness, Ethnologist of the National Museum of Canada for his opinion, the Chairman invited Mr. Jenness to attend the Board meeting. Mr. Jenness being present was asked by the Chairman to express his opinion. Mr. Jenness explained that only a highly trained person could properly record Eskimo or Indian words and that it was evident that many of the words proposed as place names by Mr. Soper were incorrectly recorded and that their meaning could not now be deciphered. He further explained thatnative [*sic*] names are not permanent but are merely descriptive terms employed by a family, or a group of families, they are in no sense place names as Europeans think of them. Furthermore, he pointed out that in not many years, the native population would have largely disappeared and therefore even if natives could recognize the present names that are recorded by Europeans, no purpose would be gained. The Board, considering that many native names are so long, so difficult to, [sic] pronounce, and are of doubtful, etymological origin, unanimously decided that they would not sanction native names unless they were short and euphonius [*sic*]. (Geographic Board of Canada, 1935., p. 375)

The names submitted by Mr. Soper were then considered and rejected by the Board:

> The Board does not look with favor [*sic*] upon the practice of using Eskimo names for geographical features on Canadian maps or in official publications and the Board suggests that these names be replaced by those of northern explorers or members of northern expeditions. (Geographic Board of Canada, 1935., p. 375)

Though sovereignty is not explicitly cited as rationale for the exclusion of Inuit toponyms, the effect of this policy has been to create a cartographic landscape in the Arctic that is culturally European.

In 1935, the Executive Committee recommended that Dr. Jenness be consulted on a series of Inuit names that had been published in *An Expedition to Melville Bay and North-East Baffin Land* by J.M. Wordie (1935) with an accompanying map of Kangiqtugaapik (formerly Clyde Inlet) and its surrounding region. Echoing the previous decision of the Board, Wordie (1935) states his preference for using English names in

publication “in keeping with the Canadian custom, where the Geographic Board prefer that native names (Indian and Eskimo) should not be used except where the name is short and euphonious” (p. 309-310). In discussing the submission of the names that Wordie had submitted to the Board in July of that year, the following was recorded in the minutes of December 4th, 1935:

> The names in question were discussed and particularly the following:
>
> > Arvertuyak (place of whales)
> > Niakukualuk (rounded like a head)
> > Kingmiartaktuayak (gets plenty to eat)
>
> which were considered as long names, not euphonius [*sic*] and difficult to pronounce. It was suggested that Dr. Jenness be further consulted regarding these names. (Geographic Board of Canada, 1947)

A series of searches of current and former names in the Canadian Geographical Names Database, returns a single toponym matching the spelling of those names in Wordie’s text. Of the nine toponyms recorded by Wordie, only the name Kogalu River (recorded by Wordie as ‘River Kogalu’) was adopted[3]. Notably, each of the English-language toponyms forwarded to Dr. Jenness for further scrutiny, and later adopted by the Board have since been replaced on federal maps by Inuit toponyms. Though attitudes with regards to Inuit place names have changed markedly since the 1930s, the legacies of policies and exclusions have been lasting. A brief survey of current topographic maps of northern Canada quickly reveals names such as Parry Channel, Hudson Bay, Victoria Island, and Queen Maud Gulf, which continue to mark European achievement.

It was not until the 1980s and 1990s that “Aboriginal names [were] no longer singled out for special consideration, but [were] included under the general umbrella

[3] Kogalu River was rescinded on March 14th, 2007 and the toponym Kuugaaluk was made official in the same location.

guidelines" for naming (Kerfoot, 1991, p. 273). The administrative structure of geographical naming in Canada has also changed markedly. In 1961, all provinces, territories, and some federal departments gained authority over geographical naming in their jurisdictions. The federal government previously had primary authority over place naming. The principles and practices of the Canadian Permanent Committee on Geographical Names (CPCGN), changed quite rapidly, coinciding with an era of greater empowerment for Inuit groups. By 1969, the principles "stated that all names of Eskimo origin are to be spelled according to the recognized standard orthography for Eskimo language geographical names in Canada" (Kerfoot, 1991, p. 272). It is interesting to note, however, that place names that were already official at the time, were retained in their adopted form (Kerfoot, 1991, p. 272). During the 1980s and 1990s the CPCGN, "took particular initiatives to encourage the recording the processing of Aboriginal toponymy in Canada – endorsing a number of resolutions; publishing tools, such as a field guide and bibliography; investigating the inclusion of special characters in toponyms and addressing the method of their inclusion in the national database" (Kerfoot, 1991, p. 273). These efforts have been important as a renewed efforts to survey Inuit place names coincide with the recent initiatives to publish federal topographic maps in the North.

In Nunavut, the Ministry of Culture, Language Elders, and Youth (CLEY) administers now the territorial Geographic Names Program. A key objective of the program is to "preserve and promote Inuit language and culture by providing official recognition to Inuktitut place names" (Government of Nunavut, 2010, para. 2). Through its Geographic Names Policy, the program prioritizes an official recognition of "traditional

names for geographic features to ensure cultural continuity for the people of Nunavut", alongside an intent to "support and promote the development and documentation of traditional oral toponymy" (CLEY, 2010, p. 1-2). When approved, place names decisions are sent to the federal government for inclusion on federal mapping products and the Canadian Geographical Names Database – the official repository for current and historical place names pertaining to Canada. These decisions range from applying a name to a previously un-named feature, replacing one place name with another (eg. in 1996, Kugluktuk was adopted to replace the hamlet's former name, Coppermine), to adopting a new official place name to hold equal status as another for the same feature (eg. in 2006, Kangiryuaq gained equal status as Prince Albert Sound). Despite these improvements, stakeholders of Inuit place name mapping in Canada continue to face major challenges.

The legacy of historical toponymic policies, and incomplete topographic mapping in the North has left a major task in the surveying and collection, verification and approval, and publication of Inuit place names. When Natural Resources Canada began work in 2000 to complete topographic map coverage at the scale of 1:50,000 over 800,000 km^2 of the north were unmapped (Clavet, 2011, p. 9). Though not all of this land has been historically occupied by Inuit, and while efforts to include Inuit place names on new topographic map editions have progressed, map production often outpaces the ability of territorial authorities to approve place names. This is particularly true in Nunavut, which has the most nascent place naming program in the country. Without consideration of place names mapped independently of government sources, resource development groups may overlook unpublished place names. Recent survey

and mapping efforts by community heritage organizations and government departments have helped develop a more accurate record of Inuit place names than what had previously been recorded on federal maps. It is unclear, how frequently new editions of northern topographic maps will be produced, however, adding to concerns about the visibility of Inuit place and feature names on federal maps, and their potential inclusion in environmental assessment and other facets of governance.

Chapter 5: Community Mapping

Critical approaches to mapping have developed as a result of a series of essays published in the 1980s when scholars argued that maps, by their nature, are a reflection of dominant paradigms that normalize practice and particular ways to represent the world (Harley, 1989; Harley, 1991; Wood & Fels, 1992). These discussions led to new conceptual and methodological spaces in cartography in which authorship of maps shifted from governments and 'official mapping bodies', towards participatory and community-driven practices. Community mapping of place names has been a important practice within Inuit and First Nations communities, even as territorial policies have evolved to include and promote the appearance of traditional place names on official maps. These new approaches have had significant impact on the role of traditional and local knowledge in mapping.

In a legal case at the Supreme Court of British Columbia, the Gitxsan and Wet'suwet'en First Nations used community mapping to challenge federal jurisdiction and representations of their territory. Traditional and local knowledge of boundaries, place names and fishing sites was used to successfully affirm territorial rights (Sparke, 1998). In the Arctic, the mapping of Inuit historical, political and cultural knowledge during Inuit Land Use and Occupancy Project (ILUOP) in the mid-to-late 1970s has "provided the foundation for early aboriginal land claims negotiations, including ground breaking research approaches and methods that set the stage for community-based and collaborative research programs today, and ultimately led to land claims settlements and the creation of Nunavut" (Aporta, Taylor & Laidler, 2011, p. 2). The

knowledge mapped through the ILUOP continues to support evidence of Inuit land tenure and historical occupancy, including during the traditional knowledge study that informed the environment assessment that is the focus of this thesis.

This chapter will explore critical cartography, its central tenets, and contributions to the development of community-based traditional knowledge mapping. This will help differentiate community-based mapping from other approaches, and establish a foundation for the integration of these data in formalized decision-making frameworks. The mapping of traditional knowledge also poses legal and ethical dilemmas which will be addressed in this chapter.

Critical Cartography

Postmodernism has been influential in the emergence of critical and participatory approaches to cartography. Drawing on postmodernist theory, cartographers in the 1980s – including Denis Wood, John Fels, J.B. Harley, and David Woodward – began to write critically of cartography and the challenge the paradigms within which maps are produced (Wood & Krygier, 2009). Critical cartographers saw in postmodernism, a framework to reconsider "claims that laid the basis for the construction and the adoption of rational models of society (and social analysis); claims whose ontological foundations were based in Enlightenment idea(l)s of truth and objectivity" (Minca, 2009, p. 365). One central task of postmodern scholarship is to "[unveil] the implicit political dimension of all representations and on combating the hegemony of dominant discourses that inevitably [silence] other, submerged voices" (Minca, 2009, p. 365). Foucault's interpretation

“places particular emphasis on the exercise and functioning of power and, in particular, the relationship between power, discourse, and space” (Minca, 2009, p. 366-367). Applying concepts from Michel Foucault and Jaques Derrida, Harley (1989) sought to problematize the dominant cartographic paradigm and “devise a scheme of social theory with which we can begin to interrogate the hidden agendas of cartography” (p. 3) and “accept the social consequences of cartographic practices” (p. 8).

Harley (1991), identifies two major discourses which dominate cartographic practice: the first, that there exist explicit rules which govern cartographic practice as scientific procedure or technique; and the second, that maps which don't adhere to those rules are to be regarded as inferior. In his influential essay *Deconstructing the Map*, Harley (1989) argued that “[cartographers] tend often to work from the premise that mappers engage in an unquestionably 'scientific' or 'objective' form of knowledge creation” (p. 1). Harley, Woodward, Edney et. al. (2002-2013), work to dispel this notion in the *History of Cartography*, which explores and details cartographic traditions from different cultural contexts, challenging the notion that a singular and linear cartographic history, interpretation or practice exists. Among the central assumptions of Western mapping – developed through survey mapping of the Enlightenment period and later in Seventeenth century (Harley, 1989) – is the idea that “the objects in the world to be mapped are real and objective, and that they enjoy an existence independent of the cartographer; that their reality can be expressed in mathematical terms; that systematic observation and measurement offer the only route to cartographic truth; and that this truth can be independently verified” (Harley, 1989, p. 4). If this were accurate there would have been no need for the CPCGN to develop new methods of inclusion for

Aboriginal place names, for example. The need for resolutions and investigations to include special characters in toponyms reflected the failure of existing policy and practice to adequately address what might have previously been considered universal cartographic needs. Though policy has changed over time, cartographic practice continues to reify particular knowledge paradigms, and culturally situated decision-making. Wood and Fels (1992) wrote that “maps, all maps, inevitably, unavoidably, necessarily embody their authors' prejudices, biases and partialities...There can be no description of the world not shackled (or freed – for this too is a matter of perspective) by these and other attributes of the describer” (p. 24). Maps reflect the geographic vision of those who create them, through the development and application of cartographic methods and principles.

Harley (1989) asserted that cartographers' assumptions should be challenged in order to uncover “the social forces that have structured cartography and [locate] the presence of power – and its effects – in all map knowledge” (p. 2). In engaging these theories, Harley (1991) argued that an ethical cartography was possible and indeed should be aspired to. Harley drew attention to the “geographical discourses and texts, in order to unveil the 'taken for granted' that disciplines such discourses and texts and grants them their 'normalizing' power” (Minca, 2009, p. 366). Harley engages this postmodern social theory in maps and scrutinizes the results of cartographers’ “selection, omission, simplification, classification, the creation of hierarchies and 'symbolization'” (Harley, 1989, p. 11). Helander (2009) has argued in the Norwegian context that historical policy and cartographic practices “produced deliberately nationalistic representations, [by] silencing the original toponymy and effectively de-

culturalizing the [Indigenous] landscape" (p. 257). As discussed in chapter 5, the selection and omission of Inuit place name in Geographic Board of Canada policy have produced northern maps of Canada that fail to reflect the culture and heritage of its most prominent cultural groups.

In his paper *Can there be a Cartographic Ethics?* Harley challenges the cartographer to be critically engaged and reflexive in decision-making and praxis. Harley (1991), raises a number of questions that should be considered when practicing a more ethical cartography including: "Can there be an ethically informed cartography and what should be its agenda? How can we go about formulating principles and rules that would allow us to arbitrate moral judgments in particular cartographic circumstances? Can we debate cartographic ethics in the narrow arena of internal practice, looking for a pragmatic code of professional conduct, or should we be concerned with transcendental values that go to the heart of social justice in the world at large?" (p. 10) Though not answered decisively in the paper, Harley's inquiries have been taken up by other geographers who seek to reconcile cartographic practice with social theory.

Alternative Approaches to Mapping

In the spirit of Harley, counter-mapping has emerged to acknowledge the idea that "maps contribute to the constructions of spaces that they later seem only to represent" (Sparke, 1998, p. 466). Counter-mapping uses the social philosophy of critical cartography to develop more openly political maps which "not only [counter] the

maps made by state and corporate authorities but also [reveal] the hegemonic politics inherent in those maps they are countering" (Rundstrom, 2009, p. 314). Most frequently, these are 'bottom-up' approaches that enlisted local, and often Indigenous, residents to work with NGOs, as well as cartographic, geographic information systems (GIS) and other experts to create alternate maps of contested space (Rundstrom, 2009, p. 314). These techniques have contributed to important political and cultural gains for Indigenous peoples in Canada. Participatory GIS (PGIS) has also developed within this legacy, combining "participatory mapping visualizations, spatial information technologies (SIT), spatial learning, communication and advocacy" to transform "the discourse about land and resources, the meaning of geographical knowledge, the work practices of mapping and legal professionals, and ultimately the very meaning of space itself" (Rambaldi et al., 2006, p.106). Counter-mapping often utilizes open data and the participation of non-traditional cartographers to create more accessible, democratized and community-based GIS infrastructures.

Counter-mapping faces a paradox, however. While the purpose of counter-mapping is to "counterpose indigenous ideas of spatial organization against those of the state", maps and the way they communicate information can be considered to be "the language and tools of the dominant society" (Rundstrom, 2009, p. 316). Rundstrom (2009) provides the example of resource mapping which, for Indigenous peoples, cannot be mapped independently of the social relations that produce it. As Bowker asserts, "overly normative, standards-based approaches to data documentation may [fail] to provide the ontological, epistemological, and semantic expressiveness required to adequately document knowledge from different communities of practice, including

Indigenous communities" (as quoted in Pulsifer et al., 2011, p. 113). Maps and geographic information systems are considered to have transformative and reifying power as Indigenous knowledge is translated into Western spatial terms. Often these tools are "silent about the histories and precedents involved in customary land uses, effectively canceling them and creating new realities based on alien ideas" (Rundstrom, 2009, p. 316 - 317). A challenge facing counter mappers is how to open space for new forms of representation within the established knowledge paradigms and standards-based practices that comprise Western cartography. The challenge to address these contradictions has been taken up in different ways by communities of practice.

Community mapping, is a strategy used to diversify the voices heard through cartography by including alternative and often unheard view-points. One of the priorities in Inuit communities is to make use of and represent traditional knowledge in ways that contextualize the systems of cultural value and appropriate use within which they were formed. The Kitikmeot Heritage Society has formed a partnership with the communities of Cambridge Bay, Gjoa Haven, and Kugaaruk, and the Ottawa-based Geomatics and Cartographic Research Centre (GCRC) at Carleton University to develop a cybercartographic atlas of regional Inuktitut and Inuinnaqtun place names (Kitikmeot Heritage Society, 2013). Proposed by D.R. Fraser Taylor, cybercartography is a conceptual framework designed to impart cartographic and geographic information management through interactivity and multimedia (Pulsifer et al., 2010). Indigenous methodological considerations including community collaboration, participatory design, and data sharing are integrated within this framework. The *Kitikmeot Place Names Atlas,* for example, uses images, video and 'artist renditions' to "comprehensively record

the traditional Inuktitut and Inuinnaqtun place names of the region, including their pronunciations, meanings and associated oral traditions" (Kitikmeot Heritage Society, 2013). The shift from a model that positioned government-based agencies as the dominant producers and distributors of mapping information, provides individuals and communities opportunity to "create geographies that are representative of their needs, knowledge, and worldviews" (Pulsifer et al., 2010).

Land-Use and Occupancy

A link has also been recognized between counter-mapping and community empowerment. Much research has been dedicated to the use of counter-mapping to include community voices in issues of land use and resource development. As greater capacity is built to map outside of and contribute to official knowledge creation, the process of counter-mapping "equip[s] people with skills, knowledge, information, and tools that allow them to gain control over their affairs and local resources" (Kyem, 2001, p. 7). This strategy has been employed successfully in a number of contexts including collaborative research, community-based resource planning, the negotiation of land claims and land-related disputes, and the preservation and revitalization of indigenous cultural resources (Corbett & Rambaldi, 2009, p. 81). Many contemporary Inuit place names mapping activities in Nunavut are linked to the latter strategy of preservation and cultural revitalization.

The Department of Culture, Language, Elders and Youth (CLEY) relies on the support of community trust organizations across the territory to assist in the collection and validation of Inuit place names. Among these organizations is the Inuit Heritage

Trust, which, in the eastern Arctic, supports CLEY through a “dedication to the preservation, enrichment and protection of Inuit cultural heritage and identities embodied in Nunavut’s archeological sites, ethnographic resources and traditional place names” (IHT, 2008). Similarly, the purpose of Kitikmeot Place Name Atlas project is to “comprehensively record the traditional Inuktitut and Inuinnaqtun place names of the region...[to] ensure that the region’s place names will continue to be known to future generations of Nunavummiut” (GCRC, 2013, para. 7). Though place-name mapping is currently oriented toward cultural continuity and knowledge preservation, there is historical precedent in Canada for place names to be employed in the negotiation of land claims and large-scale resource negotiations.

An often cited example of successful counter-mapping is found in the Gitxsan and Wet’suwet’en aboriginal groups of British Columbia, which used the technique to further claims to “ownership, jurisdiction, and damages for the loss of lands and resources since the establishment of the colony” (Sparke, 1998, p. 470). The Gitxsan and Wet’suwet’en used mapping of oral histories and traditional toponymy to build a successful legal case for the sovereign use and management of their territory (Sparke, 1998, p. 470). The Inuit Land Use and Occupancy Project carried out with the participation of the Government of Canada “documented past and present hunting, fishing, trapping, and gathering patterns” of Inuit as well as “perceptions of their relationship to the land, compiling extensive data on history, place names, linguistics, subsistence techniques, campsites, and other cultural information” (Chapin, Lamb & Threlkeld, 2005, p. 624). This mapping subsequently contributed to the land claims

negotiations that led to the creation of the territory of Nunavut. In both instances, community mapping contributed to the establishment of rights to resources and territory.

Projects and partnerships like those between the Kitikmeot Heritage Society and the Geomatics and Cartographic Research Centre, and the Gitxsan and Wet'suwet'en oral history mapping have been successful as counter-mapping projects, giving Indigenous communities greater representation and participation in the creation of maps. At territorial and federal levels, however, place names continue to be adopted within Western material, normative, and policy-based mapping constructs. Addressing issues of knowledge translation and reification remain relevant and will continue to be important if a more ethical cartography is to complement decision-making.

Legal and Ethical Concerns

The incorporation of traditional knowledge in research has a history of abuse and misappropriation, including "using [traditional knowledge] to further only the researcher's own goals, commercial exploitation of the [traditional knowledge] without permission, acknowledgement or compensation, use by others of the information for their own purposes" (Scassa, Engler & Taylor, 2012, p. 10). Like many other forms of research involving Inuit and Canadian Aboriginal groups "the challenges involved in 'remapping' include maintaining and ongoing attentiveness to avoiding misappropriations of knowledge, understanding and perspectives" (Pyne & Taylor, 2012, p. 93). Some of these challenges have been mitigated through the development of methodological guidelines, research licensing, and regulatory oversight which aim to establish legal and ethical norms for northern research.

Negotiating Research Relationships with Inuit Communities (ITK & NRI, 2007), provides methodological guidance to researchers who intend to conduct, or are conducting research in northern Canadian contexts. Some important concerns addressed in the document involve informed consent and data control. Researchers are advised to "discuss with the appropriate local authorities the requirements for informed consent, informant confidentiality, as well as adhering to protocols established by a university licensing agency (ITK & NRI, 2007, p. 8-9). Within this methodological context, researchers should also "clarify who will have access to the data and when, as well as how and to whom research data may be distributed" (ITK & NRI, 2007, p. 9).

While intellectual property rights are used within Western paradigms to negotiate issues of consent, authorship and guide the proper and improper use of knowledge, traditional knowledge often falls outside of these protections, or is excluded from formal intellectual property laws (Scassa, Engler & Taylor, 2012). For the purpose of copyright law, map creators are typically the first owner of copyright in the map (Scassa, Engler & Taylor, 2012, p. 11). As there are no rights granted for intellectual property that is not considered to be “new, original innovative or distinctive”, it becomes difficult for traditional knowledge to be granted protection (Simeone, 2004, p. 5). Furthermore, if granted, those intellectual property rights often acknowledge individual, rather than collective rights, an approach to knowledge stewardship which is incompatible with Inuit epistemologies (Simeone, 2004, p. 5). This is of particular concern as ‘soft-law’ governing ethical practice within the academic community may not extend to the private sector. More often, Western precepts of ownership, intellectual property and copyright protection undergird the business structures within which development companies

operate. Furthermore, “the prohibitive costs of registering and defending a patent or other intellectual property right effectively limits its availability to the vast majority of indigenous communities” (Simeone, 2004, p. 5).

Social science and traditional knowledge research licensing in the eastern Arctic is coordinated by the Nunavut Research Institute (NRI), which, as part of its mandate, ensures that researchers comply with ethical norms and legislation. The Nunavut Impact Review Board helps support informed development through engagement with both traditional knowledge and scientific methods. At the institutional level, universities also provide ethical regulation through compliance with the Tri-Council Policy on Ethical Conduct for Research Involving Humans (TCPS2), which defines standards by which academic research should be designed and conducted (Scassa, Engler & Taylor, 2012, p. 8). Through this system of regulation and ethical compliance, research predicated on “reciprocal and collaborative relationships built on trust, consent, inclusion and control” become conditions of obtaining a research license (Scassa, Engler & Taylor, 2012, p. 10). These efforts address some of the missteps, tensions and misgivings that continue to surround northern research, resource development, and the collective interests of communities. The policies of the NRI, however, fall short of legally protecting traditional knowledge from misappropriations under intellectual property law.

In Canada, intellectual property law designates ownership to individuals rather than communities, undermining Inuit ethical and cultural norms surrounding knowledge stewardship. As traditional knowledge can be exploited, taken out of context, or used to undermine community interests, further legal protections of traditional knowledge are needed. At the community level, traditional knowledge is governed by cultural norms

and social practices which determine which individuals can share traditional knowledge, the degree of importance that certain knowledge holds, and the terms of its ethical use and dissemination. These norms, which have guided Inuit relationships with the environment, the land, and its resource, since time immemorial, also support communities in their mapping of traditional knowledge, and its integration in facets of equitable decision-making today. In Nunavut, the significance given to IQ and the emphasis on cultural and linguistic continuity, are at the forefront of place naming policy. These aspects of place naming policy favor the integration of this form of traditional knowledge into broader facets of governance.

Chapter 6: Baffinland Iron Mines Corporation Mary River Mining Project - A Case Study

The research conducted in this thesis is intended to contribute to a broader understanding of the role that Inuit place names might have in future environmental assessments in Nunavut. The Mary River iron mine project near Steensby Inlet, Nunavut, is a well-suited case study due to its nexus of economic development, ecological sensitivity, and cultural importance. The following chapter will introduce the mining operation planned by the Baffinland Iron Mines Corporation, and the approach used by the corporation to integrate traditional knowledge into its assessment of project impacts.

Mary River Mining Project: Steensby Inlet Port

The Baffinland Iron Mines Corporation was granted approval for the development of a deep sea port in Steensby Inlet to support a year-round iron ore mining project at Mary River. Adherent to mining regulations in the territory, the Mary River project was subject to an environmental impact assessment under the purview of the Nunavut Impact Review Board (NIRB) to assess the ecosystemic and socio-economic impacts of the proposed development, gauge and define the extent of the impact on communities and the region, and determine whether the project should proceed (NIRB, 2009, p. 2). Baffinland Iron Mines Corporation was issued a NIRB certificate for the Mary River mine project on December 28, 2012 (NIRB, 2012). Based on the initial project scope, once complete, the Mary River project will become "one of the largest and richest undeveloped iron ore projects in the world", involving the construction, operation,

closure and reclamation of an open pit mine (Baffinland Iron Mines Corporation [c], 2012, para. 1).

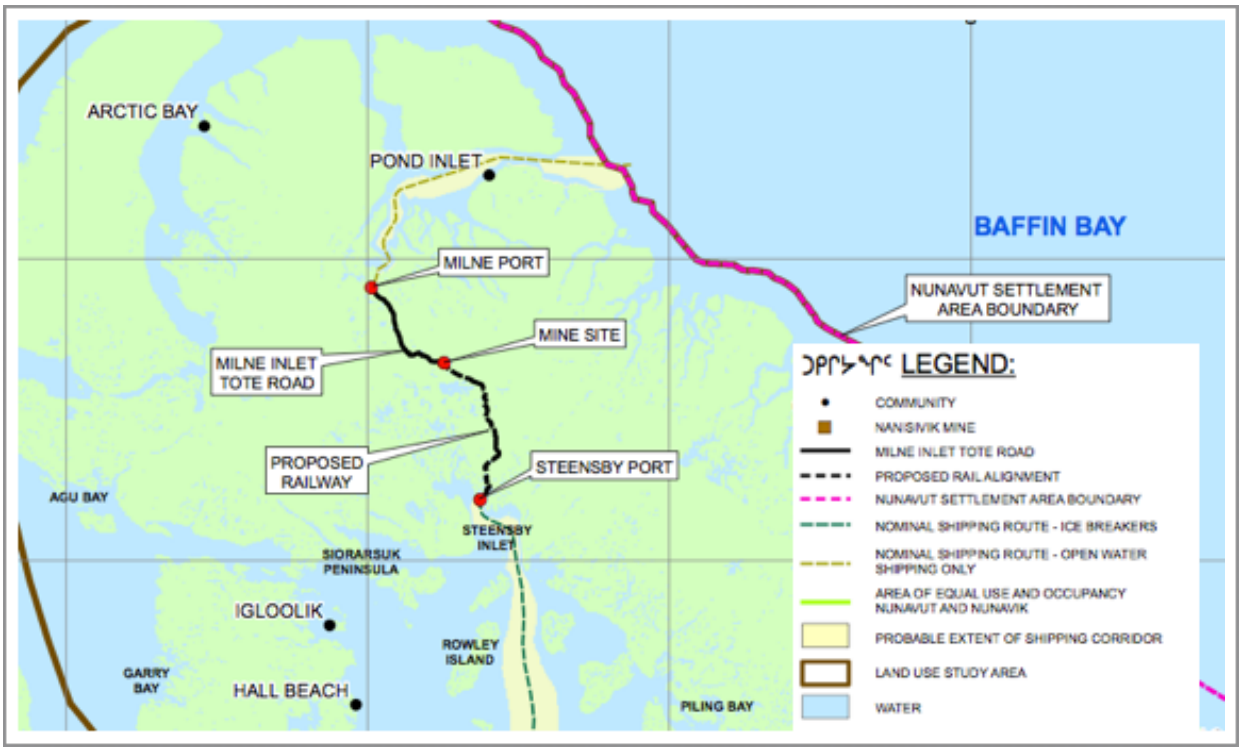

Figure 1: *Major development sites of the Mary River iron mine development (Baffinland Iron Mines Corporation [b], 2009, Fig 1.1).*

Seven major project components were identified in public meetings:

1. Iron ore mine at Mary River
2. Railway transportation of iron ore from Mary River mine site to Steensby Inlet all-season sea port
3. Open water shipping into Milne Inlet, through Eclipse Sound and Pond Inlet, via Baffin Bay and Davis Strait from southern Canada
4. Transportation of supplies and materials from Milne Inlet via the Milne Inlet Tote Road to Mary River
5. Operation of all-season sea port at Steensby Inlet
6. Year round shipping (including ice breaking) at Steensby Inlet sea port through Foxe Basin and Hudson Strait to southern Canada and Europe

7. Air transportation
8. Ongoing geotechnical exploration. (NIRB, 2009, p. 1)

On January 10, 2013 following the issuing of a project certificate, Baffinlands Iron Mines Corporation submitted a letter to NIRB requesting the scope of the project be reduced citing global economic instability and financing concerns (Jordan, 2013; Nunatsiaq Online, 2013). The Mary River mine is now projected to produce 3.5 million tonnes of iron ore per year (Jordan, 2013, para. 8), a significant reduction from the projected 18 million tonnes of iron ore per year with a maximum output capacity of 30 million tonnes per year that was first proposed and approved by NIRB (Baffinland Iron Mines Corporation [a], 2012). In addition, trucks rather than railway transportation are to be used to transport ore from the mine to a port at Milne Inlet in the northern portion of Baffin Island (Jordan, 2013, Nunatsiaq Online, 2013). This eliminates the immediate need for a port at Steensby Inlet, which was intended to be a year-round shipping facility for the majority of iron ore outputs from the mine site (Baffinland Iron Mines Corporation [b], 2012, p. 3). Under the revised plan, iron ore will be stockpiled and shipped from the Milne Inlet port between July and October when sea ice extents are at their seasonal minimum (Jordan, 2013, para. 8). Acknowledging the impact that these changes are likely to have on the extent and magnitude of the environmental impacts of the project, the research conducted in this thesis is nonetheless based on initial project specifications. Baffinland Iron Mines Corporation has indicated plans to implement a second phase of development to match the original scope at an undetermined time (Nunatsiaq Online, 2013).

The impact of year-round shipping was of primary concern during the environment review process due to the unprecedented duration of the proposed ice breaking operations (Minister of INAC as quoted in NIRB, 2009, p. 3). The potential project impacts identified at public meetings included disruption of habitats and migration patterns of wildlife particularly in Hudson Strait – identified by the public as important habitat for marine mammals including polar bears, seals, walruses and beluga whales (NIRB, 2009, p. 6-7). Increased noise levels from icebreaking and shipping were identified as having potential to disrupt marine bird habitats. Shipping activity was recognized as having potential to reduce stability and predictability of ice regimes in the region. The public expressed concern regarding the potential for spills and contaminants to spread quickly to other regions, and prolonged impacts of sewage and solid waste disposal on the marine environment and wildlife. There was also concern that hunting and gathering, and traditional land-use activities might be degraded due to shipping, and that social problems might be spawned by changes to social and economic patterns. (NIRB, 2009, p. 6-7). Mitigation strategies for each of these concerns had to be addressed before the mine project could be approved.

The Qikiqtani Inuit Association (QIA), representing 14,000 Inuit from the Baffin region, was actively engaged in the Mary River project's environmental impact assessment and remains connected to on-going mitigation processes. Early in the environmental review process, opposition to the Mary River mine project arose particularly due to concerns over the adequacy of baseline measures and estimates of environmental impact. Based on the Draft Environmental Impact Study submitted to NIRB by Baffinland Iron Mines Corporation, QIA rejected the conclusion "that there will

be no negative impacts of any significance from a project of this magnitude either to the environment or Inuit" (QIA, 2011, p. 3). Noting "deficiencies of science in Canada's north" (QIA, 2011, p. 2) and echoing the limitations highlighted by Brown and Fast (2012), in its report QIA states that "in many instances baseline information is limited at best or lacking at worst. This is particularly the case in relation to the marine environment, terrestrial wildlife and engineering aspects" (QIA, 2011, p. 3). QIA also highlighted "gaps in the information on seasonal environmental conditions; the seasonal distributions of species; population density, composition, and size; community composition; habitat use; and behaviour" (QIA, 2011, p. 5) and limited investigation of the impacts of changes to 'valued ecosystem components' on 'valued socio-economic components' – "[t]his is very significant from an Inuit perspective considering that it is simply not possible to separate biophysical from cultural effects" (QIA, 2011, p. 3). In order to satisfy requirements to integrate traditional knowledge in their assessment, Baffinland Mining Corporation initiated the Mary River Inuit Knowledge Study from 2006 to 2010 (Baffinland Iron Mines Corporation [b], 2012 p.16).

Mary River Inuit Knowledge Study

The Mary River Inuit Knowledge Study (MRIKS) began in Pond Inlet in 2006. Workshops and interviews were initiated in Arctic Bay, Clyde River, Hall Beach, Igloolik and Pond Inlet between 2007 and 2010, and the study was completed in Kimmirut in 2010 (Baffinland Iron Mines Corporation [b], 2012, p. 16). Data for the MRIKS was compiled through working groups, individual meetings with community elders and topic-specific workshops (Baffinland Iron Mines Corporation [d], 2012, p. 3). Interviews with

elders were conducted in the communities of Arctic Bay, Igloolik and Pond Inlet. The interviews were structured, using an initial list of 168 questions focused on “Inuit use and understanding of the land, caribou, marine mammals, fish, birds and other land mammals” (Baffinland Iron Mines Corporation [d], 2012, p. 6). The full list of questions was used in the Pond Inlet consultation but reduced in subsequent interviews in Arctic Bay and Igloolik due to considerations of interview and transcription length.

The Mary River Inuit Knowledge Study was also informed by the historical land use patterns recorded during the Inuit Land Use and Occupancy Study (ILUOP). ILUOP was established 1976 by the Minister of Indian and Northern Affairs due to a proposal by Inuit Tapiritsat of Canada that a “comprehensive and verifiable record of Inuit land use and occupancy” be produced in the Northwest Territories (Library and Archives Canada). The ILUOP has been an historically important mapping project for Inuit and was “designed to create an information source that would support Inuit land claim negotiations” (Aporta, 2011, p. 14). Historic record of wildlife harvesting sites, trading posts, settlements and travel routes were compiled during the study (Land Use Report, 2012, pp.14) and used to bolster the key areas of documentation for the Mary River Inuit Knowledge Study.

In May 2012 the Qikiqtani Inuit Association (QIA) ratified support for the Mary River mining project, acknowledging the work of the Baffinland Iron Mines Corporation to address community concerns (QIA, 2012). QIA noted, however, that following the improved integration of traditional knowledge into the Final Environmental Impact Statement, Inuit represented by QIA had outstanding concerns regarding the interpretation of data and interpretation of impacts: “Inuit still feel that the potential for

serious negative outcomes, or the challenges to actually realizing benefits, are being downplayed" (QIA, 2012, p. iv). This comment highlights one of the more challenging qualities of traditional knowledge – that it is developed and understood through numerous lived experiences. Its interpretation and understanding is bound in that experience. While the discrete knowledge gained through the knowledge study provided assistance in developing acceptable baseline measures, interpretation of nuanced impacts and connections were seen to be lacking.

Key areas of documentation for the MRIKS included the mapping and illustration of travel routes; seasonal and permanent camps; waterbodies and sources of drinking water; harvesting areas for dietary stables – including caribou, sea mammals, waterfowl, berries and eggs; rock and mineral harvesting areas; non-mammal sea resources such as seaweed, clams, mussels and other fish; and sea ice use. Spiritual, archaeological and burial sites were also identified during this stage of assessment (Baffinland Iron Mines Corporation [d], 2012). The Inuit Qaujimajatuqangit Study Consultant Interview Guide used in the MRIKS, included only one question about place naming during the Pond Inlet interview. The interviewer asked: "We are interested in place names. Can you give us the names for the major land and water features [on the map] for the areas you know?" (Baffinland Iron Mines Corporation [d], 2012, p. D1-D2). Thirty-six key words related to place names were recorded during the study (Baffinland Iron Mines Corporation [d], 2012, p. 3) though documentation of the context of these references was not available. The question about place names was removed in subsequent iterations of the interview guide.

It is quite remarkable that Inuit place names were not included in the final summary as a key area of interest, and no Inuit place names appear on maps in the final land use report. Place names are an important aspect of the Inuit approach to the environment, and they become established through repeated use. They are frequently associative, providing record of resources found at particular places. These cultural and ecological events and resources are identified in the translations or the meaning of place names (see Appendix A), which in turn provide indication of where the resources are located. The subsequent portion of this thesis will explore the importance of place names, and reflect on the significance of their exclusion from the study.

Chapter 7: Methodology and Data

Research involving Inuit communities and traditional knowledge require particularly rigorous attention to ethical standards and practices to ensure that research practices complement cultural and community expectations. This research primarily involves exploring the potential of Inuit place names to complement analysis and strengthen environmental assessment. An area delineated by contiguous National Topographic Series (NTS) map sheets 37F, 37G, 47E and 47H was considered in this analysis. This area of ecological and anthropogenic significance, and toponymic complexity is frequented by hunters and trappers from the communities of Arctic Bay, Pond Inlet, Igloolik and Hall Beach (Steensby Inlet, 1981). This chapter will introduce the ethical concerns governing my exploration of the contributions that a more comprehensive inclusion of Inuit place names could make to environmental assessment. With those ethical expectations in mind, I will introduce the qualitative method and data being used in this investigation.

Methodology

Selecting an appropriate research methodology is of enhanced importance in cross-cultural and Indigenous research contexts. Broadly defined, a methodology is “a theory of what can be researched, how it can be researched, and to what advantage” (Baxter, 2010, p. 82). Methodology provides guidance to researchers – ascribing a theory of how research can and should be conducted, including considerations of ethics, researcher reflexivity, transparency and accountability. Awareness and consideration of Indigenist and post-colonial research ethics and

approaches are of fundamental importance because of the northern context of the research and its reliance on traditional Inuit knowledge.

In the past unexamined attitudes, assumptions, purposes and views of research have "reinforce[d] domination and exploitation through the attitudes and differential power embodied in [research] relationships with 'others', [dismissal] of their rights and knowledge, [intrusive] and non-participatory methodologies, and often also its goals and its use of research findings" (Howitt & Stevens, 2010, p. 42). These attitudes have historically been reflected in northern research which often was conducted in a manner that ignored the cultural values and world-views in Inuit communities, and was unaccessible or not directly beneficial to those communities (CIHR, NSERC & SSHRC, 2010, p. 105). As a result, many Indigenous communities and scholars (Tuhiwai Smith, 1999; Wilson, 2009; ITK & NRI, 2007) have sought to shift research paradigms by developing new methodologies. These methodologies seek to identify the advantages of community integrated research, outline key community concerns, and provide advice to researchers in developing reciprocal research relationships.

Negotiating Research Relationships with Inuit Communities (ITK, 2007), compiled by Inuit Tapiriit Kanatami (ITK) and the Nunavut Research Institute (NRI), is a guide for researchers who intend to conduct, or are conducting research in northern Canadian contexts. In an effort to ensure that Inuit communities are participants in and beneficiaries of northern research, the guide seeks to clarify community expectations and give substantive methodological guidance to researchers (ITK & NRI, 2007). The guide notes that "not all concerns, or expectations, are relevant to every kind of research project [h]owever, it is important to be aware of some of these community

perspectives as back-ground when considering, or developing, a northern research project" (ITK & NRI, 2007, p.5).

Indigenist research methodologies frequently advocate involving Indigenous communities in collaborative partnerships, rather than positioning them as 'subjects' or 'informants'; identifying research needs alongside communities; and sharing research materials and results with participants (Louis, 2007). Research involving publicly available data does not require community engagement, however researchers are advised to "seek culturally informed advice before use of such data to determine if harms may result and if other considerations such as sharing of the research results should be explored with the original community" (CIHR, NSERC & SSHRC, 2010, p. 114). The guidance of individuals connected to northern research communities, and support of local organizations, such as Inuit Heritage Trust, have helped to ensure culturally informed perspectives are part of this research. My supervisors for this research have been involved in participatory place names research in Nunavut, helping to develop nuanced, diverse and grounded perspectives of Inuit place naming tradition into the development and execution of this project. By using data collected in a manner that complements the guidelines proposed in *Negotiating Research Relationships with Inuit Communities* (ITK, 2007), I have also sought to ensure that Inuit paradigms were of central consideration in the collection and representation of data used for this study.

Qualitative GIS

The nature of the central questions in this research is best addressed through a methodology that employs the tools of geospatial analysis. Geographic Information

Systems (GIS) have become centrally important in contemporary geospatial analysis – using the processing power of modern computing to combine visualization and layering of geospatial information with analytic and statistical functionality. The application of GIS has garnered criticism, however, as methods employed within them are often best suited to quantitative analysis. GIS was developed within a Western research paradigm, which sought to automate spatial analysis strongly tied to scientific modeling (Pavlovskaya, 2009, pp. 19). Typically, GIS software packages provide limited opportunity for the inclusion of contextual information, as spatial data are coded, categorized, attributed and processed. This quantitative epistemology contrasts with post-colonial research paradigms and typical characterizations of Indigenist knowledge systems, within which the expression of qualitative information is fundamental.

Typically in Indigenous knowledge systems, knowledge is embedded in local culture and belief systems, connected to nature and culture, explained through the use of metaphor, and focused on qualitative rather than quantitative description (Pulsifer et. al., 2011, p. 112). Indigenous research paradigms often emphasize the inclusion and acceptance of poly-rhetorical, contextually based and historically contingent knowledge (Louis, 2007). Though the use of GIS packages to perform environmental assessment is common, difficulties exist for researchers seeking to integrate traditional ecological knowledge in their analysis. In order to leverage traditional knowledge and spatial analysis together, a truly mixed methodology must be employed.

Qualitative GIS is part of a continuum of critical, integrative and post-colonial mapping methodologies (Harley, 1989; Wood & Krygier, 2009; Rambaldi et al., 2009) that expands the use of digital mapping to bring together multiple epistemologies,

analytic approaches and modes of knowledge formation (Elwood & Cope, 2009, pp. 5). Qualitative GIS researchers have responded to the critiques of GIS in three ways: by challenging the ways in which GIS manifests particular representations of spatial phenomena through categorization, attributes and metadata structures; by engaging with GIS through new theoretical lenses – interrogating power, knowledge production, and situated-ness; and by applying mixed techniques to integrate qualitative data in GIS analyses (Elwood & Cope, 2009). Qualitative GIS is a critical methodology that, at its core, acknowledges the situated and partial nature of knowledge.

Through a mixed method approach, qualitative GIS seeks to mobilize new ways of exploring evidence, in order to "inform more robust understandings of complex processes or phenomena" (Elwood & Cope, 2009, p. 5). A retrospective case study method was used to conduct this research – an approach that uses data about past events to measure, identify and understand change (deVaus, 2006, p. 268). While some retrospective studies may involve the recollection of past events, as in the case of oral histories, others "involve collecting information about the past and comparing that with contemporary information collected from the same cases" (deVaus, 2006, p. 268). A visual method of comparison was employed to examine the relationships, gaps and inconsistencies between Northern Land Use Information Series data, Nunavut Coastal Resource Inventory data, and Inuit place names supplied by the Inuit Heritage Trust. By overlaying place names on georeferenced ecological habitat maps in a GIS, and then examining the alignment of place name descriptions with the ecological areas identified by the habitat maps, I systematically identified trends, outliers, and other differences between the data.

Steensby Inlet Place Names Data

To analyze the trends between place names and ecological habitats a collection of regional place names was needed. The Traditional Place Names Manager at Inuit Heritage Trust (IHT), Lynn Peplinski, was contacted regarding the availability of Inuit place names and their meanings. As previously noted, IHT plays an integral role in the collection of Inuit place names for adoption by the Minister, and many place names had been collected in the geographic region surrounding the Mary River mine project. When collecting place names, IHT contacts hamlet offices to inform them of the proposed mapping, and to finding elders who are willing to share their place names knowledge. Elders are able to identify features and their names on blank maps, "from their recollections of the land and what their families have described to them in words or in songs" (Walker & Peplinski, 2013). Inuit Heritage Trust uses a syllabic writing system – the primary writing system for Inuktitut – when collecting place names in communities. Those names collected in syllabics are translated to Nunavut's standardized roman orthography, the format used for place names in this research, at a later stage of verification (IHT, 2005). Many of the names provided by IHT for this research do not appear on federal maps despite having been collected in the early 2000s. One of the primary barriers facing the Nunavut Geographical Names Program is "the large volume of field work yet to be undertaken and the associated funding" (Champoux, 2011, p. 19). Considering historical legacy and lags in the adoption of Inuktitut names by the territorial and federal governments, all names provided by IHT were considered to be contemporary and accurate (see Appendix A).

As previously acknowledged, Inuit place names are used within a system of expression which uses narratives to connect places to each other and their geographic contexts. Though the place names used in this research were collected in an Indigenist framework, the translations and meanings of the place names have already been taken out of their original context – the narrative. Developing categories of names is difficult to establish, however I will rely on Goehring's semantic system to determine a name's central reference. The Goehring system largely matches the characteristics of Inuit mapping described elsewhere. The lead researcher of Inuit Heritage Trust, for example, explained that:

> Inuit are descriptive as a matter of course: landforms and other features are named for the currents that occur there, the animals that inhabit the area, the odd shape of an island or a lake. Any place of any significance, like a landmark, will have a descriptive name. (Walker & Peplinski, 2013)

The Goehring system also recognizes the presence of commemorative naming, which was present in the place names provided by IHT.

Of the 128 place names, provided by IHT, 86 had English translations. There were 44 place names that were provided from IHT without translation. These place names fell on NTS sheet 37G, and thus this map area was removed from further analysis. Two names were recorded as having unknown origins, and two did not fit the classification system. Of those with translations, three were commemorative – named after an event or person; 22 were associative – named in relation to resources; and 57 were descriptive of the landscape.

Place Name Type (Goehring Classification System)	Number of Place Names (IHT Data Set)
No Translation / Origin Unknown	44
Descriptive	57
Associative	22
Commemorative	3
Outside classification system	2
Total	**128**

Table 2: *Inuit Heritage Trust place names categorized using the Goehring Classification System*

The two names that did not fit the classification system were Iqaluit Kangikłua and Maniirurarjuk. Iqaluit Kangikłua was translated as 'replaces Gifford Fiord' which seems to be a misuse of the translation field in data entry, describing the intent to replace the name Gifford Fiord if Iqaluit Kangikłua were to become official, but not a direct translation of the name. Maniirurarjuk is translated as 'an area they try to avoid while traveling on the trail', which likely is an allusion to the roughness of the terrain. As discussed by Collignon (2006), cultural context is important in revealing the connection between the meaning of a place name and the physical attributes of the land. The place named Inuksuligaarjuk is translated in the database as 'there are a lot of inuksugait around this lake'. The meaning of inuksugait, like many Inuktitut words, depends on its context. In some contexts inuksugait can be inuksuk pointing to stored food or it could refer to rock structures used by Inuit hunters to mimic the human figure while trapping

caribou (Heath & Arima, 2004, p. 122). In either context, there is an implied reference to resources, and more specifically caribou, so this place name was included in the associative category. Similarly, Ivisaaruqtuup Kangiqłua, translated as 'bay of Ivisaaruqtuup' was added to the associative category because Ivisaaruqtuup is translated as 'has plentiful spawning [male] char'.

The place names data provided by IHT uses point symbols to digitize the location of each place name. For features that are well-defined such as islands or lakes, the application of the feature name is implicit in the topographical boundary of the feature. For geographic areas like bays, hills, mountains or peninsulas, however, the extent of the application of the name is less clear. To maximize the performance of an automated spatial analysis, place names features would need to be digitized as polygons, reifying distinct ontological perceptions that may not reflect local usage or the opinions of individuals who provided the names. An alternate approach would be to apply a standard buffer around each point to serve as a proxy for the geographical extent of the place name. This would also introduce assumptions about the application of each name. Unfortunately, the IHT dataset did not consistently apply a geographic feature-type (eg. lake, river, or bay) to the place names, further reducing my ability to confidently identify their geographic extents. The application of a visual method is intended to accommodate these limitations and extend analysis beyond a reductive codification of place names.

Ecological Resource Inventory Data

Two secondary sources of ecological information were used for comparison with the Inuit place names: the Northern Land Use Information Series (NLUIS), published by Indian and Northern Affairs Canada (now Aboriginal Affairs and Northern Development Canada) in conjunction with Environment Canada between 1972 and 1987; and the Nunavut Coastal Resource Inventory (NCRI), published by the Government of Nunavut with the participation of Indian and Northern Affairs Canada in 2008.

The intent of both the NLUIS and NCRI mapping projects was to inventory and document the extent of northern ecological habitats. In the case of NLUIS, the primary objective was to facilitate the regulation of northern land and water resources through "comprehensive regional planning and a managed approach to development and environment protection" (Steensby Inlet, 1981). Similarly, the NCRI was conducted to permit "strategic assessment leading to promotion of economic development opportunity, coastal management and conservation", while documenting and preserving traditional knowledge in preparation for climate-driven environmental change (Nunavut Coastal Resource Inventory, 2008, p. 1). NLUIS and NCRI maps were extracted from Portable Document Format (PDF) files using screen capture software, and georeferenced to UTM Zone 17 using the ESRI ArcGIS 9.2 geographic information system package. The data from both ecological inventories was generated with a methodology aligned with the ethical considerations highlighted in *Negotiating Research Relationships with Inuit Communities* (ITK & NRI, 2007). These data were informed, advised and analyzed by Inuit community members, local hunters and trappers (Steensby Inlet, 1981; Nunavut Coastal Resource Inventory, 2008; IHT, 2012). All data

are available free of cost from their originating source, minimizing concerns that data is not available to the communities from which it emerged.

On the both NLUIS and NCRI maps, contiguous polygons identify zones of like-ecological composition. Initially the research method considered was to digitize and code these zones, and then to use analytic tools to correlate them with the translations of the geolocated place names. This would facilitate an analysis of whether place name features intersect, are contained by, or touch the boundary of ecological unit boundaries. Such an approach, along with an analysis of climate data, would have allowed assessment of the relationship between the land and the place names, and whether climate had had significant impact on the connections between place names and the locations they described over time. This was made difficult, however, by inconsistencies in the NLUIS dataset at the edge of the NTS map sheets.

There were ecological resource zones that were not contiguous across map sheets. For example, at the southwestern edge of the Steensby Inlet, ecological zone 10 bounds an “important waterfowl nesting and molting habitat [and] year-round caribou range” (Department of the Environment [a], 1981). The contiguous wildlife zone on the Erichsen Lake map, unit 10, identifies “year-round caribou range; important waterfowl nest and molting habitat [and] some polar bear denning” (Department of the Environment [c], 1981). The resulting 18 km straight-line boundary of polar bear denning habit is unlikely to exist without natural or man-made boundaries. Neither boundary is cross-identified on the NLUIS maps, increasing the likelihood that the phenomenon is the result of an error in coding. Secondly, because unlike the NLUIS – which mapped both inland and coastal resources – the NCRI focuses on coastal

resources, opportunity for identification of temporal changes between datasets and place names was limited. Instead, I chose to analyze associative place names, that were likely to reflect the location of resources, and note any overlap between those locations and the habitats identified on each of the ecological resource inventories.

Associative Place Names

Of the names that I classified as associative place names, the majority are related to caribou and fish, which are important ecological resources to Inuit. Ten place names made reference to caribou, six to fish, two to berries, and one to ravens, rabbits and falcons respectively. The number of associative place names (as well as descriptive and commemorative) would likely increase if translations were available for all place names in the data set, and if more contextual information had been included.

Ecological Resource	Number of Place Names (IHT Data Set)
Berries	2
Caribou	10
Falcons	1
Fish	7
Rabbits	1
Ravens	1
Total Associative Place Names	**22**

Table 3: *Associative place names organized by ecological resource type*

The percentage of associative names (of names with available translations) in Steensby Inlet study area is 22 of 128, or 26%. This percentage is far less than the 37% of associative place names Goehring (1990) found in his sample of Inukitut names from the Pelly Bay region, then in the Northwest Territories. Likewise, Collignon (2006) identified a 40% composition of uumajit names – in its most specific translation "a plural that refers to 'game animals'" – in her study of place names in Nunavik (pp. 196). It is apparent that regional patterns of naming can impact whether place names have viability in informing land use patterns, resource patterns, or a combination to outsiders. In either circumstance, intensive engagement with traditional knowledge remains part of the due diligence required of corporations that propose resource development in Nunavut.

The questionnaire that was used in the Mary River Inuit Knowledge Study documented 94 references to caribou harvesting locations, 318 references to caribou migration and life cycles and 43 references to caribou reactions to disturbance (Baffinland [d], 2012, p. 2). Though the list of associative place names demonstrate that caribou are an ecological resource of central importance in the Steensby Inlet area, the contextual information provided by the MRIKS is indispensable. The translations of place names are informative, but do not necessarily provide in-depth information about species health, quantity or their detailed interactions within the proposed development area. Place names need to be supplemented with detailed qualitative and quantitative modes of inquiry to support a rigorous environmental impact assessment. I will now proceed to analyze the NLUIS and NCRI and compare the locations of associative place names with identified ecological habitats.

Chapter 8: Ecological Resource Inventory Analysis

Northern Land Use Information Series (NLUIS)

Caribou

In the NLUIS, ecodistricts were identified to record the expanse of each species habitat, as well as characteristics of the terrain, vegetation, water, wildlife and coast. Five place names with associative reference to caribou are located on the Steensby Inlet map (see Figure 2). Each place name falls within ecodistricts 2 or 8, both of which were identified as a year-round caribou ranges. Caribou place names are concentrated near the north and west portions of Steensby Inlet, though caribou ecological zones surround the inlet. Two Erichsen Lake map place names are in ecodistrict 8, one in ecodistrict 3, and another in ecodistrict 5. Each of these zones was identified as a year-round caribou Northern Land Use Information Series range at the time of the NLUIS study. The final caribou place name is on the Phillips Creek map in zone 4, a year-round caribou range. The consistency of the relationship between the ecological zones identified in the NLUIS and the translated place names is strong.

Seasonal considerations were also revealed in the translated place names. For example the translations of Saggaqsiuvik ‘a good place for getting caribou in late August’, and Ukiuliqsiurvik ‘caribou there in winter’ detail seasonal nuances of caribou hunting not captured by the data in the land use inventory map. The NLUIS does identify ‘wildlife zones’ to denote the function of various habitats and variations and their seasonal patterns. Due to poor use of symbology, the boundaries of these zones were often unclear. Caribou place names, however, were often close or within a reasonable distance to caribou habitat zone symbols. Historical nuances were also captured by the

place name descriptions. Six place names are translated in the present-tense, indicating their use at the time of place name collection. Two place names on the Erichsen Lake map are historical names, for example Tasirjuaq '[...]The Inuit of the past would hunt caribou as they swam across the lake', which refers to historical hunting practices. The remaining place names Nagjuktaqtujuq 'there are a lot of caribou antlers in this area' and Inuksuligaarjuk 'there are a lot of inuksugait around this lake' cannot clearly be identified as reflecting contemporary or historical resource patterns, though both are indicative of intensive land-use and historical occupancy.

None of the caribou place names are misaligned with identified ecodistricts, though caribou associative place names did not appear in every ecodistrict zone identified as having caribou. This could be reflective of land use patterns specific to the communities that provided the place names, or knowledge which is concentrated in specific areas depending on the experience of the elder or hunter providing the name. Furthermore, the concentration of place names in certain areas may reflect geographic patterns which make some regions better-suited to caribou hunting than others. Place names on the Steensby Inlet map, for example, were concentrated at the inner end of the inlet. The relative concentration of these place names strengthens the connections to be made between certain geographic locations and the presence of ecological resources.

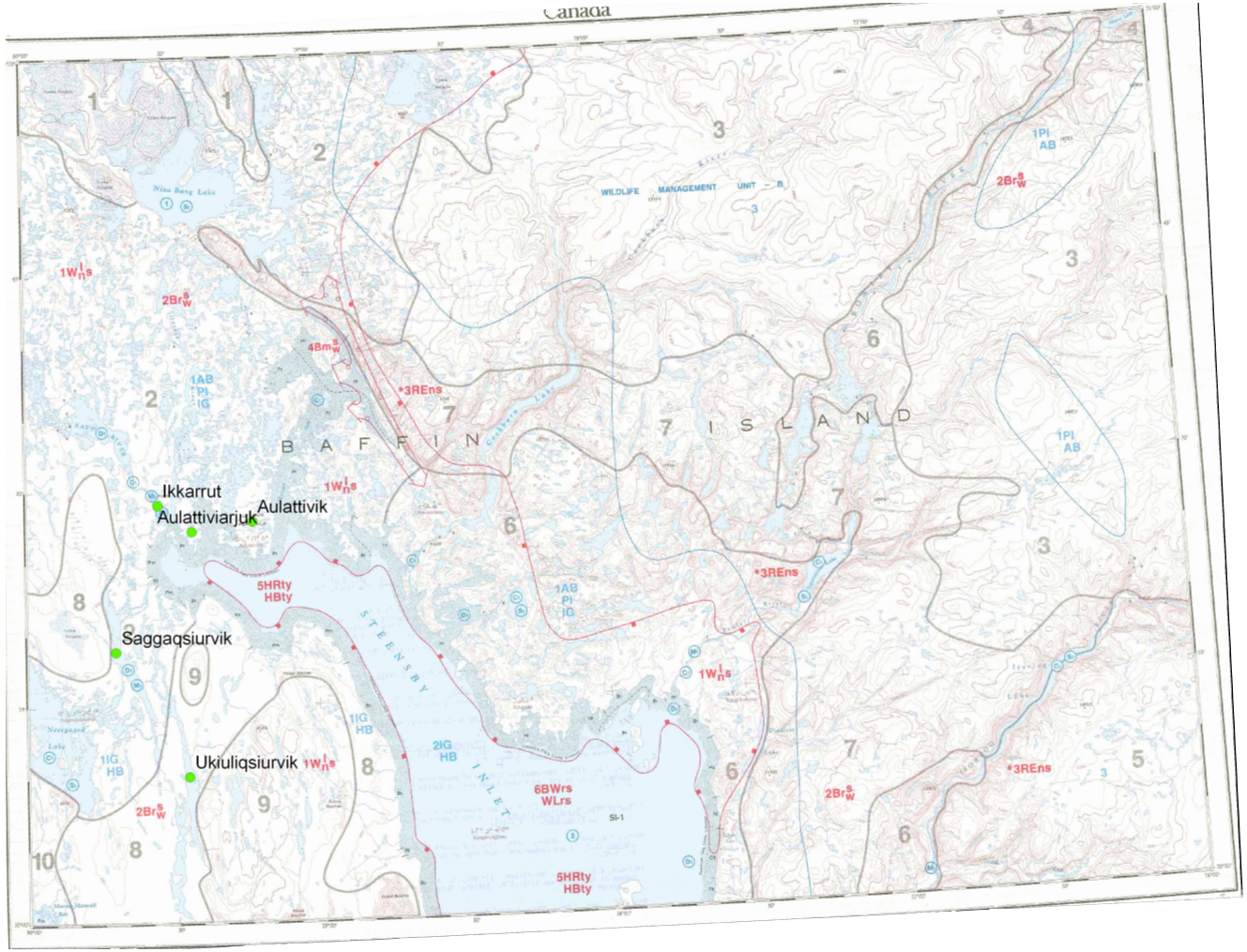

Figure 2: *Caribou associated place names on Steensby Inlet (NTS sheet 37F) 1:250,000 scale Northern Land Use Information Series map. Ecodistrict zones are identified by numbered polygons. Each describes unique features of the regional terrain, vegetation, water, wildlife and coast. Further information regarding wildlife patterns are indicated by red codified symbols, while hunting, trapping and fishing information is codified in blue.*

Fish

In identifying the associations between place names and resources, it was important to consider the locations of place names in relation to implicit indicators of resource concentration. Fish, for example, are an important part of the Inuit diet and the locations of seasonal camps are likely to indicate the presence of fish and other important resources nearby. Though not many seasonal camps were identified in the area, there was a close proximity between the fishing camp identified on the Erichsen Lake map to fish resources indicated by place names. Saniqqijarvik, 'a shallow part of the river where fish gather' was located within three kilometers of a fishing camp, Iqaluit Kangirłuata Qinngua. Similarly, some other fish associated place names, Ivisaaruqtuup Kangiqlua, and Ivisaaruqtuup were located in close proximity to each other, reinforcing the likelihood that fish resources exist in that area. This pattern was further corroborated by the presence of domestic fisheries in the same waterbodies as the place names on Erichsen Lake. One additional place name, Sapugaarjuit, was not within a proximate distance to a fishing resource identified in the NLUIS. However, there is a caveat in the NLUIS data which states that during the inventory study period, residents of Igloolik fished for Arctic char "at river mouths and virtually anywhere along the coast" (Department of the Environment [a], 1981). It is therefore possible that fish resources exist beyond the habitat areas delineated in the NLUIS.

Two additional place names were located on the Steensby Inlet map. The first, Aukkarnilik is located in the same waterbody as a commercial fishery, while Uugarjualik is on a waterbody that flows into a bay that is identified as a domestic fishery. All seven of the fish associated place names are located along the coast of waterbodies,

demonstrating a connection between their location and the physical geography of the region. If using this information to establish baseline ecological measures, it would be important to note that most place name translations do not identify the type of fish typically caught at each location. The one exception, Uugarjualik, a 'lake with cod fish', could not be corroborated with the NLUIS based on the level of detail available regarding the species of fish found in each waterbody. Further data would be needed to establish a thorough measure of the size, health, and risk associated with each habitat.

Raptors

Raptor is a broad term which incorporates several types of birds of prey including eagles, hawks, falcons and owls (NOED, 2005). The sole raptor reference, Kiggavialik, 'the place where falcons have their young', overlaps an area identified on the Steensby Inlet map as an essential raptor nesting habitat.

Ravens

Tulugalik, 'a hill with ravens', is located in ecodistrict 6, described in NLUIS as "important habitat for birds, particularly waterfowl" (Department of the Environment [a], 1981). NLUIS makes no explicit reference to the species of birds for which this is an important habitat, making the relationship of the ecodistrict zone to the place name unclear. Few Inuit place names are labeled on the NLUIS, however, it is important to note that the place name Tulugalik is labeled on the Steensby Inlet map at the location identified in the IHT dataset. Interestingly, Tulugalik does not appear in the Canadian Geographical Names Database as either a currently or formerly official place name,

raising questions about the source of the Inuit place names for the NLUIS series maps, and the consistency with which new information on place names was integrated into federal mapping government publications at the time of the survey.

Nunavut Coastal Resource Inventory (NCRI)

Fish

Areas of high fish abundance were identified in the NCRI. Arctic cod, one species identified in the translation of place names, was also identified as a regional species by an NCRI interview participant. The fishing ground identified by the participant, however, was not within the study area for this research project. Arctic char was the species identified most often in the NCRI. Areas identified by multiple NCRI interviewees as an important fishing ground for arctic char are in close proximity to Iqaluit Kangirłuata Qinngua, a fishing camp, and Saniqqijarvik, 'a shallow part of the river where fish gather'. Sapugaarjuit, 'a place where fish were trapped' is along the edge of an NCRI identified arctic char habitat. Ivisaaruqtuup Kangiqlua, and Ivisaaruqtuup were located downstream from an area identified by multiple interviewees as an arctic char habitat.

Aukkarnilik and Uugarjualik were two place names located quite a distance away from those habitats of high fish abundance identified in the NCRI. The nature of traditional knowledge is such that elders are able to identify place names that are within their geographic range of their experiential or acquired knowledge. During mapping sessions held by IHT, elders at times provided the "names of elders in other areas, because they know that their own knowledge of the land reaches only so far" (Walker & Peplinski, 2013). This does not mean that ecological habitats and important resources

do not exist beyond the areas identified by elders, but rather that the resource habitats and place names identified were those known by the elders present at the consultation. The historical analyses of Collignon (2006) and Müller-Wille and Weber Müller-Wille (2006) highlight this nuance.

As elders die and access to traditional knowledge changes over generations, place names reflect geographic familiarity and patterns of land use. In their study of place names collected by Boas, Müller-Wille & Weber Müller-Wille (2006) found variations and gaps in the knowledge of elders when compared to place names recorded by Boas in 1883: "[I]n no case did contemporary Inuit experts discard or disregard 'forgotten' Inuit place names; rather they were accepted as genuine Inuit knowledge that had been lost but had now been rediscovered and recovered for reintegration into the current Inuit knowledge as part of the overall cultural heritage" (p. 226-227). This finding was complemented by the the research of Collignon (2006) in her analysis of place names collected by Jenness in 1914-1916, Rasmussen in 1923-1924 and Métayer in 1958.

Ravens

Due to the localized nature of place name knowledge, resources are likely present beyond those locations known through place names, or other sources of traditional knowledge. The NCRI was intended to catalogue contemporary resource habitats, however, its authors acknowledge that hunters have developed knowledge of the land over a number of years – in some instances 40 or more. Responses from participants could represent an aggregation of observations made over a undetermined period of time rather than the immediate present (NCRI, 2008, p. 22). Tulugalik is not located

within any raven resource areas identified in the NCRI. It is difficult to determine whether this is the result of habitat changes (reflecting the age of the place name), varying experiences of individual hunters (reflecting the nature of traditional knowledge), or knowledge that needs to be validated through other means. In both inventories, the ability to connect place names to raven habitats was difficult, reinforcing a need to apply mixed methods when establishing baseline ecological information near potential development sites.

Raptors

Kiggavialik 'the place where falcons have their young' is located within one of many peregrine falcon and rough-legged hawk habitats identified in the NCRI (see Figure 3). The translation provided for Kiggavialik does not specifically identify the species of falcon found there, making the connection to the peregrine falcons and rough-legged hawk habitats identified in the NCRI unclear.

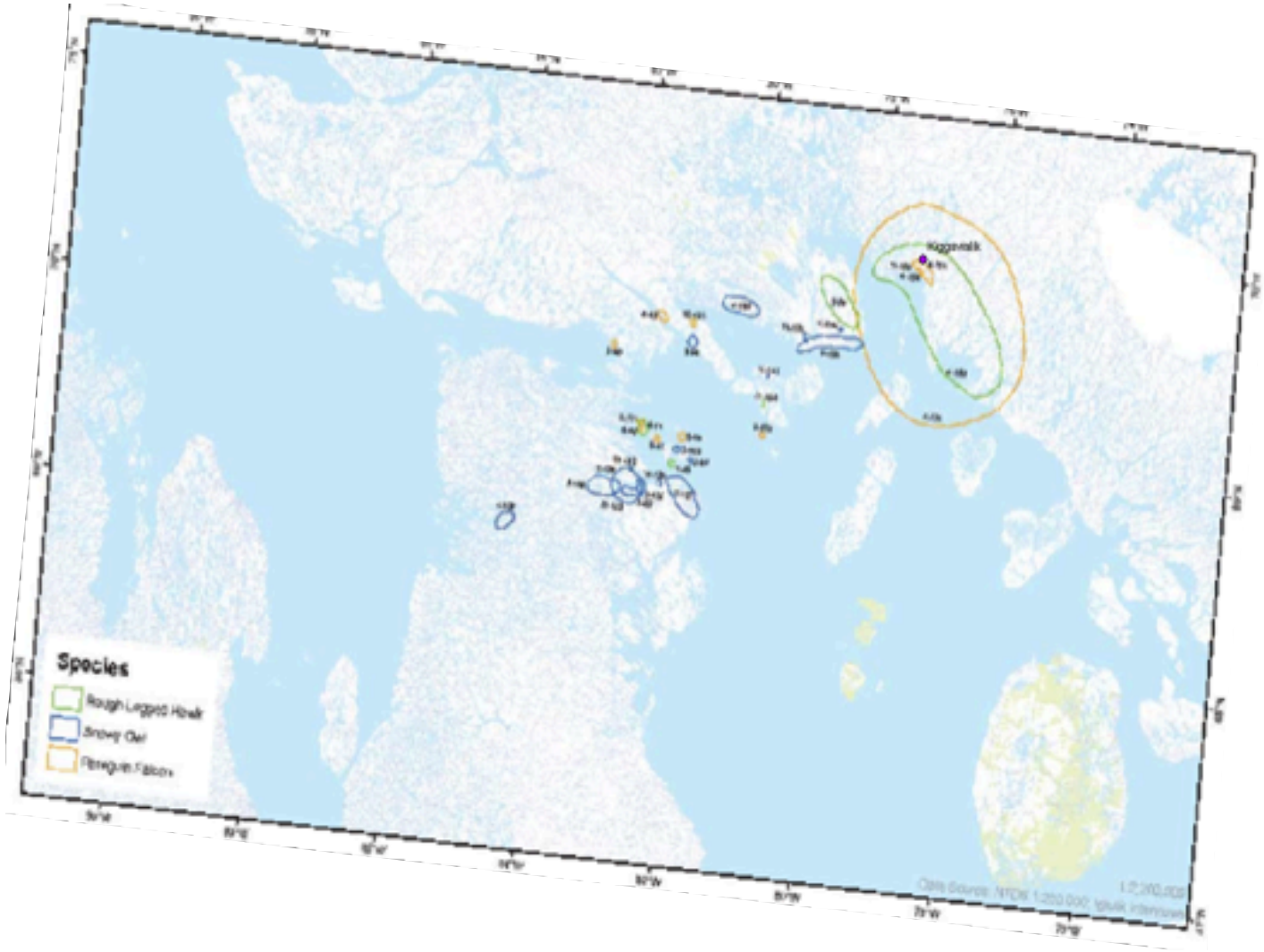

Figure 3: *Raptor associated place name on Nunavut Coastal Resource Inventory map of bird of prey habitats in NAD83 Zone 17N. Coloured polygons demarcate, by specifies, areas identified as habitat for birds of prey by interview participants. Each polygon is codified to identify which interview participant contributed the traditional knowledge to the Inventory.*

Chapter 9: Discussion and Implications

In studying the connection between Inuit place names and environmental assessment, I analyzed spatial links between Inuit place names in the vicinity of Steensby Inlet and the data from two environmental resource inventories: the Northern Land Use Information Series (NLUIS), published by Environment Canada and Inuit and Northern Affairs Canada; and the Nunavut Coastal Resource Inventory (NCRI), published by the Government of Nunavut and Inuit and Northern Affairs Canada. I also investigated the contributions that Inuit place names played in the recent assessment of the impact of the Mary River mining project at Steensby Inlet. This project is the most recently approved resource development endeavor in Nunavut, and is projected to become one of the largest iron ore developments in the world. The unprecedented scale of this development, and the importance of the development area to many Inuit communities made it an appropriate area of focus. From this case study, I was able to draw four conclusions:

1. Place names are strongly associated with land-based ecological resource patterns and land tenure.

Inuit place names are often descriptive in nature – relating to resources of an area, describing the landscape, or commemorating an event at a particular location. Of those associative place names examined, the majority of translations were connected to the ecological habitats identified through ecological inventories. This relationship was seen

most strongly when identifying caribou habitats. Each of the ten caribou place names from the Inuit Heritage Trust (IHT) dataset fell within a NLUIS caribou habitat. Place names associated with fish were also well-correlated with the NLUIS dataset. Five of six place names coincided with commercial or domestic fisheries. In some cases information available about the habitat was extended through the inclusion of place names because of seasonal variances indicated in the place name translation.

The majority of place names in the IHT dataset were located on land, which made connections to the NCRI data more difficult to establish. Explicitly a coastal inventory, the NCRI collected information about marine mammals such as walruses, seals, whales that were not described in place name translations. Where the place names and data did overlap in species, only half of the place names matched habitats delineated in the NCRI. The weakness of this connection could be impacted by a number of qualities of the data including the explicit focus on coastal resources, the collection of data on small scale map (NCRI was mapped at scale of 1:2,200,000 as opposed to 1:250,000 for the NLUIS), historical habitat change, limitations of the place names mapping work, or the focus of inventory participants. For example, berries and rabbits were two ecological resources identified in the list of associative place names within the study area. Neither of these resources appeared in the ecological habitat maps, indicating that there is incongruence in what was thought to be of interest in the compilation of the ecological resources maps, and resource areas significant enough to be named.

As part of the oral linguistic tradition, Inuit place names are tied strongly to travel narratives and trails used to move between communities, hunting and camping grounds, and other significant locations. The reliability of these names as environmental

descriptors and points of reference make them a relevant backdrop to environmental assessment where land-use and tenure is of consideration. Because the names are chiefly descriptive rather than commemorative, and mark hunting grounds, camps, burial sites and other points of interest, their usefulness in providing context to environmental assessment is strong.

2. Place names are tied to other forms of traditional knowledge, and contextual information should be included in their documentation.

Initiatives to map Inuit place names make them accessible to a wider audience, counteract historical exclusions, and help preserve an important facet of traditional knowledge. Like other forms of traditional knowledge, skill in understanding and interpreting place names is developed through practice and experience. Interpreting the application of place names, their significance, contemporary use, and connection to proposed development, is made difficult without context. Place names that do not refer to ecology most often indicate environmental interaction that is not explicitly expressed in its meaning. For example, fish resources, caribou, and marine mammals are likely to be found near seasonal camps, which serve as important outcamps for hunting and fishing activities. A named camp is a likely indication of the presence of ecological resources even when the meaning of the name does not explicitly recognize them. Volume 4 of the *Final Environmental Impact Statement* (NIRB, 2012), presents complementary data collected in the assessment of the prospective Mary River site. These data include the location of archaeological sites and the locations of traditional

camps. Though their locations were not gleaned through the interpretation of place names, these aspects of traditional knowledge are connected to and can help contextualize place names. Engagement, guidance and participation of Inuit community members is vital to a thorough understanding of place names in the broader context of their use.

3. The inclusion of place names is not a replacement for other forms of baseline assessment.

Inuit place naming reflects patterns of cultural land-use. The presence of place names, especially in high concentrations, are an important and valuable indication of ecological resources. The lack of place names in an area, however, does not necessarily indicate a lack of ecological resources. Both ecological resource inventories analyzed in this research identified the presence of ecological resources in locations beyond those indicated by place names. Gaps can exist in the place name knowledge of elders, depending on their experience and acquired knowledge of an area. Ecological resources can exist beyond established trails, hunting grounds, and in regions of Arctic that are no longer frequented by Inuit. Place names might also be old enough to describe a landscape that pre-dates contemporary ecology or terrain. While place names can help to identify habitats for further study, they are intended to supplement other baseline assessments rather than replace them.

The Final Environmental Impact Statement submitted to NIRB by the Baffinland Iron Mines Corporation (Baffinland Iron Mines Corporation [b], 2012) studied the

potential impacts of multiple 'valued ecosystem components' and 'valued socio-economic components'. Ecosystem components included impacts on the atmospheric environment (climate change, air quality, noise and vibration); land environment (landforms, soil and permafrost, vegetation, terrestrial wildlife and habitat, and birds); freshwater environment (surface water and sediment quality, water quality, freshwater fish, fish habitats and other aquatic organisms); and marine environment (sea ice, marine water and sediment quality, marine habitat and biota, and marine mammals) (Baffinland Iron Mines Corporation [b], 2012). None of these components could be adequately assessed, or, monitored over the length of the project, through an analysis of Inuit place names alone. A combination of scientific study and traditional knowledge is required for a comprehensive assessment that will capture the complexity of Inuit land- and sea-use.

4. Legal issues remain unresolved.

As discussed in chapter 6, traditional knowledge in Inuit communities is part of a knowledge paradigm where knowledge is considered to be collective rather than the property of an individual. In existing intellectual property legislation, the rights of "new, original, innovative or distinctive" works qualify for protection whereas traditional knowledge is often considered to be part of a collective knowledge system developed over generations (Simeone, 2004, p. 5). The challenge presented by this legal framework is that it leaves traditional knowledge in a grey zone. The strengthening of legal protections for collective knowledge is important as "many areas of traditional

knowledge have potentially lucrative applications", and the fair use of traditional knowledge has much to offer in western scientific paradigms (Simeone, 2004, p. 2). Traditional knowledge also belongs to the communities where it was collected, and, therefore, is different from other kinds of public knowledge, and must be protected.

As part of the Mary River Inuit Knowledge Study, the research agreement between the consultation group and participants established the following:

> The intellectual property rights of the Inuit authors are recognized and protected. They will retain the copyright of any study reports and their information will be properly cited and acknowledged in Baffinland and King Piésold reports. (Baffinland Iron Mines Corporation [c], 2012, p. 62)

Though a valuable clause and important recognition of the need for intellectual property protection, it relies on interpretations of Canadian law which to-date has not adopted "effective domestic legislation that clearly protects indigenous traditional knowledge" (Simeone, 2004, p. 4). Northern research and environmental assessment are directed through systems of certification, oversight and licensing, which serve to ensure ethical norms are considered. However, these norms do not legally establish traditional knowledge as the intellectual property of the communities from which it originates, leaving it vulnerable to misappropriation.

Future Directions

Habitat mapping like the Nunavut Coastal Resource Inventory was important to this research, as it is a recent and comprehensive habitat survey. The extension of this type of small-scale habitat mapping to inland species is important, however, to further analyze the relationship between place names and contemporary resource patterns. An extension of this research might include a deeper investigation of the age of place

names, and their correlation over time to habitats over time, especially as climate continues to change. This will require the inclusion of comprehensive habitat surveys from a wide variety of time periods.

Analysis of the Mary River Inuit Knowledge Study demonstrated that place names were not a major contributor to Baffinland's analysis of the project site, and cultural, social, and environmental risk factors. A future extension of this research might involve a more detailed study of how widespread the use of Inuit place names is in environmental assessment – on maps, in reports, and documents submitted to environmental impact assessment agencies. Alternately, an environmental development proponent could include a place name analysis in an active assessment, while recording the benefits and challenges encountered when implementing this type of analysis. By demonstrating a concrete way to amalgamate traditional knowledge and western scientific inquiry, this research supports the values which underlie environmental assessment in Nunavut, and in particular, the application of Inuit Qaujimajatuqangit.

Finally, this research provides evidence that toponymy has value outside of its traditional uses. Often toponymists are interested in tracing the historical origins of place names, ameliorating their application on maps, and refining principles and procedures for their inclusion on maps (Lapierre, 2009, p. 36-37). This research provides indication that a future direction in the field of toponymy might include more outreach beyond its typical participant community. Toponymists in the future might assist other professionals in building connections between their fields of practice and place naming.

Conclusion

As climate changes continue to impact the political and economic landscape in the North, the importance of effective and culturally-informed environmental assessment grows. The integration of traditional knowledge in environmental decision-making has been identified as a key task in Nunavut, where Inuit are already experiencing the impacts of environmental, social and economic changes. The findings of this thesis demonstrate that Inuit place names can strengthen northern environmental assessment – helping to identify ecological, and socio-cultural impact at prospective development sites. Furthermore, place names can generate a broader understanding of Inuit connections to the land and its resources, providing helpful context to individuals and corporations operating in Inuit lands and marine areas.

The first chapter of this thesis highlighted the impact that climate change has had in creating a political and economic appetite for resource development in northern Canada. A decrease in multi-year sea-ice has created new potential for oil, natural gas and mineral extraction, and year-round shipping routes through the Arctic. Inuit representatives have stressed importance of Inuit opinions and values in environmental decision-making, to ensure the concerns and interests of communities are adequately represented. The Nunavut Impact Review Board (NIRB), explored in chapter two, has a significant role in balancing community and corporate development interests. Legislated through the Nunavut Land Claims Agreement, the Nunavut Impact Review Board (NIRB) was created to gauge the eco-systemic and socio-economic impacts of environmental development. NIRB achieves its mandate by systematically evaluating, screening and monitoring the social and environmental impacts of proposed

development projects. At each stage, the guidance of Inuit Qaujimajatuqangit – values knowledge and principles guiding an Inuit worldview – and engagement with traditional Inuit knowledge is stressed. The Nunavut Impact Review Board is the only environmental assessment board in Canada that requires development proponents to integrate traditional knowledge in their assessments. In contrast to Western scientific methods which favor knowledge that can be measured or observed, traditional knowledge is developed through experience, practice and sharing. Traditional knowledge is expressed in many facets of Inuit livelihood, including Inuit place names – the focus of chapter three.

Inuit place names are a form of traditional knowledge which, aside from identifying geographic location, document environmental resource patterns, and hazards that have been observed over generations. Environmental assessors often struggle for year-round environmental data as climate and budget considerations often shorten field seasons. Southern researchers can also be unaware of unique cultural and environmental considerations in the North. A close engagement with traditional knowledge can help mitigate these issues, produce more nuanced understandings of socio-cultural and environmental risk, and generally strengthen environmental decision-making. The largely descriptive characteristics of Inuit place names complement the scoping phase of environmental assessment well. Informed by environmental and cultural contexts, Inuit place names can be a wealth of knowledge about the environment, land-use patterns and the value of various locations to the communities that make use of them: "If you want to know where seabirds, caribou, wolves or landlocked char are – a lot of that information is there, in these names" (Walker & Peplinksi, 2013, para. 13).

Opportunities to extend this knowledge to environmental assessment have been undermined however, in part by discriminatory policies which historically prevented Inuit place names from appearing on maps. These policies, the focus of chapter four, have changed over time, but have had lasting impacts on the number of Inuit place names that appear on federal maps. These misleading maps often contextualize proponents' environmental assessment reports, and form a basis for geographic representations of development sites. In turn, the potential to extend the application of place names to impact assessment is often missed.

Chapter five explored community-led mapping initiatives which seek not only to map Inuit place names more thoroughly, but also develop methods that capture the usage and value of these names in more culturally appropriate ways. Part of this task includes developing methods of storage which maintain connections between the place names, their locations, meanings, and stories that connect places together in narratives. These aspects are of importance within an Indigenist methodological framework, but also are central to a well-rounded understanding of Inuit place names. The relationships between place names, cultural activity, and the environment are part of an important but complex interaction that can be extended to bolster environmental assessment. The case study introduced in chapter six examines the Mary River iron mine project – one of the most significant resource development operations proposed in Nunavut in recent years. The Mary River Inuit Knowledge Study comprised the central investigation of traditional knowledge during the project assessment, but inquiries about local place names were removed from early iterations of the study. This decision reflects poor knowledge of the connections to be made between place names, environmental

resources and land use. This was a missed opportunity to complement scientific baseline measurements with traditional knowledge during the consultation phase of the project.

As demonstrated in chapters seven and eight, close relationships can be found between the presence of resources as indicated by place names, and ecological habitats identified in resource inventories. The strength of this association is enhanced by a broad understanding of the context of place names. For example, a place name marking a seasonal camp is likely related to the presence of caribou, fish, or mammals, as the camp play an important role in hunting and cultural activities. Furthermore, in areas where place names are not matched by resource habitats, the place names themselves are indication of historical land-use, which complements analysis of the socio-cultural impacts of development. Like other measures, however, an analysis of place names should be used in concert with other methods to identify and produce rigorous measures of development impact. As the role of traditional knowledge in resource planning expands, it is important that legal protections evolve to adequately address concerns about misappropriation and misuse.

During his annual tour of northern Canada in 2013, Prime Minister Harper announced $100 million to extend the Geo-mapping for Energy and Minerals (GEM) program for an additional 7 years. This decision is anticipated to support “more than $500 million in economic activity through private sector exploration for new energy and mineral resources” in the next 10-15 years (Prime Minister of Canada, 2013). Inuit will be at the forefront of environmental decision-making as the global climate continues to warm, and opportunities for northern resource development increase. The territorial

minister in charge of energy and mining in the Northwest Territories, indicated that as new mines open in the territory over the next decade, there will be need for up to 3,000 new skilled workers (Krugel, 2013, para. 1-2). A new federal grant has also been announced to “teach essential mining skills to 400 aboriginal workers in the Northwest Territories and Nunavut, an effort to ensure the local population benefits from big resource extraction projects” (Chase, 2013, para. 1). These investments complement territorial legislation which ensures that Inuit values and knowledge play a prominent role in environmental decision-making and resource development. Inuit place names have been developed over generations and provide a wealth of environmental and cultural knowledge. The application of this knowledge to environmental assessment will strengthen the long-term alignment of resource development and cultural values in the North.

Appendix A

A list of Inuit Heritage Trust place names analyzed on National Topographic Series map sheets 37F, 47H and 47E. All place names in roman orthography and their descriptions are shown as provided by Inuit Heritage Trust (2002). Place names on map sheet 37G did not include translations and thus were removed from the analysis and appendix, despite being of potential interest to environmental impact assessors. Ecological resource and name type data were compiled by the author.

Legend	
D	Descriptive
A	Associative
C	Commemorative
U	Origin Unknown
O	Outside Classification System

NAME	DESCRIPTION	NAME TYPE	ECOLOGICAL RESOURCE
Angmaluqtualuk	Big round lake.	D	
Angmaluqtualuk	Large round one.	D	
Aukkarnilik	A good fishing place	A	Fish
Aulattiviarjuk	Waiting place for caribou	A	Caribou
Aulattivik	A caribou waiting place	A	Caribou
Ikaariarvik	When travelling by boat it is a point to start crossing	D	
Ikiqtuuq	Broad or wide.	D	
Ikkarruq	Shallow water.	D	
Ikkarrut	A shallow place. Where caribou cross over.	A	Caribou
Ikpiarjuk	A small hill.	D	
Ikpikittuarjuk	Located by the short river	D	
Ikpikitturjuaq	A short creek	D	

NAME	DESCRIPTION	NAME TYPE	ECOLOGICAL RESOURCE
Ikummaq	Named after Ikummaq, who helped surveyors to map this area. The official name on Canadian maps is Ikummaq Bay.	C	
Ilaalliirvik	Mouth of the river, meaning unknown but it may mean people have lost friends at the rapids of the river.	U	
Inuksugalik	Has an inuksuk.	D	
Inuksuligaarjuk	There are a lot of inuksugait around this lake.	A	Caribou
Iqalugasugvik	Iqaluit's fiord's end lake. Lake.	D	
Iqaluit Kangiqłua	Replaces Gifford Fiord.	O	
Iqaluit Kangirłuata Qinngua	The end or head of Iqaluit fiord. Fishing camp.	A	Fish
Isulijaakuluk	Small Isulijaaq	D	
Isulijaaq	End of the hills	D	
Isulijaaruluk	End of a hilly land	D	
Isuqtuup Tasia	The lake of Isuqtuq.	D	
Itilliq	This trail connects Iglulik with Pond Inlet.	D	
Iviangirnaak	Like breasts.	D	
Iviksukuni	Name of a person who drowned there	C	
Ivisaaruqtuup Kangiqłua	Bay of Ivisaaruqtuuq.	A	Fish
Ivisaaruqtuuq	Has plentiful spawning [male] arctic char.	A	Fish
Kaligaaq	Moving ice moves by the land	D	
Kanajjuk	This valley is located along a trail, and it is used to make reference when traveling	D	
Kangianga	The landward end.	D	
Kangiangata Tasia	Origin unknown.	U	
Kangiqługjuaq	Large bay or inlet. (Replaces Steensby Inlet)	D	
Kangiqłuk Kangilliqpaaq	Furthest inland bay.	D	
Kiggavialik	The place where falcons have their young	A	Falcons
Kinngaqsiaq	A big hill	D	
Kinngmiaq	Looks like a mouthpiece of a drill	D	
Kitingujaak	A very narrow place between two cliffs (bad for traveling).	D	
Kuugaaluk	A large river	D	
Kuugjuaq	Strong rapids	D	
Maniiruarjuk	An area they try to avoid while traveling on the trail.	O	
Nagjuktaqtujuq	There are a lot of caribou antlers in this area.	A	Caribou
Narijjiutaa	This hill is lower than Paurngaqtuuq (285).	D	
Nirimanaaq	The bay is almost closed	D	
Nuvuujaq	Big point.	D	
Pamialluk	Resembling a tail bone.	D	
Paurngaqtuuq	Has plentiful blueberries.	A	Berries

NAME	DESCRIPTION	NAME TYPE	ECOLOGICAL RESOURCE
Paurngaqtuuq	Has plentiful blueberries.	A	Berries
Pingugalait	This area is part of a caribou migration route. People use this as a trail.	A	Caribou
Pingurjuaq	Big hill.	D	
Pusinngajuujaq	A navigational marker. It resembles a bowl upside-down.	D	
Qaanniqtalik	An area where the river overflows.	D	
Qaimajuq	A flat place that seems to be coming forward.	D	
Qalilik	A hill that has a big boulder on top	D	
Qarmaqtalik	Has sod or stone houses	D	
Qarmaqtalik	Has sod or stone houses	D	
Qattiktuq	It is a lump. Inuit would leave their dogs on a small island in this lake.	D	
Qaurnak	Like a forehead.	D	
Qaurnak	Like a forehead.	D	
Qikiqtaliruluk	Has an island.	D	
Qikiqtarujaaq	Long island	D	
Qimiruluk	Not favourable. This ridge is an obstacle for travelers.	D	
Quaqsaaraarjuk	Place where someone got suddenly frightened or startled.	C	
Qurlungnilik	Has waterfalls	D	
Qurlurngnilikuluk	Has a little falls.	D	
Saggaqsiurvik	A good place for getting caribou in late August	A	Caribou
Saniqqijarvik	A shallow part of the river where fish gather.	A	Fish
Sapugaarjuit	A place where fish were trapped.	A	Fish
Sikusuittulik	Place where it never freezes over. The downstream end of the lake, where it starts to flow into the river, never freezes over. before there was a trading post in Igloolik, people would cross this lake to trade in Pond Inlet.	D	
Tariujaq	Like the sea.	D	
Tariuraujaq	A branch of larger bay, the water is slightly salty	D	
Tasilugjuaq	Big lake having little purpose.	D	
Tasiqjuap Isua	The bottom part of Tasilugjuaq.	D	
Tasiraujaq	Long lake	D	
Tasirjuaq	Big lake. The Inuit of the past would hunt caribou as they swam across the lake.	A	Caribou
Tulugalik	A hill with ravens	A	Ravens
Uiguqłiq	A liake that is part of Uugarjualik	D	
Ujarasukjualuk	When travelling it is a marker for navigation	D	
Ukalilik	Has rabbits	A	Rabbit
Ukiuliqsiurvik	Caribou there in the winter	A	Caribou
Uliqqajaaq	the tide flows in and out of the bay	D	
Umiaqattaarusiq	Small version of Umiaqattak	D	

NAME	DESCRIPTION	NAME TYPE	ECOLOGICAL RESOURCE
Umiaqattak	Low and narrow hill	D	
Uquutalik	This wind break was used for Inuit while waiting for caribou.	A	Caribou
Uugarjualik	Lake with cod fish	A	Fish
Uumannak	A high hill	D	

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