Bridging Mining-Scarred Landscapes and Nature- and Resource-Based Tourism and Recreation in Northern Ontario

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

The lifecycle of resource towns in Canada has been a topic of study for many decades, but recently, the role of diversification has become a key point in the discussion. Tourism and recreation are a potential route to diversification, especially for minetowns looking to reduce the impacts of 'boom and bust,' so common with the fluctuation of markets. One unique option for minetowns is the repurposing of mine land to support nature- and resource-based tourism and recreation (NRBTR). A post-mining landscape designed to be accessible and provide a new asset for the community can help with the diversification efforts and promotion of tourism.

This study investigates the diversification of northern mining communities. The research is guided by objectives focused on community lifecycle modeling, northern Ontario minetown population, labour force and tourism, and the reuse of mine sites for NRBTR. A mixed methods approach is used to combine qualitative and quantitative data. This includes qualitative deductive modeling, a quantitative community inventory, and qualitative case studies.

A new minetown model is proposed that addresses the shortcomings of existing resource community lifecycle models. The new model uses mining sector labour force as the categorizing factor, and includes stages of mining influence and diversification responses. An inventory of northern Ontario minetowns, identified at any time from 1950 to the present day as being dependent, is created. The inventory is used to assess population and labour force trends and the prevalence of tourism in the communities. The inventory results show only one post-1950 minetown as being abandoned (Renabie), and 24 have been amalgamated into larger municipal areas, leaving 23 communities in the inventory. Minetowns are found to move through the lifecycle stages in a non-sequential fashion from 1991 to 2011 and to have a more diversified economic base than previous models allowed for, supporting the need for a new evolutionary model. Nearly all communities were found to have tourism and NRBTR businesses and activities. Only one (Gauthier) did not have tourism businesses and only three (Cobalt, Gauthier and McGarry) did not have NRBTR businesses.

NRBTR has previously been identified as a market niche for northern Ontario and its prominence in minetowns supports this. The communities were surveyed for NRBTR post-mining land uses to identify case study sites. From these, the Charleson Recreation Area in Atikokan and the Sherriff Creek Sanctuary in Elliot Lake were selected. The case studies examined the process of transitioning former mines to NRBTR sites in former minetowns, including the on-going use and maintenance of the site. Both sites were naturalised areas where informal passive recreation occurred pre-NRBTR development. This helped facilitate the transition to a formal NRBTR asset. The case study findings indicate that volunteers and community members are the primary drivers for NRBTR redevelopment projects. The need for clearly defined roles in development and maintenance of such sites is supported by the findings.

This thesis highlights the reality of minetowns and the lifecycles that describe them, and the opportunity for post-mining land use for NRBTR. Academic and applied implications of the research are provided with recommendations for various actors, including those considering mine site redevelopment to support NRBTR activities. This research supports proactive diversification efforts in mining communities, and supports the inclusion of NRBTR.

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Finally, and most importantly, my family: Mary Anne, Morley, Devin, Lynda and Stuart for cheering me on, reading through early editions regardless of how dry or disorganized, and maintaining politely glazed looks when I started to ramble about my work. You can all breathe a sigh of relief with this work done, at least for a little while, until the next exciting project.

To everyone else, and you are many, who supported me in this undertaking and cheered me on, thank you and good luck in everything you do!

As they say in the mining industry *'if you can't grow it or farm it, you mine it'*;
(Vale Earth Gallery, Canadian Museum of Nature)

Let's leave something for everyone to enjoy once we're done mining.

Dedication

To Devin:

the best brother, and friend, ever.

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List of Abbreviations

AEDC	Atikokan Economic Development Corporation
AMIS	Abandoned Mines Information System
CASIT	Canadian Association of Single Industry Towns
CLRA	Canadian Land Reclamation Association
CRA	Charleson Recreation Area
FI/FO	Fly-in/Fly-out
ICMM	International Council on Mining and Metals
JitW	Jewel in the Wilderness
LBH	Lucas/Bradbury/Halseth
LDC	Long Distance Commute
MAC	Mining Association of Canada
MNDM	Ministry of Northern Development and Mines
MNR	*[Ontario]* Ministry of Natural Resources
MNRF	*[Ontario]* Ministry of Natural Resources and Forestry
NBT	Nature Based Tourism
NRBT	Nature and Resource Based Tourism
NRBTR	Nature and Resource Based Tourism and Recreation
NOAMI	National Orphaned/Abandoned Mines Initiative
NOHF	Northern Ontario Heritage Fund
NRCan	Natural Resources Canada
OMA	Ontario Mining Association
PHFN	Penokean Hills Field Naturalists
RAL	Rio Algom Ltd.
SCS	Sherriff Creek Sanctuary
SRMA	Steep Rock Mining Area
TMA	Tailings Management Area
ToA	Township of Atikokan

Chapter 1
Introduction

1.1 Introduction

Mining communities in Canada are vulnerable to 'boom and bust' cycles and community decline following the closure of mining operations. This has been well established through a large body of work on staples economies, with highlights in Lucas's, Bradbury's and Halseth's work on the Canadian resource-based community life-cycle (Bruce, Ryser, & Halseth, 2005). This body of work identifies the need for alternative futures to prolong the lifespan of resource-based communities[1] and reduce the impacts of fluctuations in the mining and metals market. Historically, socio-economic concerns tended to be treated as secondary to the very serious environmental damage and degradation that is seen as an unavoidable aspect of mineral extraction. This view is shifting and attention is now widening to include the socio-economic effects of mining on local residential populations. There is also increasing community outreach and support through the identification and encouragement of opportunities to develop and diversify the economic base of mining communities (ICMM, 2012; Worrall, et al., 2009).

Tourism and recreation may offer a significant and viable means to diversify the economic base of mining communities; it has often been seen as a viable economic development strategy and has been used worldwide for the development of rural, remote and peripheral areas (Schmallegger & Carson, 2012). Nature- and resource-based tourism and recreation (NRBTR)[2] is often promoted in these areas and relies on the natural features of the area to entice tourists to visit (Boyd & Butler, 1999; Butler, Hall, & Jenkins, 1998; Schmallegger & Carson, 2012). This reliance on the natural landscapes for NRBTR seems at odds with the mining sector but there are opportunities to bridge the

[1] 'Community' is used throughout this study to identify a built-up settlement or identified region. Many of the communities in the study are amalgamated census subdivisions, population centers, designated places and localities that have a collective identity associated with a permanent settlement. For a thoughtful discussion about defining 'community' compared to the everyday common use of the word, please refer to Halseth and Sullivan (2002).

[2] Resource- and nature-based tourism and recreation are identified by the place-based nature of the marketable asset but are differentiated by the consumptive nature of resource-based tourism and recreation (hunting for example) versus the in-place appreciative quality of nature-based tourism and recreation (scenic hiking for example) (Johnston & Payne, 2005). The separation of tourism, recreation and leisure is a difficult task (Butler, 2004); while tourism could be considered a subset of recreation, tourism often includes movements outside of the usual environment, and excludes those whose main purpose for travel is employment in the region (Singh, 2007; WTO, 2014).

two industries (Pearman, 2009), especially by incorporating the mining landscape into the NRBTR development to capitalize on existing resources (Carlson, Koepke, & Hanson, 2011; Edwards & Llurdés i Coit, 1996).

The need for the reuse of land previously mined, or associated with mining activities, is self-evident as vacant, derelict land is a detriment to communities and the visual blight of a negative legacy compounds economic problems (Worrall, et al., 2009). Technology has greatly reduced the damaging physical effects of mining and increased the ability of operations to control pollutants and clean-up sites after closure (Bridge, 2004). NRBTR is one redevelopment option for post-mining land use (Carlson, Koepke, & Hanson, 2011; Edwards & Llurdés i Coit, 1996; Lintz, Wirth, & Harfst, 2012). Mining operations generally have a much larger claim area than the functional mine site, and this land, along with mining infrastructure, has the potential to be included in tourism planning to diversify the community and foster better relations between the extractive industry and local citizens (Brereton, et al., 2006; Buultjens, et al., 2010). This coupling of tourism, recreation and operational mining can be done through inclusive planning and community development initiatives, which can culminate later on as the reuse of mine land to support NRBTR development (Carlson, Koepke, & Hanson, 2011; Frey & Spellerberg, 2011).

This study focuses on the redevelopment of mine land within the broader context of the diversification of resource-based communities to include tourism and recreation components, with a focus on NRBTR activities and businesses, and the reuse of mine sites to support these activities. It expands on previous academic work on the resource community life-cycle by proposing an updated model and evaluating the process by which nature- and resource-based tourism and recreation may be developed as an "alternative future". Northern Ontario is chosen as the study region due to its long mining history and large share of the Canadian mining market.

Industrial mining in Ontario has been a large part of the backbone of the staples economy of modern Canada, and has led to the creation of resource-based communities (and in some cases community decline and abandonment) (Hayter & Barnes, 2001; Johnston & Lorch, 1996; Randall & Ironside, 1996). This history has left its mark with over 6,000 abandoned and orphaned mine elements across the province, alongside twenty-two major active mining operations (MacKasey, 2000; Mitchell & Mackasey, 1997; OMA, 2014). The bulk of these mine sites and abandoned elements are in northern Ontario. Recent efforts to diversify the resource extraction-dominated economy of northern Ontario have led to an increasing interest in tourism (Bennett & Lemelin, 2010; Johnston & Payne, 2005). The need for value-added end uses has become apparent with recent

efforts to create a more balanced approach to mining (Waggitt, 2011; Worrall, et al., 2009). This study examines the use of mine land for NRBTR in the region of northern Ontario as a whole and uses case studies to gain insight into the processes that facilitate site transition from mining to tourism, thereby expanding the academic literature and providing insight and recommendations to future community development projects.

1.2 Research Question and Objectives

This study addresses the overarching issue of the diversification of the economies of mining communities in Canada. It focuses on the specific research question '*How can mine-site NRBTR be incorporated as a diversification strategy in northern mining communities?'* The research is guided by five objectives:

1. to develop a mining lifecycle model that accommodates diversification;
2. to apply the model to northern Ontario minetowns, and to describe how population and labour force changes as communities move through the model's stages;
3. to determine when tourism, specifically NRBTR, is introduced during minetown evolution;
4. to assess the process by which a mine site is transitioned, maintained and used for NRBTR in two case study sites; and,
5. to provide recommendations to mining community stakeholders for including NRBTR at reclaimed mine sites, as part of a diversification strategy.

This study is justified on three grounds. First and foremost there is a need to revisit and update, expand or revise the existing resource community lifecycle models or to create one more suitable to today's rural reality. Secondly, the mining industry has been making strides to embrace sustainability, and increasing importance has been placed on the post-mining usability of land (Bridge, 2004; Waggitt, 2011; Worrall, et al., 2009). Finally, resource extraction was the foundation of Canada's expanding role in the global economy, and resource industries continue to be a major aspect of the Canadian economy and the focus of major trade agreements (Hayter & Barnes, 2001).

The study area for this research is northern Ontario, which was selected because of its historical roots in the mining industry and the prevalence of NRBTR. The historical ties to the extractive industries, specifically mining, and the number of rural communities that were established to support extractive industries, set northern Ontario apart as an excellent location for a staples-based

study. This is furthered by the importance of extractive industries to the economy of northern Ontario, and the large share of the Canadian mineral production that is based here[3].

The recent push for tourism in northern Ontario ultimately led to the selection of the region for the study. Northern Ontario is not a typical exotic ecotourism destination, but its scenic and wild places make it suited to NRBTR (Boyd & Butler, 1999). The opportunities for tourism in northern Ontario are increasing, and are supported by a number of documents and initiatives. The government policies released to support NRBTR in Northern Ontario, such as the *Resource-Based Tourism Policy* (Government of Ontario, 1997) and *Partnership for a Strong Tourism Industry: Northern Ontario Tourism Marketing Strategy 2012 - 2017* (Government of Ontario, 2012), and the inclusion of tourism in the 2011 *Proposed Growth Plan for Northern Ontario* (Ontario Ministry of Energy and Infrastructure & Ontario Ministry of Northern Development, Mines and Forestry, 2011) (a 25 year plan) provide further reason to study the value-added post-mining site use to support tourism in the region. A detailed description of northern Ontario is presented in the next section to give the reader a regional context for the study.

1.3 Regional Research Area

It is important to provide a regional context to frame and ground the study. Markey, Halseth and Mason (2008b) and Halseth, Markey, Reimer and Manson (2010) have argued the importance of place in rural development, and the shortfalls that can occur without an understanding of context. This section provides readers with a brief overview of northern Ontario, including geography, population and mineral extraction operations.

Northern Ontario is defined as the area north of French River-Lake Nipissing (Bennett & Lemelin, 2010; Ministry of Northern Development and Mines, 2012). It represents more than ninety percent of the total area of the province of Ontario, having an area of 802,775 square kilometers. Figure 2 illustrates the communities in northern Ontario and the major roads. Of note is the settlement placement along rail and road transport routes and the poor transport connections for the

[3] The suitability of the region was further enhanced for this study due to the extensive database that exists for abandoned and orphaned mines through the Abandoned Mines Inventory System (AMIS), which is the largest listing for abandoned and orphaned mines of any of the provinces or territories of Canada (MacKasey, 2000; Mitchell & Mackasey, 1997). Mackasey (2000) identifies databases and information sources in other provinces which catalogue abandoned mines, and a number of provinces have excellent data sources for follow up or similar studies in the future.

most northerly communities. These communities are often fly-in fly-out settlements that make use of ice roads when possible and are almost exclusively First Nation's settlements. Northern Ontario is divided into ten territorial districts, illustrated in Figure 1. These districts are often used as planning units and the communities within cooperate as a unit where possible (Ministry of Northern Development and Mines, 2012).

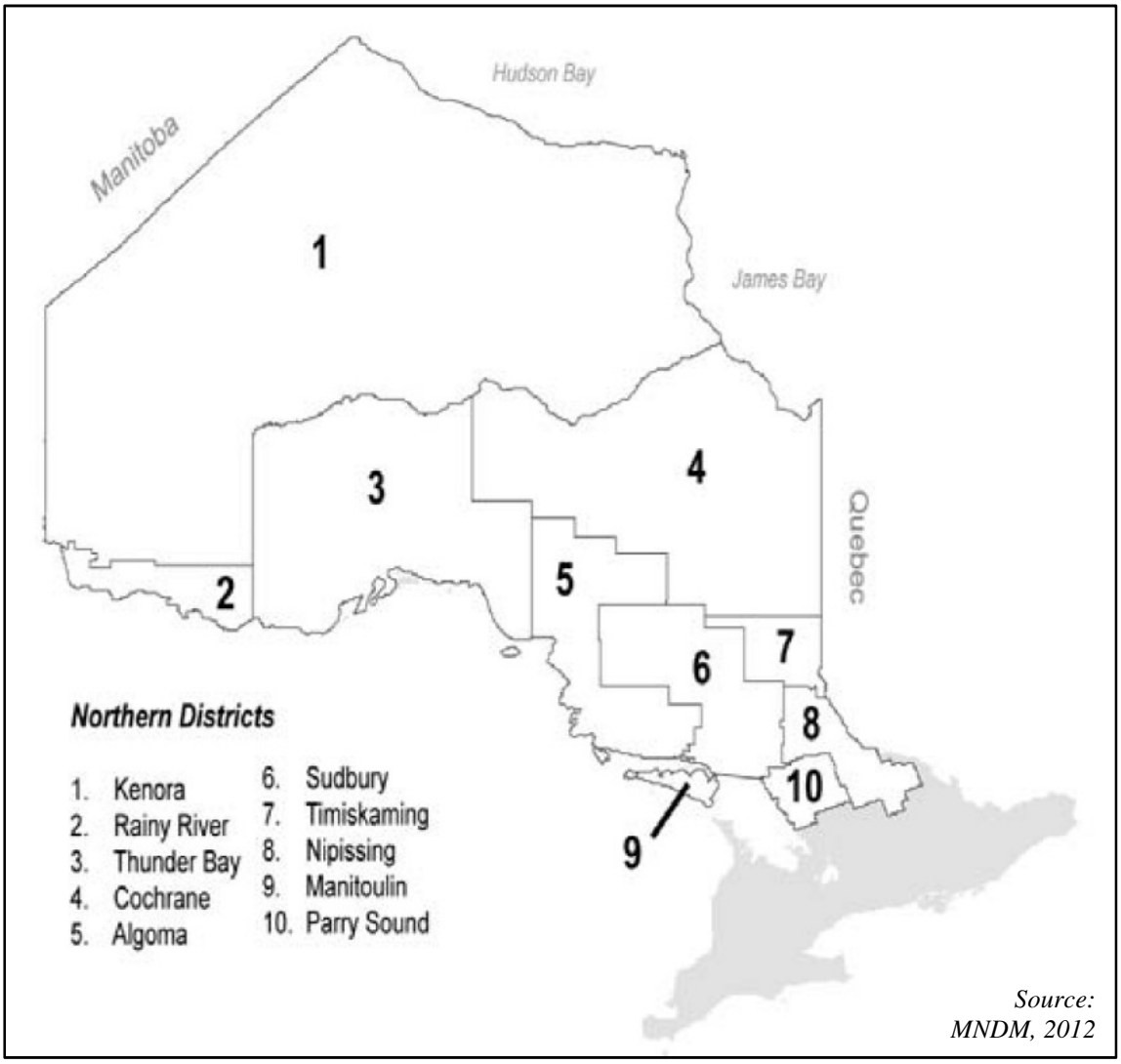


Figure 1: The Territorial Districts of Northern Ontario

Figure 2: Northern Ontario Communities

Northern Ontario has a population of 803,900 (Ministry of Northern Development and Mines, 2012). This accounts for six percent of Ontario's population and the population density is one person per square kilometer. More than fifty percent of the population of northern Ontario lives in the five major urban centers of Sudbury, Thunder Bay, Sault Ste. Marie, North Bay and Timmins. Table 1 lists the population sizes of the five major centers based on 2011 census data. Thirty-one percent of

northern Ontario's population lives in rural areas, including small towns of less than 1,000 people and undeveloped fringe land and wilderness areas (Ministry of Northern Development and Mines, 2012). Northeast Ontario's population is declining; a trend that is expected to continue into the future (Ministry of Finance, 2012; Ministry of Northern Development and Mines, 2012). In contrast, northwestern Ontario has experienced a very modest population growth; a trend that is also expected to continue (Ministry of Finance, 2012; Ministry of Northern Development and Mines, 2012).

Table 1: Population of major northern Ontario centers for 2011

Major center	Population	% of total population of northern Ontario	% of total population of Ontario
Greater Sudbury	160,840	20	1.3
Thunder Bay	102,222	12.7	0.8
Sault St. Marie	67,646	8.4	0.5
North Bay	53,515	6.7	0.4
Timmins	30,614	3.8	0.2

Source: Statistics Canada 2011 Census

Northern Ontario is an ethnically and linguistically diverse region with large Aboriginal, Francophone and Anglophone Canadian representation. The region brings together the diverse background of the Canadian population in a landscape that is stereotypically 'Canadian'; the Canadian Shield and the inspirational landscape of the Group of Seven (Ministry of Northern Development and Mines, 2012; Boyd & Butler, 1999). Northern Ontario has 106 of the 134 First Nations groups of Ontario (98,000 people; 40 percent of the total Aboriginal population of Ontario). The Aboriginal population accounts for thirteen percent of the population of northern Ontario. The Francophone population accounts for a little more, with 139,000 living in northern Ontario, accounting for eighteen percent of the population (Ministry of Northern Development and Mines, 2012). The population of this region is employed predominantly in the health care and social assistance sector, and trade sector, with a strong mining presence (Ministry of Northern Development and Mines, 2012).

Health care and trade sectors account for the largest portion of employment in northern Ontario, providing sixteen percent and fifteen percent of employment respectively. The breakdown of employment in northern Ontario, and the comparison to Ontario as a whole for 2011, is provided in Figure 3. Employment fluctuations are much greater and more frequent in northern Ontario than in Ontario as a whole (Ministry of Northern Development and Mines, 2012). Northern Ontario has a

stronger reliance on primary resource extraction than its southern counterpart. The primary resource sectors, including mining, are much higher in northern Ontario and account for six percent of the total employment. This is much higher than the provincial total of a half percent.

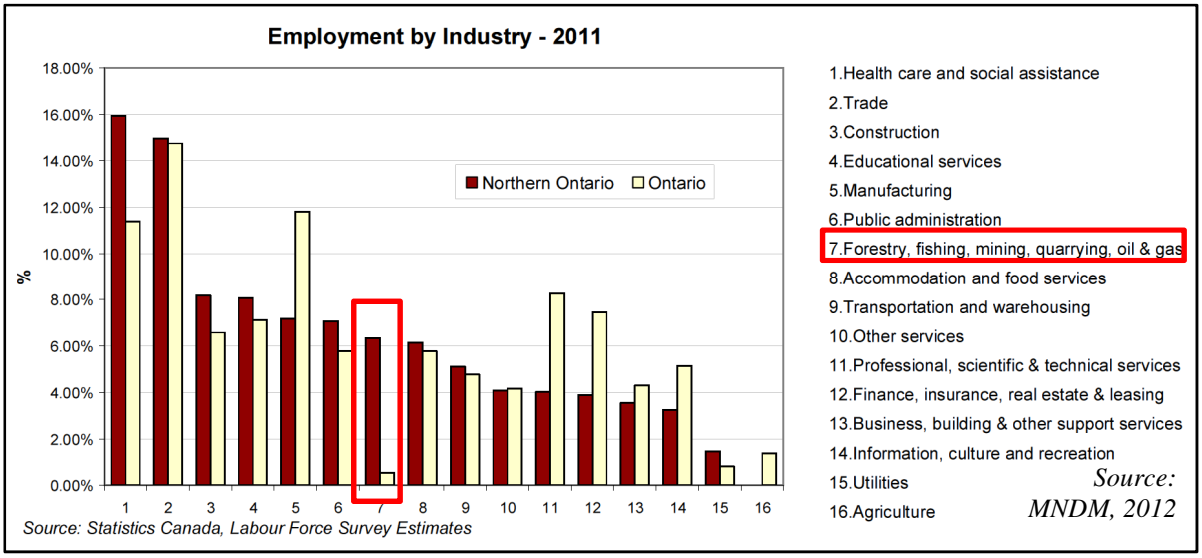


Figure 3: Employment in Northern Ontario and the Comparisons to Ontario

Northern Ontario mines are predominantly metal ore mines, with industrial and construction material quarries[4] being less common due to the distances from urban centers and available rock types (Bridge, 2004; Mitchell & Mackasey, 1997). In 1866, the first gold mine opened and in 1868 the first silver mine began operations (Udd, 2000; Smith, 1986). Over the next century and a half, methods, technology and regulations for mining evolved, although there are limited changes in the public perception of mining with many of the new, cleaner technologies going unnoticed (Bridge, 2004; McAllister, 2008).

AMIS has been cataloguing abandoned and closed mining operations for three decades, and has created a Google Earth inventory offered through the Ontario Geographical Survey (Figure 4). Mining operations in Ontario tend to cluster at historical sites where there is a population to draw labour from and the option to use existing infrastructure (Keyes, 1992). Figure 5 illustrates the active mining operations of Ontario. Five quarries for industrial and construction material are located in the

[4] Quarries are differentiated from mines due to two main features: 1) a larger quantity of the material is removed for processing resulting in a significantly lower volume of waste rock than in a mining operation; and 2) the rock being quarried tends to be less damaging to the environment because of the chemical makeup compared to the sulphide rock bodies generally mined in metal mines (Bridge, 2004).

eastern area of northern Ontario, and one diamond mine in Attawapiskat, highlighted with a diamond. The remaining sites are metal or ‘hard rock’ mines.

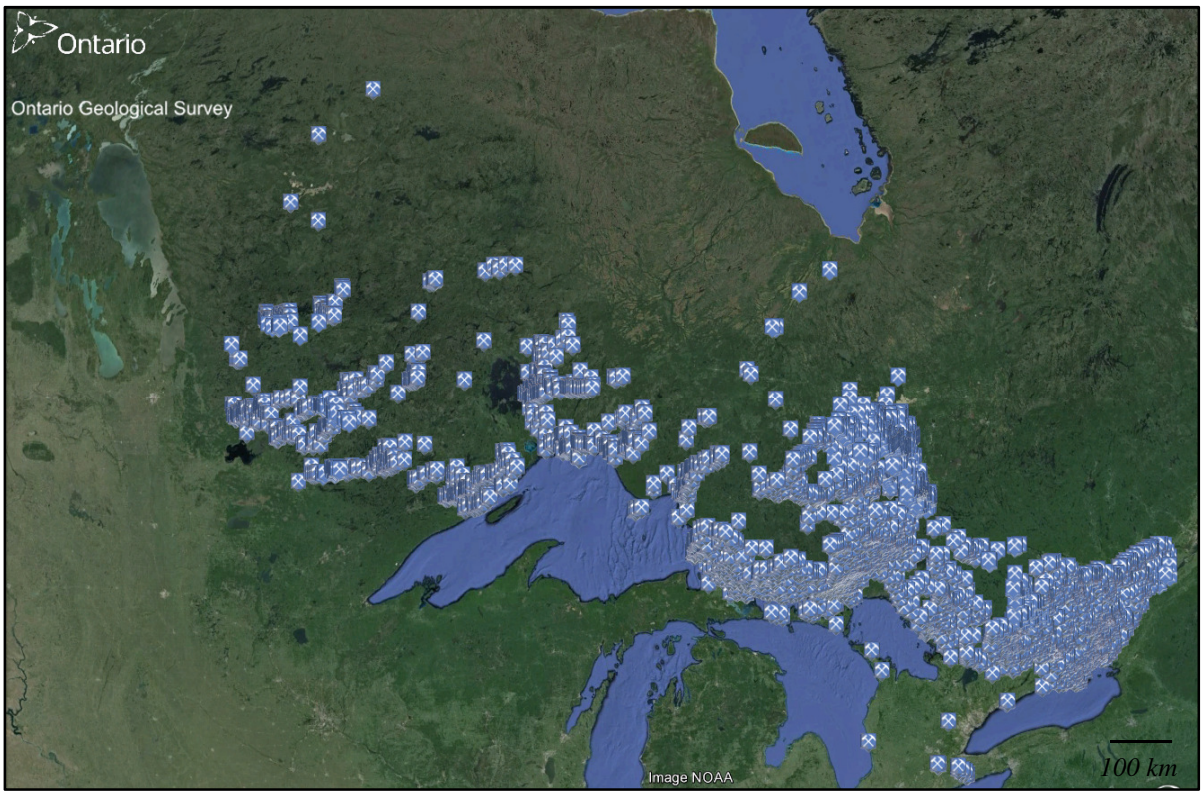


Figure 4: AMIS Feature Locations (Ontario Geological Survey Google Earth layer)

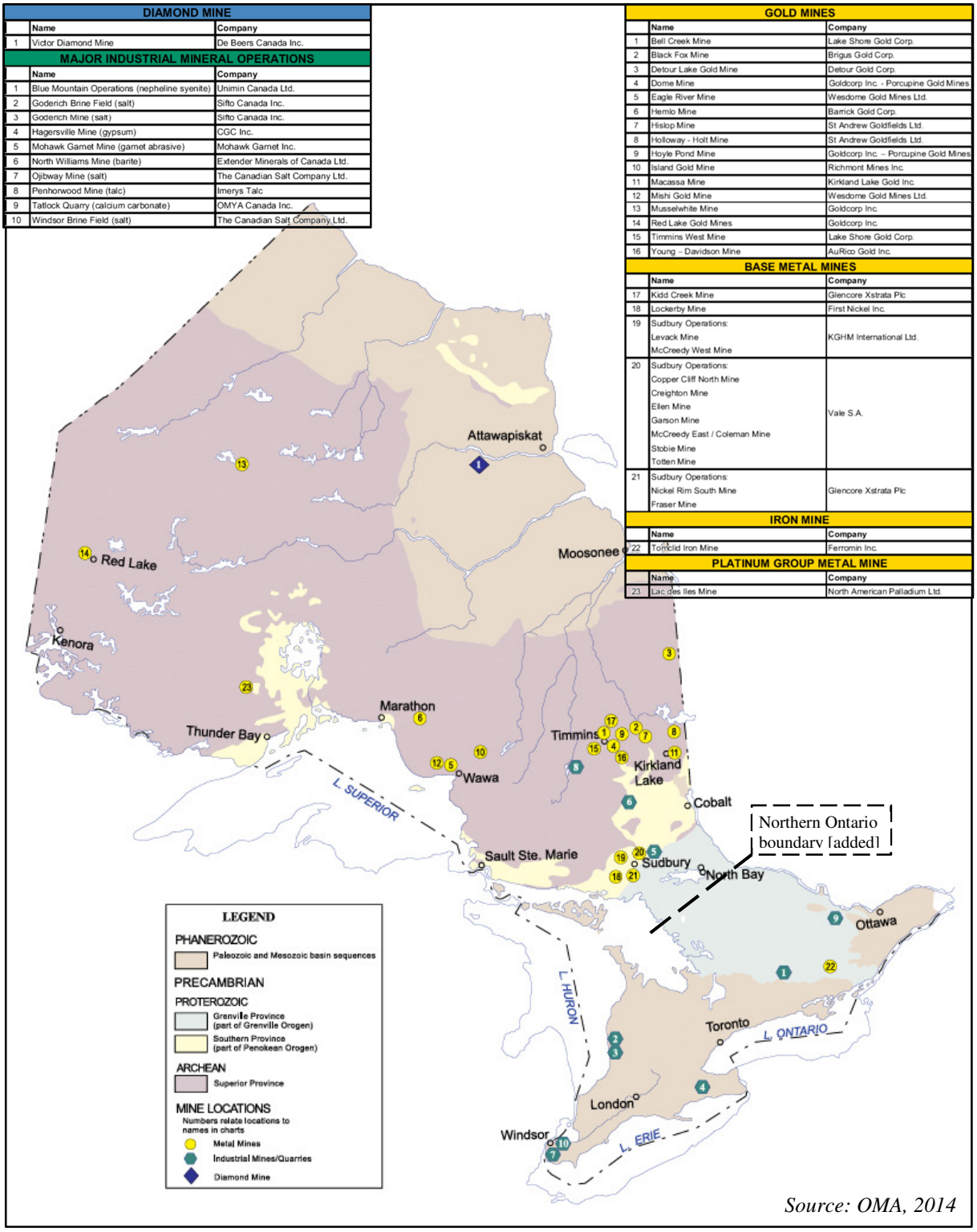


Figure 5: Active Mining Operations in Ontario

Fly-in and fly-out mining operations (also known as long-distance commute, or LDC operations) add to mine sector employment. These operations must source employees from existing communities because there is no established local population to draw from. A few places act as pickup points for employees, which can influence community statistics. These communities may be the resident home for such employees, but many may travel to the pickup point from a nearby centre. These operations include Detour Lake Gold Mine, Goldcorp's Musselwhite Mine and DeBeer's Victor Diamond Mine. Pick-up points include, but are not limited to, Pickle Lake, Thunder Bay, and Attawapiskat.

Northern Ontario has had a long history of resource-extraction and resource-based activity. This is coupled with large distances between settlements, a perceived wilderness setting, and rich landscapes. These factors result in northern Ontario often being thought of as a peripheral or 'frontier' area (Ministry of Northern Development and Mines, 2012; Boyd & Butler, 1999). Recently, efforts have been made to promote tourism in the region, especially NRBTR, which capitalizes on the natural attributes of the region (Ontario Ministry of Energy and Infrastructures & Ministry of Northern Development, Mines and Forestry, 2009; Bennett & Lemelin, 2010; Johnston & Payne, 2005). The *Proposed Growth Plan for Northern Ontario* highlights attempts to promote collaborations between industries to support development (Ontario Ministry of Energy and Infrastructures & Ministry of Northern Development, 2009). The shifting priorities of the Canadian government, in conjunction with community interest in reducing dependency on resource extraction make tourism an attractive and viable option for diversification (Boyd & Butler, 1999; Johnston & Payne, 2005).

The physical attributes of the region make this area ideal for economic development through resource- and nature-based tourism and recreation (Boyd & Butler, 1999; Johnston & Payne, 2005). Tourism has been growing steadily in northern Ontario and a limited number of development and tourism policies have been produced by the Government of Canada and the Provincial Government of Ontario that consider development needs, guide efforts, and integrate tourism and recreation into the larger economic, social and environmental landscape of northern Ontario (Bennett & Lemelin, 2010). The first document is the *Management Guidelines for Forestry and Resource-Based Tourism* produced in 1987 by the Ontario Ministry on Natural Resources (Bennett & Lemelin, 2010; Ontario Ministry of Natural Resources, 2001). In 1997, the *Resource-Based Tourism Policy* was released by the Government of Ontario (Bennett & Lemelin, 2010; Government of Ontario, 1997). These have helped guide the management of the natural resources in northern Ontario (Bennett & Lemelin, 2010). The 2005 *Places to Grow Act* (Government of Ontario), 2009 *Discovering Ontario* (The

Ontario Tourism Competitiveness Study) and the 2011 *Proposed Growth Plan for Northern Ontario* (Ontario Ministry of Energy and Infrastructure & Ontario Ministry of Northern Development, Mines and Forestry, 2011) help to further guide development in northern Ontario, including social and environmentally sustainable considerations (Bennett & Lemelin, 2010). Table 2 lists key government documents for development and tourism in northern Ontario. These documents highlight that the Ontario government is aware of tourism's potential in northern Ontario, and the need for guidance and support for long-term success.

Table 2: Key Development and Tourism Government Documents for Northern Ontario

Title	Year	Ministry
Management Guidelines for Forestry and Resource Based Tourism	1987/ 2001	Ontario Ministry of Natural Resources
Resource-Based Tourism Policy	1997	Government of Ontario
Places to Grow Act	2005	Ontario Ministry of Infrastructure
Discovering Ontario: A Report on the Future of Tourism	2009	Ontario Tourism Competitiveness Study
Proposed Growth Plan for Northern Ontario	2011	Ontario Ministry of Energy & Infrastructure/Ministry of Northern Development, Mines & Forestry

Northern Ontario was thus selected because of its historical ties to the mining industry (McAllister, 2008; Mitchell & Mackasey, 1997; Smith, 1986) and the recent efforts to transition to tourism and recreation (Boyd & Butler, 1999). A number of communities in northern Ontario were created by the mining industry and continue to be wholly or partly dependent on it. Furthermore, the province of Ontario also has the Abandoned Mines Inventory System (AMIS) and has been a Canadian leader in locating, cataloguing and assessing abandoned and closed mines, making Ontario well-suited for this study (MacKasey, 2000; Mitchell & Mackasey, 1997). Finally, there has been recent interest in NRBTR in northern Ontario (Bennett & Lemelin, 2010; Boyd & Butler, 1999; Johnston & Payne, 2005) and a number of mine sites are being reused for NRBTR. These factors, combined, provide justification for studying the shift from resource-based communities to diversified, alternative futures in northern Ontario and the role the reuse of a mine site can play.

1.4 Thesis Structure and the Following Chapters

This thesis is divided into six distinct chapters, including this introductory chapter. Following this is the literature review (Chapter 2), which synthesises relevant academic work from a variety of sources, studies and authors. The study methodology and rationale for data collection and analysis are outlined in Chapter 3. Results of the data analysis of the proposed model and minetown inventory are presented and discussed in Chapter 4. The reuse of mine sites and the findings of the two case studies are presented and discussed in Chapter 5. Chapter 6 provides a summary of the paper, assesses its academic and applied implications, including avenues for future research and general recommendations. The appendices provide additional information on academic literature, the secondary data collected, and interview conducted, and are cited where relevant.

Chapter 2
Literature Review

2.1 Introduction

The objective of this literature review is to provide the relevant foundational information about mining communities and tourism in Canada. This literature review is guided by the question: '*How can mine-site NRBTR be incorporated as a diversification strategy in northern mining communities?'* With this in mind, the literature review begins with an introductory overview of Canadian resource community lifecycle theory. The models stress the need for diversification, and within this, the role of tourism is highlighted as a rural strategy. This lays the groundwork for an examination of the role of tourism in resource-based communities, and specifically nature- and resource-based tourism and recreation (NRBTR). An opportunity exists to use mined land for NRBTR within a larger tourism and recreation offering. The process of mine site reuse is examined to support the transition to a diversified future, including the role of stakeholders and the inclusion of mining heritage in the attraction. Following this review, the literature is summarized, gaps are identified, and the present study's role in the advancement of the academic literature is articulated.

2.2 Resource Dependent Communities in Canada

Canada's long history of resource extraction has led to 'resource communities': permanent towns and settlements reliant on resource extraction that were often created by a resource company (Lucas, 1971; Bradbury, 1984; Halseth, 1999; Bruce, Ryser, & Halseth, 2005). Halseth and Sullivan (2002) note that resource towns are unique because they are created quickly without any pre-existing foundation. A number of attempts have been made to understand the lifecycle of these communities by focusing on different indicators, such as population (Bone, 1998), migration (Lucas, 1971; Bradbury, 1984; Halseth, 2005) and economic stability (Bruce, Ryser, & Halseth, 2005). All models present a similar outcome: mine closure that leads to community decline and eventual abandonment (Bruce, Ryser, & Halseth, 2005; Halseth & Sullivan, 2002; Johnston & Lorch, 1996). These models tend to be more descriptive than predictive, and make the need for alternative future planning for long-term community prosperity clear.

2.2.1 Resource-Dependent/Staples Community Research and Models

Canada's economy was founded on the extraction of primary resources including fur, timber and minerals, and a number of scholars have studied Canadian communities that were created for the extraction of these resources. Since the early work of Harold Innis in the 1930s, a number of different models and theories[5] focusing on a variety of aspects and indicators have been developed. This section examines a number of these models, with special attention given to the community life-cycle model developed by Lucas and expanded on by Bradbury (1984) and Halseth (1999), and the alternative futures that are proposed in the model.

Harold Innis's staple theory, describing fur trading in Canada, was developed in the 1930s and is considered by many to be the beginning of Canadian-based theories[6] about resource-dependent community development (Hayter & Barnes, 2001; Randall & Ironside, 1996; Wellstead, 2008). Before this, academic study was focused on core countries (such as the U.K. and France) with little attention given to peripheral regions (such as Canada) from which resources were sourced (Hayter & Barnes, 2001). Recognizing this gap, Innis initiated the academic discussion and study of staples theory and resource towns in Canada, and other peripheral countries of the time. He emphasized that diversification in peripheral countries and areas is not automatic and is the consequence of institutional, technological and other forces working towards development (Hayter & Barnes, 2001).

Ira Robinson provided the next major academic review of settlements based on resource exploitive industries located north of the major population belt along the Canada-United States border (Robinson, 1962; Randall & Ironside, 1996). His book "New Industrial Towns on Canada's Resource Frontier" mainly focused on town planning, although he did address other aspects of new resource towns, including their social structure and economic base (Robinson, 1962). Robinson highlighted that these towns were created by industrial entrepreneurs as a 'necessary evil' to provide a settlement for the workforce. As such, the company was not only the major employer, but was also often the sole employer and provider of amenities, services as well as owning the majority of the land and buildings in the town. At the time of writing his book, Robinson found that two-thirds of the

[5] An excellent review of the earlier work on Canadian staples theory is found in the first seven pages of the Randall & Ironside article (1996) which focuses on the 'classic works' of resource-dependent communities in Canada. The article covers the major and transformative works from Innis in the 1930s to Bradbury's work in the 1980s.

[6] It is important to highlight that academic literature continues to recognize the differences between countries such as Canada and Australia from European countries due to the geographical isolation of rural communities (Liljenäs, 1992).

resource communities in Canada were company towns of this sort (Robinson, 1962). A major identifier of these towns was the 'boom call,' which attracted a larger number of people to the town who left once the need for labour was gone. Robinson also noted the higher number of male workers and the low levels of job opportunities for women (Robinson, 1962).

Soon after Robinson's work appeared, Rex Lucas published his book "Minetown, Milltown, Railtown" (1971). This is considered to be the cornerstone of academic study on the life cycle of Canada's single industry, resource dependent towns (Bruce, Ryser, & Halseth, 2005; Halseth & Sullivan, 2002; Johnston & Lorch, 1996). The Lucas model of community development outlines four stages, presented in Table 3. In the first stage, resources are located, and a company *constructs* operations, including setting up lodging for workers. Once operations are started, the company then *recruits* skilled workers, often with their young families. As the workforce stabilizes in stage three, the management of the town *transitions* to the community, as workers begin to purchase homes instead of renting. Finally, the community reaches *maturity* and the youth population begins to migrate to other community centers due to a lack of job mobility and post-secondary educational opportunities (Lucas, 1971). A major aspect of the model is the transfer of management from the company to the community followed by the maturity stage, which highlights the lack of job mobility within the community. This model has acted as the foundation of Canadian resource community study, but it does not examine possible futures for the community or some of the challenges that they face (Bruce, Ryser, & Halseth, 2005). Recognizing this, the model was further developed by Bradbury who incorporated the closure of the company into the original framework (Bradbury, 1984; Bruce, Ryser, & Halseth, 2005).

Table 3: Lucas Model of Community Development

Town Management	Stage	Demographic/Characteristics
Company	Construction	High population turnover, mostly young men
	Recruitment	Young family-oriented population, strong ethnic mix
Community	Transition	Stable workforce
	Maturity	Lack of job mobility, youth out-migration

Source: Lucas, 1971; Bruce, Ryser, & Halseth, 2005; Halseth & Sullivan, 2002

Bradbury expanded the Lucas life cycle model in 1984 with the addition of the winding down and closure stages. This addressed the issue with Lucas's life cycle model that not all resource communities stabilize, especially those extracting non-renewable resources, such as minerals, which have a finite lifespan (Halseth & Sullivan, 2002). This extension of the model is important because

mining is a non-renewable resource extraction process that often leads to the decline of the community, post-extraction (Bridge, 2004). Generally, the company is the primary employer and closure of the resource operation results in very limited employment options, especially in mining towns, due to the isolated nature of these communities. This loss of employment leads to a large in-migration of temporary workers to close operations and remove structures (Bradbury, 1984). Table 4 outlines the Lucas/Bradbury model with Bradbury's additions in italics. Figure 6 is a graphic representation of the Lucas/Bradbury model for community migration; the dotted line represents the addition by Bradbury to the Lucas model.

Table 4: Bradbury Model of Community Development

Town Management	Stage	Demographic/Characteristics
Company	Construction	High population turnover, mostly young men
	Recruitment	Young family oriented population, strong ethnic mix
Community	Transition	Stable workforce
	Maturity	Lack of job mobility, youth out-migration
Company (caretaker)	*Winding down*	*Job losses*
	Closure	*Out-migration*

Source: Bradbury, 1984; Bruce, Ryser, & Halseth, 2005; Halseth & Sullivan, 2002

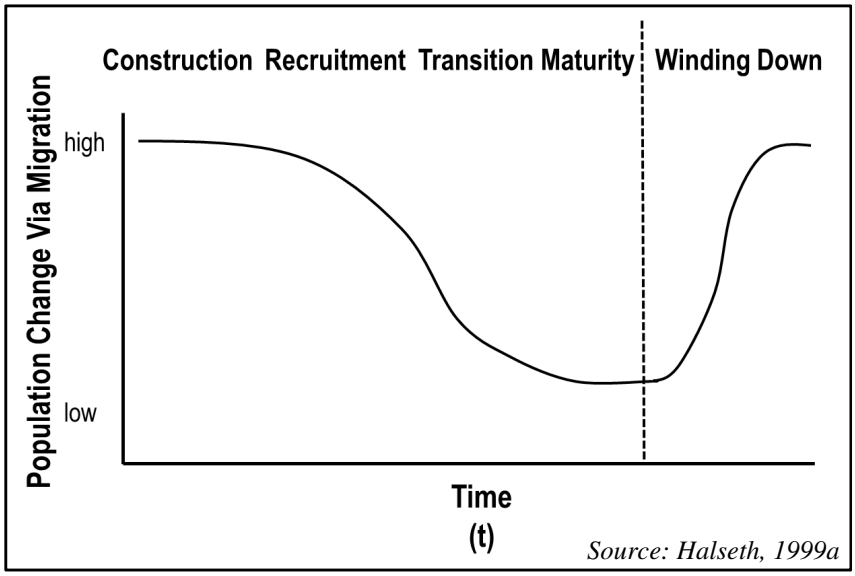


Figure 6: Bradbury's Extension of the Lucas Model

Communities in decline may also experience a number of other challenges, which are often in part associated with the closure of the major employer and reduction of community appeal to outsider

investment and potential migrants (Bradbury, 1984; Bruce, Ryser, & Halseth, 2005). At any stage, development of the community can stop with the temporary or permanent closure of the company operation, adding uncertainty to the lifecycle (Bruce, Ryser, & Halseth, 2005; Johnston & Lorch, 1996; Paget & Rabnett, 1983). Critical to the ongoing success of the community, especially with unplanned or sudden company closure, is pre-emptive planning and diversified industries (Johnston & Lorch, 1996; Mayer & Greenberg, 2001). This was included in the Halseth extension of the Lucas/Bradbury model, which includes the possibility of alternative futures in resource towns (Halseth, 1999a).

Halseth (1999a) identifies that resource communities have different future options, including winding down, as outlined by Bradbury, but also restructuring and stabilizing (Figure 7)[7]. This work drew heavily on Randall and Ironside's 1996 paper, most notably their descriptions of local economic development in Canadian resource communities. Halseth and Sullivan (2002) later proposed that economic transition and sustainable community development (including tourism) was a viable option for community diversification. Table 5 outlines the Halseth (1999a) and Halseth and Sullivan (2002) models with the additions to the Lucas/Bradbury model in italics. There has not been a subsequent published testing or expansion of the model since Halseth and Sullivan's work.

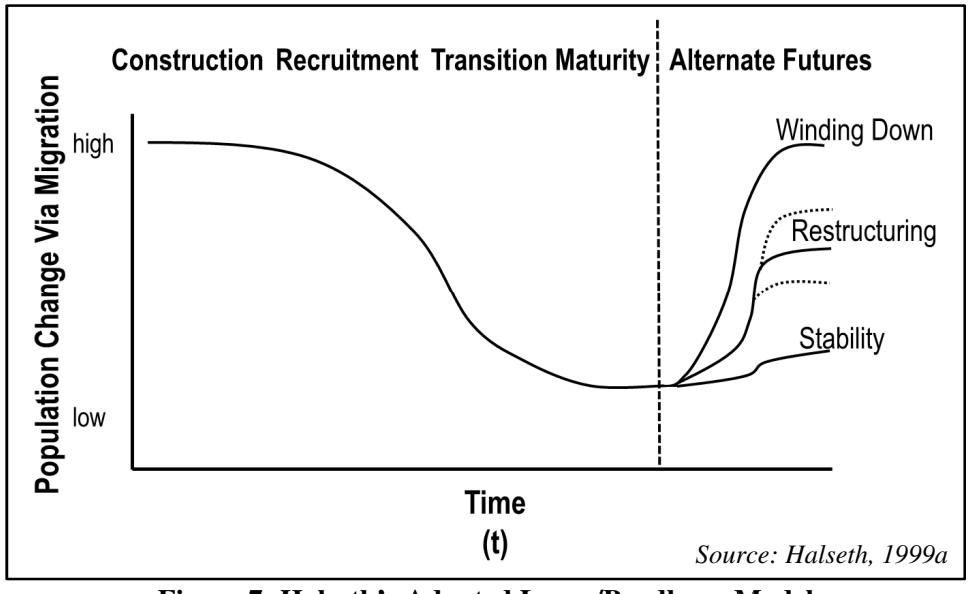


Figure 7: Halseth's Adapted Lucas/Bradbury Model

[7] In Halseth's (1999a) paper, he also cautions about revisions to the Lucas and Bradbury model of resource community development due to the inflexibility to accommodate communities with a different history or which are more economically diverse. He also suggested the need for more testing.

Table 5: Halseth Model of Community Development

Town Management	Stage	Demographic/Characteristics
Company	Construction	High population turnover, mostly young men
	Recruitment	Young family oriented population, strong ethnic mix
Community	Transition	Stable workforce
	Maturity	Lack of job mobility, youth out-migration
Company (caretaker)	Winding down	Job losses
	Closure	Out-migration
Community	*Alternative futures (alternative to closure and winding-down):* • *Restructuring* • *Stability*	*Economic transition with the goal of sustainable community development resulting in population growth (restructuring) or stability (stability)*

Source: Halseth, 1999a, & Halseth & Sullivan, 2002

A similar five-stage model was developed by Robert Bone (1998). This model built indirectly on the life cycle work of Lucas/Bradbury and outlines the five stages of resource town progression (Table 6). The model describes the settlement of an uninhabited site and progression through the rise and fall of the population, ending with the closure of the resource operation and abandonment of the town (Bone, 1998). This work was conducted independently of Halseth's. The model focuses on a settled population, in contrast to the mobile population that is incorporated in the Lucas/Bradbury/Halseth model and the most basic form of the Bone model assumes community abandonment.

Table 6: Bone Population Life-cycle Model of Resource Towns

Phase	Population Characteristics	Associated Events
1	Uninhabited site	Company announces plans to build a resource town
2	Sharp increase in population size	With the completion of the construction of a company town, workers and their families arrive
3	Population size stable	Resource production reaches its peak and the demand for additional workers ceases
4	Sharp decrease in population size	Company decides to close its operations: workers and their families depart
5	Population size returns to zero	Company closes its mine and the town is uninhabited

Source: Bone, 1998

Bone also identified four categories of resource towns. These are boom-bust towns, towns of uncertainty, diversified towns and sustainable towns. The different resource towns are outlined in Table 7. These categories are useful for drawing comparisons, but it is important to note that only boom-bust towns have predictable population patterns that follow Bone's lifecycle model (Bone, 1998). These categories single out mining towns as being the most prone to the boom-bust cycle and with the greatest need for diversification. These categories are not meant to contradict the Bone model, but, rather, act as an extension and recognize the diversity of resource towns in Canada.

Table 7: Ability of Towns to Sustain the Life Cycle Through Revitalization/Diversification

Category	Characteristics
Boom-bust towns	• Single industry mining towns • Completed population life cycle • Remote location • Limited access to the outside • Competing with regional centers
Towns of uncertainty	• Single industry mining towns • Early phase of population life cycle • Opportunity exists to diversify economic base
Diversified towns	• Diversify economic base (e.g. from mining to service center)
Sustainable towns	• Based on production of renewable resources (such as forestry) • Ability to avoid short life cycle of mining towns

Source: Bone, 1998, & Bruce, Ryser, & Halseth, 2005

Building on these, and other models (including the seminal Butler model of destination lifecycle), Bruce, Ryser, and Halseth (2005) suggested new categories for the economic life cycles of rural resource-based communities. This life-cycle includes five stages similar to those in the Lucas/Bradbury/Halseth model; start-up, growth, plateau, decline and alternative future. Details about each stage are presented in Table 8, and Table 9 outlines the different alternative futures possible.

Table 8: Bruce, Ryser and Halseth's Categories of Economic Activity

Category	Description
Start-up	New community begins or community enters a significantly different industry
Growth	Expansion of physical boundaries and growth of population
Plateau	Relatively stable economic activity
Decline	Decline in the level of activity of industry which prompted the start-up
Alterative Futures (Table 9)	After a period of stability the community changes in one of five ways: through the transformation of a new industry (including growth, stability and decline), a change in stability level of the original industry, or a decommissioning or closure of the community

Source: adapted from Bruce, Ryser & Halseth, 2005

Table 9: Bruce, Ryser and Halseth's Categories of Alternative Futures

Category	Description
Growth	Aggressive economic transformation returns community to growth category by transferring to other activities
Stability	Economic activity is transformed but remains at similar level as before
Decline	Transformation to a different economic activity fail and decline continues
Reduced Plateau	Reduced plateau level in same primary activity
Decommission or Closure	The decision is made to close the community after a period of decline

Source: adapted from Bruce, Ryser & Halseth, 2005

All three models assume a community starting point of a zero population. This is accurate for company and planned towns built for the purposes of resource extraction. It is not representative of a pre-existing settlement that became a single-industry community through intensified resource development, or communities that provide a satellite base of operations in other locations. This assumption that all resource towns are *'similar historical objects'* is a major point of concern raised by Wallace against the validity of lifecycle models (1992, p. 10). Wallace acknowledges the necessity of categorizing such towns; however, he argues that they should not be thought of as frontier towns, but as the normal, complex communities they are (1992). The models also assume that the typical progression of a community is abandonment, post-resource extraction, with restructuring and diversification as less common alternative futures. This model of community

extinction is no longer typical of a Canadian resource community, and though it is the reality for some communities, it is no longer the typical lifecycle[8] (Wallace, 1992).

All the Canadian lifecycle models for resource communities include the reality that communities may decline and be abandoned once major resource operations cease. Company towns are no longer encouraged by the Canadian government, and instant resource towns are a thing of the past (Robinson, 1962; Wallace, 1992). Mining operations now source employment from nearby existing communities or have moved to 'fly-in, fly-out' commuting schemes where workers are flown in for multi-week shifts (Bruce, Ryser, & Halseth, 2005; Bridge, 2004; McAllister, 2008; Bone, 1994). Rural mines draw from surrounding communities and are often in mining areas with an existing population base within relatively close proximity. This eliminates the need for new resource towns, but it does not address the issues being faced by single-industry mining communities that are facing the closure of the mine (the major employer) or decline due to a closure that has already occurred. Without diversification, the closure of the mine may have many serious and lasting negative effects on a community and region.

2.2.2 Effects of Closure on Mining Communities

Resource rich rural areas often have been viewed simply as places for the extraction of economically valuable resources and, as such, are left to decline, once extraction ends and the area is no longer a priority (Markey, Halseth, & Manson, 2008a). Few of the economic gains from resource extraction operations are re-invested locally, creating numerous development challenges (Markey, Halseth, & Manson, 2006). Reduced interest by governments to promote economic diversification, or to support infrastructure, further limits the development options for resource towns (Markey, Halseth, & Manson, 2008; Ryser & Halseth, 2010). All this leaves resource towns very susceptible to decline and closure, when operations are no longer profitable and production is shut down[9]. This is especially true for mining communities that face shortened lifespans and expected closures due to the exhaustive nature of the industry (Bridge, 2004; Johnston & Lorch, 1996; Randall & Ironside, 1996; Keyes, 1992).

[8] Wallace (1992) gives special attention to northern Ontario minetowns to illustrate the shortcomings of the models.

[9] Operations that are not economically viable due to market changes but still have reserves may also be suspended, and may resume operation once commodity values are higher, or close if the market is unlikely to shift in favour of the operation.

Mining communities face a variety of development challenges. Many are small and in geographically remote regions, with problems of environmental contamination and the associated stigma (Johnston & Lorch, 1996; Keyes, 1992; McAllister, 2008). Although closure is the natural (and only) outcome of the mining process, it is rarely straight-forward or anticipated (Keyes, 1992; Mayer & Greenberg, 2001). Uncertainty in the longevity of operations due to market fluctuations and commodity value is a constant in the life of a mining community, and operation closure, whether planned or sudden, can create a sense of local despair (Mayer & Greenberg, 2001; McAllister, 2008). Northeastern Ontario has some of the oldest mines in Canada, but most mines generally have life spans of five to ten years and closure planning should be considered in advance, not just by mine officials, but by community members as well (Bruce, Ryser, & Halseth, 2005; Carlson, Koepke, & Hanson, 2011; Johnston & Lorch, 1996; Keyes, 1992; Mayer & Greenberg, 2001). Mining companies are now regulated to have environmental closure plans and the funds necessary to implement the plan; communities must be equally proactive in socio-economic planning for mine closure.

Pro-active planning by the community is necessary to mitigate the effects of mine closure since the task is significantly more difficult once closure has taken place. Millikarjun Rao and Pathak (2005) identified a number of stresses common to mine closure and the linkages between these factors. These are presented in Figure 8, which illustrates the widespread effects of mine closure on a community and the compounding nature of many of the effects. Of special note is the loss and reduction of employment and wages, which leads to out-migration and a reduced standard of living (McAllister, 2008; Millikarjun Rao & Pathak, 2005). Closures increase anxiety for individuals, families and the community as a whole due to the widespread reduction in services, employment opportunities and standard of living that are associated with mine closure. The degree of company management of services can cause ripple effects, resulting in the loss or reduction of different services, compounded by the reduced tax base (Johnston & Lorch, 1996; Millikarjun Rao & Pathak, 2005). The cost of infrastructure previously maintained in whole or in part by the mine falls to the community and without a new economic base, a community may be unable to support the cost (Carlson, Koepke, & Hanson, 2011; Keyes, 1992). In a worst case scenario, the closure of the mine can lead to the creation of a ghost town (Johnston & Lorch, 1996; Keyes, 1992).

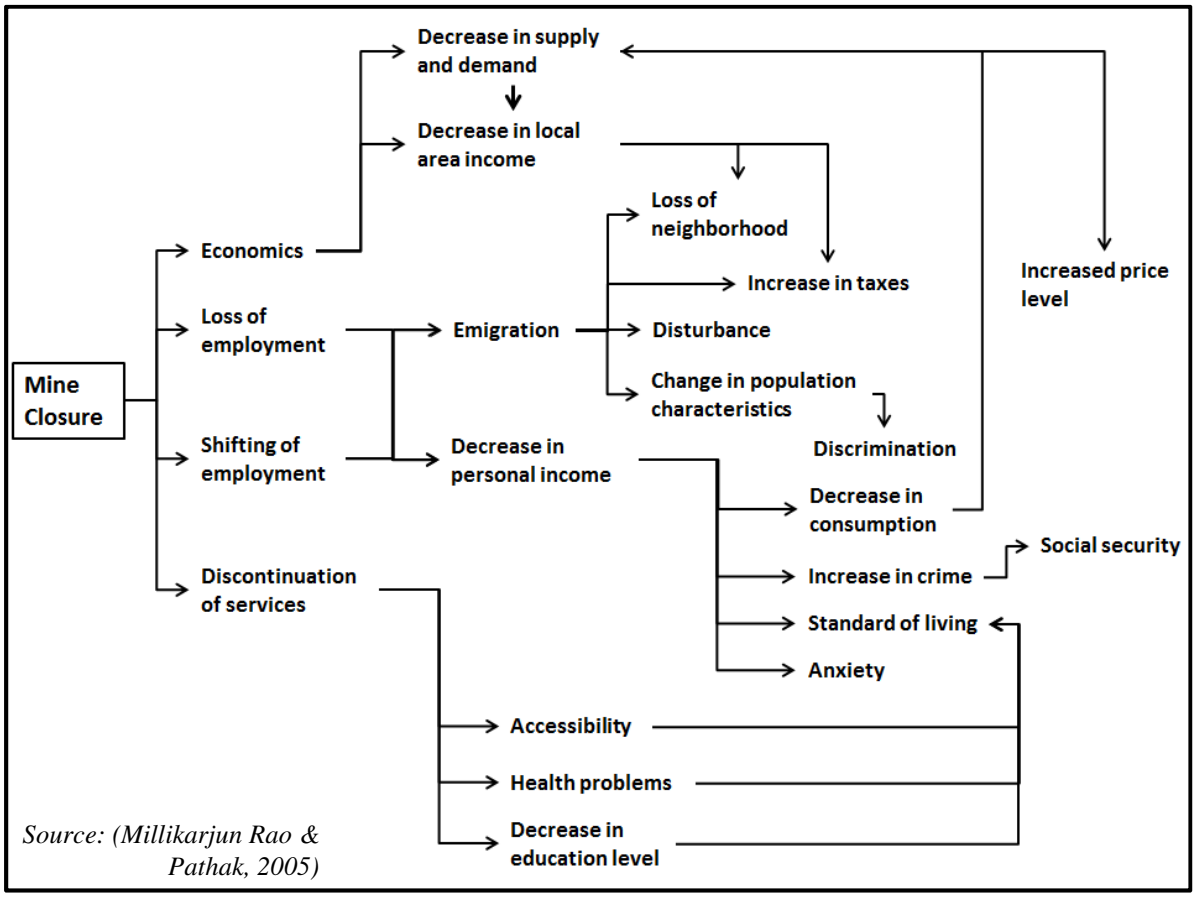


Figure 8: Socio-economic Impacts of Mine Closure

Decline or demise of a mine dependent community has often been assumed to be a relatively inevitable step in the lifecycle models of resource communities, especially those extracting non-renewable mineral resources. Models such as those by Bradbury (1984b) and Bone (1998) provide no alternative to decline, and those that include an alternative future and restructuring option, such as the Halseth's (1999a) model, still include community decline as a very real potential outcome. This decline is often compounded by a delayed response to mitigate negative effects such as job loss, economic downturn and population out-migration (Mayer & Greenberg, 2001). A time lag in the repercussions of events can be months or years, and cause a false sense of security in the community due to delayed decline and short term economic gains of mine closure. This highlights the need for proactive diversification efforts while the mining operation is operational and before a major event triggers an economic downturn (Bruce, Ryser, & Halseth, 2005; Mayer & Greenberg, 2001).

The diversification of resource-reliant communities is a large and diverse field of study. This Canadian-centric research has revealed diverse community histories and resource development paths.

It is demonstrated that diversification can come through seeking other resource industries, moving to a service or government focus, increasing industrial presence and opportunity, and moving to a tourism focus (Bruce, Ryser, & Halseth, 2005; Halseth & Sullivan, 2002). A mix of industries is ideal, to prevent dependency on a different sector, which may face challenges in the future (Cassel & Pashkevich, 2011). In the worst cases, communities decline and are eventually abandoned, with homeowners and business owners being forced to walk away from their property (Millikarjun Rao & Pathak, 2005). In other cases, particularly in rural Canada, this scenario is avoided when tourism is included as a component of a community's diversification strategy (Johnston & Payne, 2005).

2.2.3 Summary

A number of academic studies have examined the realities of Canadian resource towns and tend to follow a 'dust to dust' model that assumes a community is created by a company for resource extraction and will be abandoned when the operation closes. This was the reality of company towns, but in more recent decades company towns have transitioned to communities independent of the resource company. These communities have made efforts to find new economic activities to support local residents. Highlighted time and time again is the continuing need for economic diversification in resource communities to reduce the impact of a reduction in resource-based employment. Different diversification outcomes are presented as alternative futures in the lifecycle models and the underlying assumption is that diversification will not begin until resource operations reduce production or close. This puts the community at a disadvantage, which leads to a number of negative socio-economic outcomes, including population loss and the loss of services. The modes of diversification, which include tourism to reduce the likelihood of such outcomes, are examined in the next section.

2.3 Resource Community Diversification through Tourism

Just as Canadian resource town development is unique, so too is the process by which communities transition to include a tourism industry. Resource-reliant communities need to generate a diversified economic base to avoid decline after the closure or reduction of the major industry (Chon & Evans, 1989; McAllister, 2008; Petrzelka, Krannich, & Brehm, 2009; Reid, Taylor, & Mair, 2000 along with many others). Tourism, especially resource- and nature-based tourism and recreation

(NRBTR), is one option that is becoming a mainstay of the rural economy (Butler, 1998). NRBTR has been highlighted as a key component for rural Canadian towns that are rich with marketable natural assets (Boyd & Butler, 1999). A well-developed rural tourism industry can stimulate local businesses, create employment opportunities, and be recognized as a factor of regional social and economic development. It can, thereby, become a means to develop local infrastructure, facilities and services for use by tourists and locals (Butler, Hall, & Jenkins, 1998).

Much of the work on tourism development in Canadian resource-based communities focuses on industrial heritage tourism and nature-based attractions (Bennett & Lemelin, 2010; Boyd & Butler, 1999; Koster & Lemelin, 2009). These works identify many factors, such as community interest, marketable attributes and a willingness to change, that affect the success of diversification and the creation or expansion of a tourism and recreation industry in a rural setting. The different levels of stakeholders and decision-makers are also identified, and it is often concluded that the best chance of success is when all levels communicate clearly and work together to create a strategic plan that is feasible and tailored to the community (Markey, Halseth, & Manson, 2006). These levels include individuals, entrepreneurs and local businesses that act at the local level; regional cooperation or competition between adjacent communities; and the state level (provincial and federal) that can be pivotal for funding and legislation.

Parallels have been drawn between the resource industry and the tourism industry. Similar to the boom and bust cycles of mining, tourism is also prone to highs and lows. The Perdue, Long, and Kang (1999) model of tourism; "boomtown" tourism, not only has a similar name as the "boom-and-bust" mining cycle, but parallels the sudden large development of mines with the sudden large development of mass tourism (Davis & Morais, 2004; Perdue, Long, & Kang, 1999). The more widely used Butler model (1980) of mass tourism development indicates a slow beginning with a steep building of tourism to the threshold where communities face a variety of alternative futures. These futures include decline, stagnation and rejuvenation (Butler, 1980), not unlike the stages of maturity, winding down and diversification of resource based communities of the Lucas/Bradbury/Halseth model.

Schmallegger & Carson (2012) examined tourism through a staples-theory lens and made a strong argument for the similarities, especially the reliance on time, market and place resources with the ability to be exhausted, particularly in rural and remote areas. Rural areas often capitalize on natural assets for tourism, as does resource extraction, and the same factors that make resource development expensive (e.g. physical terrain, short season, labour sourcing) (Bone, 1992) would also

apply to tourism. Markey, Halseth, and Manson (2008) stress that an understanding of the inherited endowments of a place, such as location and available resources, is essential for successful community development planning. This inherited endowment for development is the same for resource extraction as for most tourism initiatives (especially NRBTR): both rely on place-based attributes, and are likely to fail if planned without a proper context of the place and the location's attributes (Schmallegger & Carson, 2012).

Resource communities share many development and diversification challenges, but mining communities face additional difficulties. These difficulties are a result of the high level of environmental damage caused by mineral extraction that requires costly remediation and reclamation, as well as ongoing monitoring after closure. This in turns impacts the efforts to include a tourism industry, especially NRBTR, in economic diversification efforts, due to the aesthetics, and environmental stigma and damage of mining operations.

2.3.1 Tourism Planning in Rural Communities

To be most effective and successful, diversification planning needs to be realistic and implemented before the closure of the mine and the economic downturn of the community; this will limit the lag time between operation closure and the start-up of a new industry (Ballesteros & Ramirez, 2007; Mayer & Greenberg, 2001; McAllister, 2008). Tourism developments (as well as other diversification efforts) in single-industry communities, however, are often reactionary to events or notices by the major employer[10] (Koster & Lemelin, 2009). The pressure from the loss of the major industry, or the future loss, leads to a sense of tension and crisis and need to develop and diversify (Koster & Lemelin, 2009). In the past, communities tended to turn a blind eye to the realities of the loss of the major industry, and 'trust' in the employer to come up with a solution (Edwards & Llurdés i Coit, 1996; Mayer & Greenberg, 2001). This has led to communities having a false sense of security as the full extent of the loss of the employer is not felt during the lag time (Mayer & Greenberg, 2001). This is further exacerbated by the start-up time needed for diversification efforts (Koster & Lemelin, 2009; Mayer & Greenberg, 2001). This lag time increases the risk of sites becoming derelict before alternative uses are developed (Ballesteros & Ramirez, 2007; Mayer & Greenberg, 2001). A proactive, community-based approach is advocated in the more recent planning

[10] This is often true of heritage tourism developments motivated by the realization that the mining operation will not be revived and are a response to the economic crisis this creates (Edwards & Llurdés i Coit, 1996; Mayer & Greenberg, 2001).

and tourism literature. Early planning also allows for a more efficient and cost effective reclamation, which is examined in section 2.4.1.

Efforts to diversify before mine closure can take advantage of the larger tax base to provide funding for development projects (Ryser & Halseth, 2010). It is important that diversification efforts begin while mining operations are still viable and provide an economic footing for the community. This is not always possible, especially in the case of unexpected closures (Johnston & Lorch, 1996; Mayer & Greenberg, 2001). It is also important to provide alternative employment that will encourage core population members (those who are not transient workers) to remain in the community once mining operations end (Johnston & Lorch, 1996). Waiting until after closure reduces the tax base for development funding, which, in turn, reduces the appeal of investors and the rate of skilled worker retention (Mayer & Greenberg, 2001). It can also create a 'double crisis' situation; with one crisis occurring as mining operations end, and a financial crisis taking place as markets are disrupted and jobs are lost (Martinez-Fernandez, 2010). This further creates increased unemployment and declining business activities (Martinez-Fernandez, 2010).

Diversifying after closure can further exacerbate the difficulties that often accompany rural tourism development. The economics of tourism development are complicated, and the limited economics of a rural town and setting increases these difficulties (Colocousis, 2012; Stern & Hall, 2010; Wilson, et al., 2001). Tourism in rural areas is often characterized by seasonal, low paying jobs, entrenched hierarchies, and 'cliquish' politics (Davis & Morais, 2004; Gill, 1999; Koster & Lemelin, 2009; Wanhill, 2000). Early planning and strong local partnership help to limit these effects and transition a single resource community to include tourism.

A number of variables affect the competitiveness and success of a planned tourism development. Markey, Halseth and Manson (2006) identify several of these for tourism competitiveness (Table 10) and rural tourism development (Table 11)[11]. These summary tables illustrate that many factors need to be considered in tourism development planning and that the number of barriers is disproportionately higher than the number of assets for rural tourism development. It is important that communities are aware of these variables and aspects of rural tourism when moving forward in diversification efforts. Many of these are considered below.

[11] *Please note: these lists are not exhaustive and do not include some political and institutional factors.*

Table 10: Quantitative and Qualitative Competitive Variables

Quantitative	Qualitative
• **Infrastructure:** transportation, communication, industrial, power • **Production factors:** productivity, technology • **Location:** proximity to market, resources, growth corridors • **Economic structure:** Diversity, firm size, support services • **Amenities:** cultural facilities, recreation, climate, natural environment	• **Social capital:** trust, collaboration (firm, industry, communications, public bodies), social networks • **Innovation:** networking, learning, human capital development (capacity), tacit knowledge • **Institutions:** coordinating bodies, regional strategy, flexibility, governance stability and consistency

Source: Markey, Halseth, & Manson, 2006

Table 11: Variables of Rural Competiveness

	Quantitative	Qualitative
Asset	• Cheap land • Access to resources • Natural amenities • Increasing access to education	• Strong social networks • Strong commitment to place • High quality of life
Barrier	• Weak economic base • Low population • Declining population • Aging population • Distance from: markets, capital, expertise • Weak communication infrastructure • Declining employment in primary industries	• Low levels of education • 'Thin' organizational and institutional infrastructure

Source: Markey, Halseth, & Manson, 2006

A major factor in the long-term viability of tourism developments is the need for developments to be a part of, and fit in to, the community vision. Furthermore, there is a need to include members of the community in planning exercises, and support collaboration between community members, entrepreneurs and government officials (Carlson, Koepke, & Hanson, 2011; Frey & Spellerberg, 2011; Koster & Lemelin, 2009; Mishra, et al., 2012). Tourism development planning should include both community and tourism-specific goals. This will create an integrated plan that addresses community development, local short-term and long-term needs, while remaining realistic for the community (Mair & Reid, 2007). Furthermore, this allows for tourism developments to not focus solely on economic development, but also to be used to address other needs and issues within the community, such as the need for additional recreation spaces (Mair & Reid, 2007).

For this to happen, the local community needs to be involved in the decision-making process. Community involvement also strengthens community support and acceptance of development opportunities and paths (Markey, Connelly, & Roseland, 2010). The locals that will be affected by the development are encouraged to be involved. Planners then must accept their input to ensure successful and positive development (Schiewenz, 2010; Shaw, 2002). The inclusion of residents in planning and decision-making is highlighted in a number of different works, including articles focused on the process of redeveloping mine and quarry sites as tourism attractions (Cole, 2004; Ballesteros & Ramirez, 2007; Frey & Spellerberg, 2011). This collaboration can build long-term positive working relationships and help to create a plan that is not simply borrowed recommendations and practices, but is capable of both addressing the issues and assets unique to the community and region, and encouraging local buy-in (Markey, Connelly, & Roseland, 2010; Markey, Halseth, & Manson, 2006; Markey, Halseth, & Manson, 2008a). Many suggest that local, and resourceful, stakeholders need to work internally for the development of long-lasting goals, while being respecful of regional identity and its potential for change (Schiewenz, 2010; Shaw, 2002).

Many strategic plans include components that the community and region have no jurisdictional control over; however, increasing local control can better address conflicts and reduce parochialism (Markey, Halseth, & Manson, 2008b). Increasing local decision-making power is consistent with the principles of bottom-up development, which is increasingly noted as a major trend in the community economic development literature (Mair & Reid, 2007; Markey, Halseth, & Manson, 2008b; Wilson, et al., 2001). This development approach requires local government leadership, strong local actors, and a cooperative and supportive local population, all of which are consistently highlighted as important factors for the success of local development projects (Markey, Connelly, & Roseland, 2010).

Cooperation between stakeholders, coupled with strong leadership, is essential for the success of rural communities, largely due to the lack of funding. This creates a need for efficient use of funds to create a cohesive tourism package that maximizes the use of community assets to appeal to and capture the largest possible audience (Colocousis, 2012; Markey, Halseth, & Manson, 2006; Stern & Hall, 2010; Wilson, et al., 2001). Without such cooperation and collaboration, (or worse, with conflict), the inclusion of new actors or new ideas will be limited in the development efforts (Ryser & Halseth, 2010). A lack of cooperation between local governments, businesses and community members can amplify many, if not all, of the economic challenges faced by mining communities to develop and promote tourism (Davis & Morais, 2004; Wilson, et al., 2001).

The community as a whole needs to be supportive of the tourism initiative and of tourist visits for the venture to be successful (Wilson, et al., 2001). There is the risk of push-back from some community members who may have a wariness of outside visitors, or be resistant to change (Colocousis, 2012; Haugland, et al., 2011; Petrzelka, Krannich, & Brehm, 2009; Wilson, et al., 2001). Without community support, this resistance may hinder the effectiveness of tourism development strategies and negatively impact tourists' experiences. Local and regional institutional support is also necessary (Cassel & Pashkevich, 2011). To support the efforts and enhance implementation, local residents need to be involved and made aware of the positive effects of the development (Markey, Connelly, & Roseland, 2010). It is also important to ensure that this group of stakeholders does not become entrenched and cliquish, which can lead to an insular 'club' being created, which limits new ideas and influences (Cassel & Pashkevich, 2011). This increases the risk that the tourism product will reflect the vision of only the dominant interest group and not the community and wider range of stakeholders (Cassel & Pashkevich, 2011).

The hospitality of the community, and attitude of tourism industry employees, has a direct impact on the way tourists are treated and the impression visitors have of the community (Wilson, et al., 2001). This, in turn, determines the nature of word-of-mouth recommendations. If visitors have a negative impression, then this can severely limit the chances of development success. On the other hand, a proud community, which is respectful of tourists, gives rise to positive tourist perceptions and experiences (Wilson, et al., 2001). These intangible assets are components of human and social capital, which must be cultivated and strengthened to create a competitive advantage (Ryser & Halseth, 2010). When community members work together, it provides a sense of community, which fosters local involvement and trust, further strengthening the social capital of the community (Markey, Halseth, & Manson, 2008).

Infrastructure can be, and often is, a major barrier to tourism developments in rural communities. This is difficult to address with a limited economic base (Colocousis, 2012; Markey, Connelly, & Roseland, 2010; Ryser & Halseth, 2010). The costs of infrastructure development and improvement to develop and support tourism (community access, amenities, etc.) are often more than a small rural community can afford (Stern & Hall, 2010). These costs often require the aid of development funding through government and NGO programs (Colocousis, 2012; Stern & Hall, 2010). There are indications that collaborative planning efforts are increasing between community, government and mine companies to develop infrastructure that can continue to be an asset after closure (Brereton, et al., 2006; Buultjens, et al., 2010; Lintz, Wirth, & Harfst, 2012; Markey,

Connelly, & Roseland, 2010). Projects such as the Weipa mine fields planning, and the collaboration involved, demonstrate how assets can be re-combined and re-bundled to create economic advantage (Buultjens, et al., 2010; Ryser & Halseth, 2010). Limited infrastructure not only limits the attractiveness to tourists, but it limits the attractiveness for developers and investors as well (Ryser & Halseth, 2010). Beyond infrastructure development, communities need to invest in efforts to increase the appeal of the community and area to the tourism market (Colocousis, 2012; Wilson, et al., 2001).

While intra-community factors are important, inter-community cooperation is also a component of successful rural tourism development. Destinations within a region should not operate in isolation from each other, and it is important for communities to realize that there is more to be gained by working together than competing against each other (Haugland, et al., 2011). Many examples are given in the literature of the positive effects that regional cooperation has on the development and success of tourism as a diversification strategy, including an increase in innovation and the promotion of new ideas (Haugland, et al., 2011; Shaw, 2002). Much of it deals with the reduction in competition through a holistic strategy that plays to the strengths of each community with a region (Colocousis, 2012; Haugland, et al., 2011; Petrzelka, Krannich, & Brehm, 2009; Wilson, et al., 2001). Creating a larger destination image with other communities helps to reflect the geographical area and link various actors in the development efforts, which helps reduce competition and increase cooperation for an integrated regional experience (Haugland, et al., 2011).

Outside perception is a major barrier to developing successful tourism initiatives. Within a region with a strong NRBTR industry; resource-based communities face challenges of environmental stigma and negative external perceptions, which can limit development (Cloke, Milbourne, & Thomas, 1996; Colocousis, 2012). This challenge is voiced by a number of authors (e.g. Cloke, Milbourne, & Thomas, 1996; Mayer & Greenberg, 2001; McKercher, 1992 and Wilson, et al., 2001). Tourism, especially NRBTR, is place-oriented and the environment, community and region surrounding the attractions are part of the overall package, and so need to be attractive to visitors (Ryser & Halseth, 2010; Wilson, et al., 2001). This can require a re-branding and re-bundling of assets to transition from the resource extraction activities to those based around resource appreciation and use (Colocousis, 2012; Ryser & Halseth, 2010).

Tourism development is identified as a key area for economic diversification in rural communities. Effective diversification efforts are ideally developed before closure of a major industry in the community. Planning should include collaborative efforts and clear communication between community members, regional participation and government bodies. Understanding the

barriers to tourism and the benefits it offers will help community members be realistic about planning goals and visions for the community. This includes the possible need for re-branding and shift in employment opportunities.

2.3.2 Summary

Community economic diversification is a complex component of community development. Diversification planning is most likely to succeed when it is a collaborative effort in the community and is proactive to the closure of a major employer. Diversification into tourism requires a shift in community mindset including the reality that tourism employment is typically seasonal with lower wages. Understanding the regional context and working cooperatively with other communities can increase the likelihood of success and reduce issues of direct competition. Re-branding plays a role in this by providing the resource community an opportunity to transition away from historical reputation and the stigma often associated with resource-based communities. Planning for tourism must include considerations of local mentality and historical ties. Reusing a mine site can help to bridge the mining history of a community with the new future as an NRBTR destination. This will be discussed in the next section.

2.4 Mine Site Use for Tourism

The need for mine land to be reusable after mining operations cease is becoming apparent, especially as society aims to increase social, environmental and economic sustainability (Odell, Scoble, & Recharte Bullard, 2011). Governments, NGO's, financial institutions and stakeholders are putting pressure on companies to strive for value-added end uses, and dispelling the idea that mining is a one-time use of land (Worrall, et al., 2009). Pearman's (2009) book *101 Things to do With a Hole in the Ground*, highlights a variety of mine reuse projects that have garnered public interest. Mine sites can be repurposed for a variety of uses, with housing, industrial, and manufacturing redevelopments being the most obvious, and common, due to the scale requirements and the risks of future contamination from operations. Around the world, mines have been rebranded as industrial and heritage attractions while operational and after closure (Edwards & Llurdés i Coit, 1996). There are also examples of mines becoming NRBTR sites, both deliberately and unintentionally, as mining landscapes are returned to nature, either by reclamation or abandonment, and being used informally.

It is important not only to identify such projects, but to understand the benefits, liabilities and development process of mine site reuse for tourism in one form or another.

The body of literature that exists about mine site reuse for tourism is limited, and heavily focused on heritage and industrial tourism, and the literature that does include NRBTR uses, is often abstract or without depth (studies such as Soltanmohammadi, Osanloo, & Bazzazi, 2010[12]). This literature provides insight into the development process and subsequent benefits, or lack thereof, to the community, and the findings help to guide future reclamation efforts (studies such as Carlson, Koepke, & Hanson, 2011 and Shaw, 2002). Understanding the process of development is important to the discussion of NRBTR mine site reuse to ensure that planning is realistic and goals are achievable. There is a small body of work globally on the NRBTR use of former mine sites as part of the diversification strategy employed by mining communities or regions, and what the role of these sites is in the larger diversification strategy. Much of the work is focused in the German Lusatia Lake and Ruhrgebeit Districts. There is a small body of work about English, Spanish and American communities and regions as well[13]. There are many parallels with the larger rural development literature, but the role of the mining and reclamation industry for expertise, earthmoving ability and site specific knowledge is highlighted, along with the increased role of government (both for legislative and financial reasons).

2.4.1 Mine Site Considerations

General mine site considerations need to be addressed before examining the tourism specific literature about mine site reclamation and redevelopment. These factors affect the viability and suitability of mine sites for post-mining uses and are needed as contextual information for mine site reuse, keeping in mind that each site is unique and every country has different standards and requirements. These factors include major remediation concerns (such as contamination leaching), changes in Canadian regulations about mine closure, present day mine closure issues and infrastructure use, public health and safety concerns, and on-going monitoring needs. There are four categories of factors for consideration in post-mining land-use determination: mine site factors,

[12] (Soltanmohammadi, Osanloo, & Bazzazi's 2010 article focuses on a mathematical selection process for post-mining land development and considers a number of factors but does not provide examples of successful re-developments.

[13] Much of the literature is in English, but there are works in German, Spanish and Chinese that were unavailable for this study.

technical factors, economic factors and social factors (Soltanmohammadi, Osanloo, & Bazzazi, 2010).

Mining is an extractive, non-renewable industry that requires the segregation of desired minerals from the ore body. This requires the movement of a large amount of material to reach the ore, as well as physical structures onsite to support the operation. Metal and fuel mineral mines in particular are difficult to reclaim with waste rock taking up a larger volume then it did before removal (due to the need to move and crush a large amount of rock for a proportionately small yield of desirable material), tailing ponds needing ongoing monitoring, acid rock drainage, and structural risks posing long-term dangers to the area (Bowman & Baker, 1998; Bridge, 2004; Zhang, et al, 2011). A larger volume is removed with open-cast mining than with underground mining, and the relative ease of access with open pit mining makes it economically viable to mine lower quality ore bodies than in underground mining (Bridge, 2004; Zhang, et al., 2011). These onsite (primary) modifications are coupled with the secondary geomorphological feature changes, which include debris fans, sand bars and turbid rivers (Bridge, 2004; Bowman & Baker, 1998; Zhang, et al., 2011).

Prior to government enforced mine regulation, sites were often abandoned, once the mineral source was exhausted, or orphaned if the company was no longer able to support the operation financially (Worrall, et al., 2009). Abandoned mine sites can be unsafe and potentially contaminated, and are left for communities and governments to deal with, or in many cases are in an unpopulated area and are left as is (Bridge, 2004). Abandoned mine sites are a health and safety risk from physical characteristics as well as an environmental risk from chemical attributes such as tailings and industrial materials and contaminates (Bridge, 2004; Carlson, Koepke, & Hanson, 2011; Mishra, et al., 2012; MacKasey, 2000; Mitchell & Mackasey, 1997).

Adding complexity to the issue of abandoned and orphaned mines is the often unclear coordination role of the government. In Canada, mines are the jurisdiction of provinces. However, with increased environmental awareness, combined with the existence of many pre-Confederation era mines, CANMET and Natural Resource Canada are playing a lead role in the coordination of abandoned mines (MacKasey, 2000). Furthermore, in 2001, the National Orphaned/Abandoned Mines Initiative (NOAMI) was created to develop partnerships and implement remediation of orphaned and abandoned mines across Canada (NOAMI, 2013). As companies began to take responsibility for the reclamation of sites, health and safety risks were the first to be addressed, as mine shafts were capped to prevent unauthorized entrance (Bridge, 2004; Mitchell & Mackasey, 1997). In recent decades, these efforts have begun to include environmental considerations and

clearer legislation about the requirements for site closure and remediation to return the site to a functioning ecosystem (Bridge, 2004). Very recently, pressure has increased for mines to benefit the community beyond closure; to provide socio-economic opportunities through contentious reclamation (Waggitt, 2011).

As legislation controlling the closure of mine site evolves, so too has the industry's ability to reclaim mines. Mine reclamation efforts in an ideal world would allow the company to walk away from the site and have a fully functioning ecosystem, without risk, available for use (Bowman & Baker, 1998; Kline, 2001). This is rarely the case; visually, a site can be returned to a state consistent with the surrounding area, but the functioning of the site can be severely compromised (Carlson, Koepke, & Hanson, 2011; Kline, 2001). Governments and communities do not want to be left with an industrial legacy that has the potential to be detrimental to the area, and companies do not want to have responsibilities to an area long after the resource has been exhausted or operations have ended (Alker & Stone, 2005; Bowman & Baker, 1998; Carlson, Koepke, & Hanson, 2011). Accordingly, there is an onus to create a landscape and land use that communities and governments feel are adequate to future needs and are, therefore more likely to share in the responsibilities of the site. Planning for a concurrent or future use of the region for NRBTR can change the remediation goals and plans that are guiding the company in preparing the land to be passed on to the community (Carlson, Koepke, & Hanson, 2011).

Different scenarios should be considered that incorporate ecosystem functioning, but which are flexible enough to allow for other uses (Doley, Audet, & Mulligan, 2012; Soltanmohammadi, Osanloo, & Bazzazi, 2010; Bangian, Ataei, Sayadi, & Gholinejad, 2012). This may result in shifting the ecological function of the site away from the pre-mining conditions (Doley, Audet, & Mulligan, 2012). The practical goals may not match the ideal as many key landscape features of the ecosystem prior to mining may no longer exist, or are no longer an asset to the surrounding landscape. Economic, social and physical constraints must be included in planning and there needs to be an awareness that these can change through the mining operation and rehabilitation process (Bangian, et al., 2012). Advanced planning for closure is highlighted for the mitigation of negative economic impacts and creation of a new opportunity for the community (Zhang, et al., 2011). Mining activities can create a new landscape that complies with regulations while making full use of the existing landscape resources with minimal reconstruction for economic development. The earlier this occurs, the better; earlier reclamation planning leads directly to cost-savings for mining companies (Warhurst & Noronha, 2000).

Beyond the regulatory requirements and site development considerations for Canadian mine reuse, the peripheral, rural nature of mining communities can be a liability for attracting visitors, especially because of a lack of, or challenges with, access (Brereton, et al., 2006; Buultjens, et al., 2010; Randall & Ironside, 1996). Studies in Northern Australia about the promotion of Aboriginal and nature-based tourism found that promoting areas that had increased access due to hard mining infrastructure[14] (roads, airstrips, etc.) reduced pressure on communities and allowed for longer term planning of infrastructure (Brereton, et al., 2006; Buultjens, et al., 2010). Sharing mine infrastructure requires planning and a source of economic funding to support the ongoing maintenance of infrastructure once the mine is no longer operational (Brereton, et al., 2006; Millikarjun Rao & Pathak, 2005). This also allows for infrastructure to be prioritized and upgrades made in partnership with the mine company before closure (Brereton, et al., 2006; Buultjens, et al., 2010). Transport routes from former operations can be used to support tourism developments, especially those associated with the mine site such as industrial and heritage attractions, and repurposed landscapes (Cole, 2004).

The physical and environmental considerations of mining limit the development opportunities, but do not prevent it entirely. There is the opportunity to create a post-mining landscape that serves a purpose within the community vision for future development, including industrial and heritage attractions. There are fewer examples of mines becoming NRBTR attractions, but it is an option that is worth considering where possible, highlighted by the fact that it is often mentioned as an abstract option in the academic literature (for example, Bangian, et al., 2012, discuss post-mining land use decision making without providing examples of sucessful projects). It is preferable to find approaches to mine closure that create opportunities for future economic activities or social benefits, and prevent the loss of land and the creation of negative legacies (Waggitt, 2011). Soltanmohammadi, Osanloo, & Bazzazi (2010) and Zhang, et al. (2011) both include tourism land-uses in their studies of post-mining land-use determination frameworks. This indicates that it has been considered as a viable option for post-mining land planning. There are also secondary environmental and social benefits for the surrounding area (Levi & Kocher, 2006; Mishra, et al., 2012). Zhang et al. (2011) note that landscape planning in mine closure areas brings tourism benefits and can stimulate economic and social benefits by restoring the recreational potential of the landscape.

[14] As opposed to soft infrastructure such as economic health, government and enforcement systems.

It is very important to address the challenges related to the size of mining operations, the degradation of the landscape, and the generally peripheral location of mining operations and communities in planning for the future of tourism (Edwards & Llurdés i Coit, 1996). By planning in advance, essential safety, hazard and contamination issues can be addressed before closure, limiting the level of constraint on the potential for tourism planning (Carlson, Koepke, & Hanson, 2011; Edwards & Llurdés i Coit, 1996). Issues with the selection of suitable elements, determining ownership, development timeframe and viability (such as whether there will be enough visitors) can also be addressed (Conesa, Schulin, & Nowack, 2008). It is important to have a land use plan that is implemented at closure and includes the future use of the site, allowing the mine to transition from a mining operation to a post-mining land use during the closure phase (Zhang, et al., 2011). By doing so, mining activities can leave a new landscape that provides opportunities for future land owners and minimizes post-mining risks and negative impacts (Zhang, et al., 2011).

2.4.2 NRBTR Mine Site Use

Mining is by nature a destructive industry that impacts many natural landscape features at, and near, the operation. In contrast to typical views, this can be seen as an opportunity to create a landscape that not only fits with the surrounding environment and topography, but has value-added use for the community. NRBTR (whether at an undisturbed or naturalized site) has the risk of over use and depletion and needs to be properly managed to ensure long-term use and limit environmental impacts (Bennett & Lemelin, 2010; Boyd & Butler, 1999; Butler, Hall, & Jenkins, 1998; Johnston & Payne, 2005; Schmallegger & Carson, 2012). Reusing mine sites for NRBTR allows for developments outside of protected areas on a landscape purposefully made for recreational and leisure uses that fit the marketed tourism package of the community (Carlson, Koepke, & Hanson, 2011; Dickmann, 2011). This can help mitigate risks of overuse and landscape damage, and beyond this, allows for the creation of a landscape tailored to the vision and needs of the community.

It is not usually possible to return mining land to the same state that pre-existed the operation (Doley, Audet, & Mulligan, 2012; Soltanmohammadi, Osanloo, & Bazzazi, 2010). In these cases, alternative developments should be considered. Examples of mine site reuse for NRBTR can be found that vary in scale, planning and success (Table 49 in Appendix A provides a catalogue of the examples found in the academic literature). Capitalizing on landform changes and the exposed geological formations, mine sites have provided opportunities to create geotourism attractions

(geological-based attractions), a near-perfect NRBTR reuse match (Dewar & Miller, 2011). Landform changes can also be used as the basis for a created naturalized landscape that suits a variety of NRBTR attractions (Waggitt, 2011), including lakescapes (von Bismarck, 2010), recreational spaces (Carlson, Koepke, & Hanson, 2011) and nature-based art installations (Korostoff, 2010).

The literature on mine site reuse for NRBTR is insightful, but limited[15]. A large portion of the works identify sites, but tends to provide little or no information about the planning involved, the success of the site, or the social considerations. The IBA efforts in East Germany, including the Lusatia Lakes, has the largest body of work and is often used as an example or as the study focus in recent papers (for example: Dickman, 2011; Ling, Handley, & Rodwell, 2007; Lintz, Wirth, & Harfst, 2012; and Shaw, 2002). Of the sites identified and studied, more than one quarter are former coal mines, and almost another quarter are former gold mines. The rest are mainly copper[16], iron and uranium metal mines. Half of the sites are located in Germany, the UK or the USA and only half have economic advantages to the sites through paid entrance, amenity fees or other fee-based aspects. Most are open, free access, public spaces. In some of the cases, the site is mentioned in passing, while in others (about two-thirds), it is the main focus. Few, however, provide information about how the site came to be, and those that do tend to focus on the engineering aspects (such as Davison, 1997) and land-forming aspects, rather than social and planning components. Articles that stand out for addressing the social and planning components include Carlson, Koepke & Hanson (2011), Dickman (2011), Lintz Wirth & Harfst (2012), Wrede & Mügge-Bartolović (2012), and Shaw (2002).

The goal of the post-mining landscape should be to promote ecological, social and economic capacity for the community. On the social side of planning, the redevelopment of mine sites should include considerations and opportunities for future landowners and community members, while minimizing post-mining risks (Ling, Handley, & Rodwell, 2007; Zhang, et al., 2011). Within the literature about mine site reuse, many of the authors stress the importance of the final design of the reclamation being compatible with the current land-use of the surrounding area and overall community plan (Dickman, 2011; Doley, Audet, & Mulligan, 2012; Soltanmohammadi, Osanloo, & Bazzazi, 2010). Relating the environmental goals of post-mining land to the social and economic

[15] There is work focused on the reuse of quarry sites, such as Frey & Spellerberg (2011) and Mansfeld (1992). These were not included due to the different nature of the quarry operations compared to mining, such as the larger volume of waste produced by mining and the acid rock drainage characteristic of metal mines. Frey & Spellerberg (2011) note the lack of information about the process of turning large excavation sites (both mining and quarrying) to usable assets through community management in their work.

[16] Copper mines often have other metals extracted from the same site, but for simplicity, were listed as copper mines in this study if it was the main metal extracted. This is true for other metal mines as well.

factors of the area would bridge the divide between derelict or unusable land to a reclaimed landscape with a range of societal and commercial values and functions (Doley, Audet, & Mulligan, 2012; Ling, Handley, & Rodwell, 2007; Shaw, 2002). This bridging of societal values can include aspects of industrial heritage tourism. For example, eco-museums and open air museums have been created using mining structures that capitalize on both the heritage of the area and the natural amenities (Edwards & Llurdés i Coit, 1996).

Planning for closure is highlighted as necessary in the literature, but various authors stress that it has historically been the exception, not the rule. That being said, Canada, along with a number of countries, now has firm legislation, including the Ontario Mining Act, which guides the closure of mine sites (Part VII). Diversification efforts, however, are often reactionary, and mine site reuse is equally, or more so, a reactive instead of proactive response (Carlson, Koepke, & Hanson, 2011; Mayer & Greenberg, 2000). Mayer and Greenberg (2000) provide various examples of communities that placed trust in outside intervention (which either did not occur, or did not occur to the level the community expected), and demonstrated that proactive planning would have created a more pleasant and successful transition. By trusting that redevelopment would occur, the landscape may remain damaged and become overlooked by developers (Ling, Handley, & Rodwell, 2007; Lintz, Wirth, & Harfst, 2012). Proactive planning, which allows for mine closure and rehabilitation to incorporate the post-mining land use features, also reduces the cost of closure operations (Warhurst & Noronha, 2000).

The cautionary tale of a reactionary nature of site developments also means that the time between closure and a new economic and/or social use of the site is delayed, leaving the area to become derelict and a deterrent to investment (Alker & Stone, 2005; Mishra, et al., 2012). During this time, there is also a greater chance of skilled workers leaving the community to seek employment elsewhere (Bruce, Ryser, & Halseth, 2005). Planning in advance of the mine closure allows the community to provide input without the stress and pressure of decline. It may also encourage people to stay in the community to maintain the positive legacy that they have helped create. This, in turn, can help increase the resiliency of the community by helping to coordinate the rehabilitation of the mine with the diversification of the economy (Lintz, Wirth, & Harfst, 2012).

Successful projects require collaborative stakeholders to guide project planning and implementation, as well as communicate with the community. It is important to identify the stakeholders for such development projects to ensure that the necessary people have a seat at the table, including at the regional and provincial level (Lintz, Wirth, & Harfst, 2012). Several authors

identify various stakeholders (including government representatives) for various stages, most commonly (in no particular order): community members, government/municipal officials, company representatives and a representative of the environmental authority (e.g. Carlson, Koepke, & Hanson, 2011; Soltanmohammadi, Osanloo, & Bazzazi, 2010). The company responsible for the site has a legal stake in the land, as well as the ability to remodel the site (Carlson, Koepke, & Hanson, 2011; Lintz, Wirth, & Harfst, 2012). It is in the company's interests to create a site that the community will respond positively to, thereby increasing the chances that responsibility for the site can be shared with, or transferred to, the community (Bridge, 2004; Gardner & Bell, 2007). The community is highlighted as often being given little or no voice (whether perceived or in reality), but with the largest stake in the repurposing development of the site. Because of this, it is also important to have someone of influence in the community who can maintain the momentum of the vision and champion the need for tolerance and a collaborative process, especially where relations between the mining interests and the community have historically been poor (Carlson, Koepke, & Hanson, 2011). This individual needs to communicate to local residents how the project will have widespread benefit (Shaw, 2002). The resounding theme is the need for collaboration of all stakeholders during the process (Carlson, Koepke, & Hanson, 2011; IBA, 2012; Lintz, Wirth, & Harfst, 2012).

Local acceptance of the project and its benefits will improve the chances of successful collaboration essential to innovation and efficiency (Carlson, Koepke, & Hanson, 2011; Shaw, 2002). Effective collaboration requires clear goals and steps to complete the plan (Carlson, Koepke, & Hanson, 2011). Foundational planning that allows for key decisions to be made in a methodical manner is important to project success. This was apparent in Carlson, Koepke and Hanson's (2011) study of the redevelopment work done in the Mesabi Iron Range. Here, planning actions for the project took a decade to complete before construction began. Carlson, Koepke and Hanson's (2011) identified process fundamentals for a positive, successful project, which stressed the importance of local stakeholder collaboration. The use of local firms enhances collaboration and local empowerment (Shaw, 2002). Smaller, local firms are also more likely to stay in the area and adapt to changes and innovate than are larger multinationals (Shaw, 2002). This ensures a local focus and encourages a more holistic restructuring that includes those who will be affected (Dickman, 2011; Shaw, 2002).

Finances are a critical component of a successful project, alongside the more socio-cultural aspects. Funding for projects may not be provided by the group that is running the site, making communication and updates important (Frey & Spellerberg, 2011). Funding for many of the projects

identified in the academic literature initially comes from corporate partners, and government development and grant programs, making the need for self-sufficiency essential to ensure site longevity (Alker & Stone, 2005). The degradation of the landscape, size, and peripheral nature of a mine are barriers to attracting development investment and add to the development and maintenance costs (this is the case with heritage and industrial tourism at mines as well) (Cloke, Milbourne, & Thomas, 1996; Edwards & Llurdés i Coit, 1996). The site is unlikely to provide the same level of economic activity as the mine could and, as such, should not be the only means of diversification for the community (Lintz, Wirth, & Harfst, 2012; Shaw, 2002). The recreational benefits of an improved environment are not completely observable as market transactions, and so require non-market valuations to fully evaluate and understand the benefits (Mishra, et al., 2012; Shaw, 2002). This can reduce the interest of stakeholders in NRBTR developments of mine sites, but understanding such projects are a component of creating the right socio-economic environment, for development helps to increase interest (Shaw, 2002).

Mine reuse that focuses on NRBTR does not need to erase the history of the site; aspects of the previous use can be incorporated into the development to enhance the experience. Structures and landscape changes associated with mining can embody the heritage and cultural memory of the location, and act as a monument to the past. Maintaining these structures is often important to communities as a way of maintaining a connection to their roots and celebrating local history, as well as creating a vivid and interesting tourist attraction (Edwards & Llurdés i Coit, 1996; Conesa, Schulin, & Nowack, 2008; Ballesteros & Ramirez, 2007; Cassel & Pashkevich, 2011). There is a growing appreciation for mining landscapes and their historical and cultural significance, as well as the juxtaposition these sites create with natural landscapes in the immediate area (Cole, 2004; Hosper, 2002). By including these landscapes into the area's tourism offerings, a cultural attraction is created that can help bridge the community and tourists, and provide an opportunity for locals to share their history (Ballesteros & Ramirez, 2007; Cole, 2004; Edwards & Llurdés i Coit, 1996; Castillo, Lopez-Guzman Guzman, & Vazquez de la Torre, 2010; Ballesteros & Ramirez, 2007). Including aspects of heritage can create a more varied product within the NRBTR offering of a former mine site.

Industrial and heritage tourism can help improve the perception of the region and attract economic resources when promoted effectively (Cole, 2004; Hosper, 2002). In instances where the mine is still operational, industrial tourism presents an opportunity for improving community relations, and providing and education and tourism attraction without the added cost of maintaining the site (Rudd & Davis, 1998; Pretes, 2002). Both the Bingham Canyon Copper Mine in the USA

and the Potosí Silver Mine in Bolivia are excellent examples of this (Rudd & Davis, 1998; Pretes, 2002). Such sites can more easily be transitioned to heritage sites once mining operations end, though the maintenance costs and requirements of the site and structures may be beyond the capacity of the community and more than the tourism spending can support (Alker & Stone, 2005; Wanhill, 2000). Costs of maintaining the site notwithstanding, heritage tourism alone is not generally enough to provide employment and incoming funds for the community. Furthermore, a number of authors have identified that mining heritage and industrial tourism attractions as stand-alone attractions are not enough to replace the economic activities of an operational mine (Balcar & Pearce, 1996; Ballesteros & Ramirez, 2007; Cole, 2004; Wanhill, 2000).

The limited ability of the attractions to encourage longer visitor stays further reduces the economic viability of heritage and industrial tourism as stand-alone attractions[17]. Research suggests that most visitors tend to be day visitors with low levels of spending (Cole, 2004; Castillo, Lopez-Guzman Guzman, & Vazquez de la Torre, 2010; Hosper, 2002; Wanhill, 2000). Often these visitors spend little time on site and the time spent is self-guided, limiting the employment opportunities for guides, which further reduces spending and local employment (Balcar & Pearce, 1996). Heritage sites tend to have low employment levels, low wages and seasonal jobs, and as such, these developments have relatively low impacts on regional employment (Cole, 2004; Hosper, 2002). Therefore, it is better to include the mining heritage as one attraction within a larger offering, possibly within the mine site, by including open-air exhibits and a wider variety of attractions on site[18] (Edwards & Llurdés i Coit, 1996). Encouraging longer stays through a larger offering of tourism attractions increases spending and is essential to the viability of the diversification efforts and transitioning of communities from mining towns to tourism destinations (Balcar & Pearce, 1996; Cole, 2004; Hosper, 2002). The main economic advantage of heritage tourism is the improved place-image it creates for the community and region, which can have a strong positive role in attracting investment and visitors (Cole, 2004; Edwards & Llurdés i Coit, 1996; Hosper, 2002).

In summary, the literature suggests that mine site reuse for NRBTR is an opportunity not often employed to support NRBTR within a community. As with any tourism development, clear communication and realistic visions are critical to a successful project. Earlier planning allows for a more seamless transition between land uses and increases the chance of a mining company partner to help with earth moving, technical and financial aspects of the project. Stakeholders must be clear

[17] There are a few exceptions to this, such as the Wieliczka Salt Mine in Poland (Edwards & Llurdés i Coit, 1996; Hosper, 2002)

[18] Zeche Zollverein and Landschaftspark in Germany are good examples.

about the development and maintenance needs of such projects to ensure that on-going costs are within generated revenue. Such projects have not been well studied, in part due to the limited number of examples, but they do provide an innovative way to interact with the mining heritage of the area and can include industrial components in the landscape and site design.

2.4.3 Summary

A mine site provides an opportunity for the community to design and construct a purposefully built NRBTR site on already disturbed land. Realistic goals about the objectives and outcomes of a project are important for planning an end use that is aligned with the long-term vision of the community. Former mine sites are often marketed as heritage and industrial attractions, which can act as a monument for the history of the community but are costly to upkeep. Heritage aspects could be maintained with the NRBTR attraction to bridge the mining heritage with the tourism industry. By redeveloping the site as a new asset, the community can maintain ties to the past while demonstrating an innovative mentality.

2.5 Summary

This chapter has reviewed and assessed the literature on Canadian resource-based communities, the effects of the loss of industry in such communities, the tourism diversification of rural communities, including the use of a mine site. Resource communities in Canada are described by a number of models, all of which highlight the decline of the community if economic diversification is not pursued or successful (Bruce, Ryser, & Halseth, 2005; Mayer & Greenberg, 2001). Tourism is often used as a tool for development and diversification, and has been used for the development of rural and remote areas; the same areas where primary resource extraction has occurred (Reid, 1998; Schmallegger & Carson, 2012). Diversification before mine closure greatly increases the chances of continued socio-economic viability of the community after closure (Mayer & Greenberg, 2001). A coupling can be created between NRBTR and mining operations in rural and remote areas through shared infrastructure, inclusive planning and community development initiatives (Carlson, Koepke, & Hanson, 2011; Frey & Spellerberg, 2011). With diversification already in place, an exhausted mine site can potentially be reclaimed to not only fit the surrounding landscape and ecosystem, but to also fit within the NRBTR promoted in the community and region (Carlson,

Koepke, & Hanson, 2011). Encouraging economic activities and industries that will remain after mining operations end and creating opportunities for value-added uses of post-mining land are important to the longevity of the community.

2.5.1 Gaps

A number of gaps exist in the literature that has been discussed here. First, the existing lifecycle models for resource-based communities do not accommodate the inclusion of tourism in economic activities prior to a reduced dependency on mining activities (due to either reduced production level or operation closure). Second, the inclusion of NRBTR in resource communities has been assessed on a case-by-case basis, but a large review for the purpose of resource-based community development has not been undertaken in Canada. Third, few international studies, and almost no Canadian research, has considered the reuse of mine sites for NRBTR. Thus, little is known about their development process, their site maintenance, or their stakeholders.

This thesis addresses the identified gaps in the academic literature through systematic study. The gaps in lifecycle models will be addressed by proposing a new model of minetown evolution. Northern Ontario minetowns will be used to assess the proposed model, and the inclusion of NRBTR in minetowns. Finally, the gaps in mine site reuse for NRBTR will be addressed using two case study communities to provide insight into the social aspects of the process of redevelopment, the maintenance and the use of such sites in a Canadian context. Northern Ontario minetowns are suited for study to address these gaps due the region's long history of mining, large share of the Canada mining industry, and identified NRBTR niche.

Chapter 3
Methodology

3.1 Introduction

The previous chapter identified key gaps in the literature, which this study attempts to partially fill. In this chapter, the methodology used to meet the study's objectives is presented. The research objectives are first restated, data collection and analysis methods are then described, ethical considerations are then explained, and, finally, methodological challenges and limitations are presented. The goal is to provide the reader with an understanding of how this mixed methods study was conducted.

3.2 Objectives

As described in Chapter 1, this study is guided by the research question '*How can mine-site NRBTR be incorporated as a diversification strategy in northern mining communities?'* The study is framed by five objectives:

1. to develop a mining lifecycle model that accommodates diversification;
2. to apply the model to northern Ontario minetowns, and to describe how population and labour force changes as communities move through the model's stages;
3. to determine when tourism, specifically NRBTR, is introduced during minetown evolution;
4. to assess the process by which a mine site is transitioned, maintained and used for NRBTR in two case study sites; and,
5. to provide recommendations to mining community stakeholders for including NRBTR at reclaimed mine sites, as part of a diversification strategy.

Described in the next section is the sequential mixed-methods approach with case studies used to collect data to meet these objectives.

3.3 Research Design and Strategy

The research design of a study is the planned approach for collecting data to answer the research question (Babbie, 2001; Creswell, 2009). Within the research design are the theoretical assumptions held by the researcher, the broad category of inquiry, and the more detailed methodologies and instrumentation used to collect and analyse the raw data (Babbie, 2001; Creswell, 2009). Understanding how the researcher developed the methodologies used to collect and analysis data are important for ensuring the validity of the results and findings of the study.

3.3.1 Theoretical and Research Framework

As much as researchers try to limit preconceived notions and remain neutral, researchers do work within a theoretical framework that helps guide the research questions and methods. The researcher used an explanatory and deductive approach to answer the research question. An explanatory strategy is used to explain a phenomena being studied by producing quantitative trends and then using qualitative data to gain further insight (Babbie, 2001; Creswell, 2009). A deductive approach develops principles, theories or models to describe the phenomena being studied and uses observations for testing[19] (Babbie, 2001). These two approaches pair well and suit the nature of this study. The research design selected was mixed methodology, which generally has a pragmatic philosophical position (Creswell, 2009). This allows the researcher to 'focus on the consequence of the research' (Creswell & Plano Clark, 2011, p. 41).

3.3.2 Research Design

In very general terms, research approaches can be designed as quantitative (empirical observations and measurements), qualitative (descriptive observations), or mixed methods (employing both qualitative and qualitative methods) (Creswell, 2009). These are the general categories of design, not the specific methodologies or instruments for data collection. Within these general categories, a number of research designs are available and the most appropriate design must be determined to address the research question and objectives. Table 12 lists the most common research designs with a brief description of each. Any designs inappropriate for this study are listed

[19] This is in contrast to an inductive approach, which uses observations to build a theory or hypothesis (Babbie, 2001).

as *rejected*, designs with the potential for use are listed as *considered*, and those selected for use in this study are listed as *selected*. A brief summary of the reasoning for the decision is included in the table. Designs listed as considered and selected were further explored and are discussed in greater detail in the following paragraphs. The reasoning for the rejection of obviously unsuitable designs are listed in the table and not discussed in more detail in this section in the interest of space.

Table 12: Research Designs

Category	Design	Brief Description	Selected / Considered / Rejected
Quantitative (empirical and numerical measurements)	Inventory design[20]	Numerical description and assessment of trends	**Selected**
	Experimental design	Tests an impact through the use of controllable variables	**Rejected** No control over variables
Qualitative (descriptive observations)	Narrative	Collaborative retelling of the combined views from participants and researcher	**Considered**
	Phenomenology	Interpretative research focusing on individual perceptions of experiences and events	**Considered**
	Ethnography	Prolonged study of people in their natural environment	**Rejected** does not apply to research focus
	Action research	Participants are involved in designing steps for change to be observed in the study	**Rejected** not possible in study context/scale
	Case study	In depth study of one or more examples of the phenomenon	**Selected**
	Grounded theory	Theory and methodology are developed as the research is conducted	**Rejected** does not allow for structured methods
Mixed methods (using both qualitative and quantitative methods)	Sequential	Expand on findings from one method by use of the another (either explanatory using quantitative methods followed by qualitative research or exploratory using qualitative methods followed by quantitative research)	**Selected**
	Concurrent	Quantitative and qualitative data are merged for comprehensive analysis	**Rejected** does not allow for trends to be examined first
	Transformative	Overarching theory guides the research as it progresses in an evolutionary fashion (without regimented methods)	**Rejected** does not allow for determined methods and instrumentation

Source: Adapted from Creswell, 2009

[20] 'Inventory' is used to describe the quantitative analysis of northern Ontario minetowns instead of 'survey' because it better captured the method.

A mixed methods design was selected for this study because it bridges quantitative and qualitative research methods and draws on the strengths of both to create a broader study (Creswell, 2009). The quantitative data collected provides measurable, numerical data sets that can be categorized and compared, and the qualitative data collected enriches the quantitative data and provides a better understanding of the context of the data (Creswell & Plano Clark, 2011). A mixed methodology was ideal for the descriptive and exploratory nature of this study because it allowed for the combining of quantitative and qualitative data during analysis as well as during interpretation. A sequential research design was selected over a concurrent or transformative design because it allowed for the systematic collection of data, and the informing of subsequent research components by data already collected. It was most logical to begin with qualitative model development, followed by a quantitative stage to identify and examine mining communities in northern Ontario. A qualitative stage follows to gain insight into specific instances of community transition and mine site reuse. This led to the final research design of sequential mixed method procedures. A visual guide to the research design is presented in Figure 9. More detailed descriptions of the methodologies are found in sections further on in this chapter.

The first phase was the qualitative development of a new model to describe the development of minetowns. Preliminary research of previous studies of the development of resource communities in Canada uncovered consistent patterns and short-comings. Different aspects and metrics of community development and evaluation were examined to inform the final design. The new model was designed and described (objective 1). Quantitative data in the form of a community inventory was required to examine the proposed model in this deductive approach.

An inventory was selected for the quantitative phase of the study to identify the study population (minetowns in northern Ontario). The goal of inventory [survey] research strategies is to provide quantitative descriptions of the study sample (Creswell, 2009) making it suitable for this study. The inventory [survey] of all identified mining communities in northern Ontario allows for an examination of the temporal population and labour force trends in the region (objective 2). The inventory was used as the sample population for the empirical test and examination of the proposed model (objective 2). The inventory also allowed for an assessment of the inclusion of tourism and NRBTR in the minetowns (objective 3), and the selection of suitable case study sites (necessary to meet objective 4).

Several options were considered for the second qualitative phase. These included a narrative analysis, phenomenology and case studies. A narrative analysis was rejected because although it allows for a variety of views to be included in the study, it does not allow for the generalized process discovery, which is the goal of this study. The same reasoning led to the rejection of phenomenology. Both narrative and phenomenological research designs are better suited to very detailed social studies with a 'story-telling' aspect and were ultimately not suitable for this particular study. Case studies at specific sites allow for in-depth detailed study of specific phenomenon using a variety of data sources (Creswell, 2009). A multi-case study approach was selected because it allowed for a number of sites to be examined with input from a variety of sources and participants, and for the findings to be combined (objective 4). Content analysis of relevant documentation informed the interviews and provided additional sources of data to be included in this inductive qualitative phase.

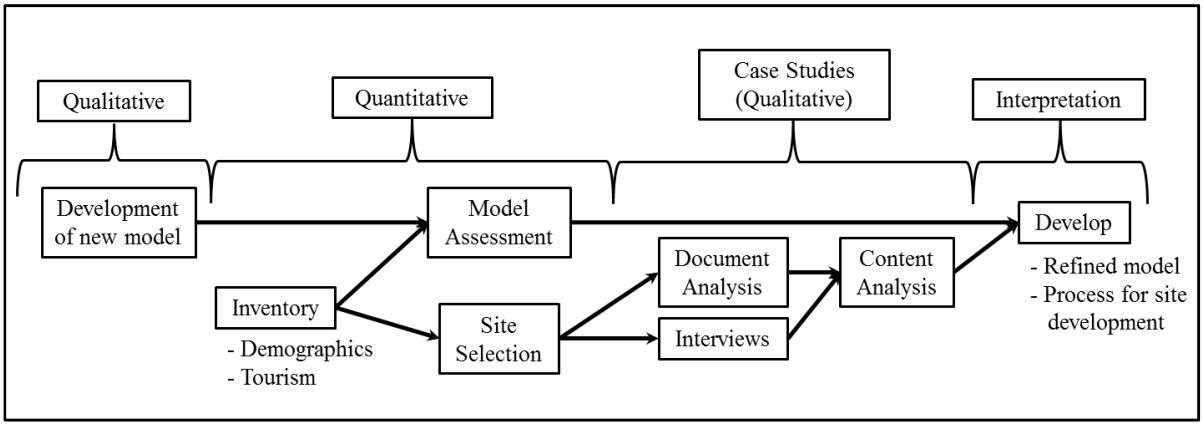


Figure 9: Research Design of this Study (Sequential Explanatory Mixed Methods)

3.3.3 Research Objectives and Methodologies

Before beginning a research study, it is important to have clear methodologies in place to address the research objectives. This helps to orient and guide the researcher during the research process. The breakdown of the methods and data for each objective are presented in Table 13. This table outlines the study and methodologies used, all of which is covered in greater detail in the following sections. It also includes an outline of the steps taken to achieve the objectives of the study and the information sources consulted for each of the objectives.

Table 13: Objectives: Steps and Data

Objective and Steps	Methods and Data
1. To develop a mining lifecycle model that accommodates diversification	• Review of academic literature • Assessment of existing resource and minetown lifecycle development models and alternative futures • Create new model
2. To apply the model to northern Ontario minetowns, and to describe how population and labour force changes as communities move through the model's stages i. Identify and create inventory of mine communities in northern Ontario ii. Review demographics for inventory iii. Categorize minetowns as per proposed model for evaluation of model	i. • CASIT • Ontario Mining Association • Mining Taskforce • Natural Resources Canada • Ministry of Northern Development and Mines ii. Stats Canada census data: population and labour force from 1991 to 2011 iii. Categorize the minetowns of northern Ontario based on model criteria using demographic data
3. To determine when tourism, specifically NRBTR, is introduced during minetown evolution i. Identify tourism, NRBTR and NRBTR businesses	i. Review: • Marketing material • Business directories • Town and regional tourist information • Tourism organizations and departments
4. To assess the process by which a mine site is transitioned, maintained and used for NRBTR in two case study sites i. Identify possible sites ii. Select case study sites iii. Review community and regional development plans and relevant government policies for case study sites iv. Interviews with key informants v. Content analysis of information and synthesis into narrative	i. Review: • Tourism and recreation material • Mining history • On the ground site visits ii. • Create decision-making framework for site selection • Identify the two most suitable sites iii. Document interrogation of: • Economic development plans • Strategic development plans • Government policies iv. Interviews with purposefully selected participant v. • Content analysis using code framework • Reading across transcript • Triangulation of codes
5. To provide recommendations to mining community stakeholders for including NRBTR at reclaimed mine sites, as part of a diversification strategy	Identify a series of recommendations based on the results of the study, including case study key findings including: champions, funding, timing of economic diversification efforts, and challenges.

3.4 Data Collection and Analysis

Data collection must be rigorously controlled to allow for reliable raw data to be analysed (Babbie, 2001). The method of data analysis is equally important as the methods of data collection so that findings provide valid conclusions addressing the research question (Babbie, 2001). The methods of data collection and analysis are provided in the following subsections. This section allows readers to gain insight into the research design and provides future researchers with information necessary to replicate the study. The mixed methodologies of this study are presented sequentially, beginning with the creation of the model (qualitative) and inventory (quantitative) and followed by the content analysis and interviews (qualitative). Additional study information is available in Appendixes A-D.

3.4.1 Model (Qualitative)

The creation of a new model for minetown development relies on a robust review of existing academic literature and models for resource community development and diversification. This was completed in Chapter 2, Section 2.2. Through the examination of the literature, it was found that the existing models were based on company town development with a 'dust to dust' model as the foundation. The option for diversification was presented as an alternative future for the community, with various paths post-dependency. There is an assumption in the models that post-dependency is a result of the closure or suspension of the resource extraction operation, not of a successful diversification effort by the community. A successful diversification effort by the community may occur alongside the resource operation, and increase the diversity of employment opportunities, thereby reducing the proportional share of resource employment.

The model was created by drawing on existing resource community literature and current trends in Canadian resource communities (objective 1). A revision and updating of the existing models was considered, but no single model accommodated current minetown realities, nor was any model found suitable to be adapted to the present economic realities. Previous work on the economics of minetowns, resource towns and rural communities was considered, as well as different indicators such as population, mobility and labour force. The model was designed to suit a variety of community situations, as well as economic diversification and mining employment outside the

community (commuter operations). It was tested against the minetowns of northern Ontario and refined as needed.

3.4.2 Inventory (Quantitative Survey)

Inventories provide a way to ground research and provide an overarching context and trend analysis for conclusions. The inventory designed for this study provides an opportunity to collect and catalogue community development, as well as preliminary data about mining, tourism and recreation in the study region. The inventory was created from secondary data; meaning data not collected by the researcher, but pulled from existing work, material and literature (Walliman, 2011; Creswell & Plano Clark, 2011). The inventory includes mining dependent communities[21] identified in government literature[22], census data[23], and previous academic research. Mining dependent communities are defined in this study as communities with mine sector employment at or above 30 percent of the total labour force. This is the threshold identified by Statistics Canada as defining a community as dependent on a single industry (Canada Task Force on Mining, 1982)[24]. Appendix B provides the full listing of documents used to identify mine dependent communities. No minimum community population size was set as a threshold for inclusion in the inventory.

The inventory was limited to communities that were identified at any time post-1950 as being dependent on mining operations[25]. The year 1950 was selected because it followed World War II, production levels had begun to increase with post-war northern expansion and community planning regulations changed (Robson, 1992). To be included in the final inventory, the mining operation had to be formal and industrial; that is to say the operation had to be recognized by authorities and be a

[21] First Nations Reserves were not included in the inventory.

[22] The CASIT database would have been preferable but it is unavailable. The papers created by CASIT during its life (1985-1990) are still available and insightful.

[23] The 1991, 1996, 2001, 2006 and 2011 census data were used to identify communities with mine sector employment at or above 30 percent of the total labour force. 1986 and 1981 census data was not used because the labour force data for all primary industries were grouped together (forestry, agriculture, fishing, etc.) and it was not possible to verify the rate of employment in the mining sector. The 2011 census was the first year of the voluntary National Household Survey in place of the mandatory long-form census which created some comparison issues.

[24] Recently, other methods of identifying resource-reliant communities have been introduced (such as the Location Quotient) to try to better account for unique attributes or risks some communities face (e.g. Rural and Small Town Canada Analysis Bulletin, Vol. 2, No. 7 (March 2011) Statistics Canada catalogue no. 21-006-XIE).

[25] Therefore, places like Bruce Mines, in which mining boomed from 1848 to 1876, and from 1915 to 1921 were excluded.

large scale earthmoving operation. Communities identified in the final inventory were those then evaluated in the context of the new lifecycle model, and their various trends (i.e. abandonment and amalgamation, population and labour force), described (objective 2). Census Canada data were used for demographic analysis. Census subdivision data were used to maintain consistency across all communities for comparable demographic data due to the limitations of available records for some communities.

The tourism activities of the identified communities were then catalogued to investigate the prevalence of NRBTR in the inventory (objective 3). Tourism activities in each community were categorized as 'tourism businesses' (any business related to tourism), 'NRBTR activities' (any marketed activity related to NRBTR), and 'NRBTR businesses' (any business related to marketed NRBTR activities). Businesses were identified through municipal business directories and economic development offices, as well as tourism marketing material. Tourism marketing media included websites, flyers, brochures and company profiles[26]. This allowed for a present day evaluation of tourism and recreation inclusion in minetowns.

3.4.3 Site Selection

Case study sites, for detailed investigation, were identified from the list of inventoried communities (objective 4). Preliminary data about each community and potential case study site was collected from various sources including tourism marketing material, community visits, and the mining operations. The secondary data were used to create a catalogue of mine site redevelopment in the research region. This allows for a controlled evaluation of the suitability of the sites. The catalogue includes the mine sites, the communities, and the type of tourism and recreation present at the former mine site. This allowed for the systematic selection of sites that reused mine land to support NRBTR for the case studies. To provide transparency in final site selection, a points system was created and used (Table 14). The ranking system was created by the researcher to prevent bias and to allow for duplication in later studies. The highest points were awarded to sites where a mine had been reclaimed for NRBTR activities. Additional points were awarded based on the use of the mining area, the community NRBTR, and living memory of the project. This allowed for the

[26] A list of material collected and reviewed is available in Appendix C, section C.3.

selection of the two most suitable sites for inclusion in the study: the Charleson Recreation Area in Atikokan and the Sherriff Creek Sanctuary in Elliot Lake[27].

Table 14: Points System for Grading Potential Study Sites

Characteristic	Points Awarded	Example
Land reclaimed or redeveloped for NRBTR	2	Sheriff Creek Wildlife Sanctuary built on Rio Algom tailings site
Site is expected to remain in use for NRBTR indefinitely	1	Gillies Lake Conservation Area is an official public recreation space and conservation area
Unused mine land used for NRBTR	1	
Mine company financially supports NRBTR on mine associated land	1	Sheriff Creek Wildlife Sanctuary is financially supported by Rio Algom
Host town encourages NRBTR	1	Atikokan has rebranded to be the Canoe Capital of Canada
Firsthand account by interview not possible	-1	Wright-Hargreaves Park has limited or no living memory of the remediation and development

3.4.4 Document Analysis (Qualitative Case Study)

A review and analysis of relevant documents for the case study sites was performed to gain insight into the current and past influences on the community and mine site development to meet objective four. Secondary sources of information, such as community and regional economic and strategic development plans, government documents and publications, and company publications were included in the review and analysis. The focus of this portion of the research was to identify the process by which mine sites are redeveloped, maintained and used over time. This included identifying who was involved (i.e. the stakeholders), how the initiative was funded, the timing of the different stages of the project, and what was involved in transforming the former mine site into a NRBTR attraction. The document interrogation also helped gauge the priority level of the mine's use of tourism and the level of focus on NRBTR mine site developments on a community scale. A content framework was created for coding and the results analysed (Table 15). Given the nature of

[27] Approximately two additional weeks per community were spent in each case study community in addition to the preliminary site visits.

the study, any information in the documents related to the research questions was identified and categorized/coded in more depth.

3.4.5 Semi-Structured Interviews (Qualitative Case Study)

This study used semi-structured interviews to supplement the information collected from the document analysis to meet objective four. Interviews were selected instead of questionnaires due to the generally higher response rate and more complete answers that interviews yield (Babbie, 2001). Interviewing provides the researcher a level of control over the line of questioning while still allowing for answers to be varied and informative (Creswell, 2009). Interviews allow participants to provide in-depth answers, permit clarification where needed, and provide an opportunity to ask non-leading probing questions when participants are unsure. These benefits result in a larger percentage of useable answers (Babbie, 2001). Semi-structured interviews with purposefully selected participants allowed for a dynamic, yet concise, set of data to be collected. Purposefully selected participants are those who are intentionally selected by the researcher based on criteria or experience matching the research goals and with insight into the specific focus of the research question (Creswell & Plano Clark, 2011; Babbie, 2001). In this study, purposefully selected participants were chosen based on their association with the mine land or host community, and required knowledge of the site. Interviewees were selected based on having a major role in the redevelopment of the site, the ongoing maintenance of the site, or the tourism and recreation of the community. Interviewees were associated with the community (2), the institutions involved in redevelopment (3), and the volunteers and champions (5) involved (many interviewees had more than one role, their primary role was used for selection). Interviewees are not identified by name in text. Instead, they are identified with the community initial(s) followed by 'I' and a number (for example a Waterloo interview would be WI1). This deliberate selection of participants allows for a greater understanding of the processes and events that lead to the creation and continued NRBTR use of the value-added mine sites.

An interview protocol was created, allowing for systematic and standardized data collection (Creswell & Plano Clark, 2011). The same interviewer (the researcher) conducted all interviews, which reduced inconsistencies. Interviews were conducted individually in person or by telephone. Interviews were recorded with participants' consent and transcribed verbatim to allow for coding. This was done as soon as possible after the interview was conducted to prevent data loss, which may occur if the processing of interviews is left for a long period of time (weeks or months) (Walliman,

2011). The predetermined questions were sent to the participants before the interview to give participants time to prepare, and to determine if they wished to continue their involvement in the study. The theming and coding was done after all interviews were collected and transcribed (more information about the coding methodology is provided in the next section).

3.4.6 Coding (Qualitative Case Study)

For this analysis, latent coding was used instead of manifest coding[28]. Latent coding aims to provide an overall assessment of the underlying meaning being communicated, whereas manifest coding counts the use of specific words in a text (Babbie, 2001; Neuendorf, 2002). This allows the researcher to use themes in the text as the coding unit (Weber, 1990). This form of coding can be less reliable and specific, and requires that the coder remain vigilant to a consistent use of definitions (Babbie, 2001). A coding framework, or codebook, was created to allow for greater transparency and consistency in the content analysis of the documents and interviews. The coding framework used is presented in Table 15. The framework identifies key themes and the scale used. The same coding scheme was developed for the interviews and the document analysis of both sites (Table 15).

The data collected from the documents and interviews were coded based on dominant themes observed. The coding framework was created after the collection of the interview data to allow for similar aspects to be represented across all sites and participants. This common practice with qualitative research of open coding requires close examination of the data for categorization, as opposed to a code created to test a hypothesis generated by a prior theory (Babbie, 2001). It is important to be aware of exclusions in the themes due to topics or issues being absent from the answers provided by the interview participants (Jackson, 2001). To identify any gaps, the interviews were compared with the document findings. The codes were also compared across interview transcripts to draw out any trends between interviewees. The framework was created to be compatible with the content analysis of the written material included in the study.

Information was first categorized into meta-themes of site development, site use, site maintenance, site history and recommendations. This was done with the blocks of text pulled from the documents and interviews. This allowed for information relevant to the same aspect of the site to

[28] The difference between these two is often considered to be more of a continuum then a separation, and in that vein of thinking (Neuendorf, 2002), this study would be using 'moderate manifest' coding.

be coded as a unit. Each meta-theme was coded based on themes such as champions (who), actions (how), funding (how), and motivations (why). Once coded, similarities and discrepancies in the information could be identified and further investigated. Codes could also be reviewed to guarantee accuracy and the absence of 'coding drift' by the researcher. The information was themed and sub-themed to allow for key information to be distilled from the larger body of available and relevant information. From this, the process for development, maintenance and use was synthesised.

Table 15: Coding Framework

Meta-theme	Theme	Sub-themes
Development Use Maintenance	Who: Champion	Internal / external Private / public / civic
	Who: Actors/Stakeholders	Internal / external Private / public / civic Responsibilities
	How/When: Actions	Milestones Challenges and Solutions
	Why	Motivation Outcome goals and objectives
	How: Funding	Source Use
	How/What: Risk	Real / perceived Mitigation
	What: Infrastructure	Used actively in development / used passively in development Destroyed during development / destroyed prior to development
Pre-NRBTR development history	What: Mine site	Production lifespan Produced metal

One community at a time was investigated to allow the researcher to stay immersed in the site throughout the process of collecting relevant passages of text and then preliminary coding. The researcher compared across each data set to ensure the consistency of the information during preliminary coding. This was especially important to verify that interview data were consistent with document analysis data. Once preliminary coding was completed, the two sets of information (one for each site) were coded concurrently to prevent 'coding drift' from one data set to the other.

The main goals of the coding were to determine 1) the process, maintenance and use of mine site redevelopment for NRBTR, and 2) the stakeholders involved in the process, maintenance and use of the site. This descriptive method of content analysis allowed for insight into the history of the redevelopment of the case study sites. This allowed for the creation of a narrative nested within the larger context of the local community. This narrative was created from the findings of the interviews, the document analysis, as well as secondary sources such as previous academic studies of the case study communities. Thus, triangulation was undertaken to identify the themes and validate the findings. The narrative of the case studies included the redevelopment process at both sites and summary tables to compare the sites.

Once coding, analysis and summarization of the case studies was completed, quantitative data from the first phase of the study (the inventory) was combined with the data from the content analysis and interviews, for interpretation. This allowed for information from the case studies to be examined in the context of the trends in northern Ontario, and in the context of resource community development, diversification and lifecycles.

3.5 Ethical Considerations

3.5.1 Study and Data Collection

The goal of research is to further the body of knowledge on a particular subject, but in doing so, must respect the participants and affected groups being studied using ethical methods. Physical, social, economic and legal harm need to be considered and any risks assessed and accounted for prior to participant involvement (Creswell, 2009). This study does not focus on vulnerable populations or matters of moral uncertainty (such as drug abuse in children) which are 'red flags' for ethics, but, nonetheless, it has ethical considerations that must be addressed. Three forms of data were collected: secondary data from censuses, documents and marketing material, content analysis of documents, and primary data from interviews. Each of these possesses ethical considerations that must be identified and mitigated to ensure they are valid and morally just.

The inventory of communities and tourism projects associated with mining presented few ethical considerations. The information sources are publically available and no participants were included. Ethical consideration for the inventory was focused on ensuring that all relevant data sources were included and that the interpretation of the data sources was regimented and consistent to

ensure the results were unbiased. The inventory was used, in part, to select the sites for more in-depth study, and this was done using a points system to ensure transparency of the selection of the sites graded most relevant to the study.

The ethical considerations for the content analysis of documents relevant to the mine site use for NRBTR were focused on the availability of documents, the method of attaining the documents and the interpretation of the documents. Ethical concerns about the availability of documents and the method of attaining the documents include the omission of relevant documents and the unauthorized use of proprietary and/or confidential information. The analysis of the documents requires vigilant adherence to the coding matrix and diligent verification of work to ensure data does not drift from the prescribed coding definitions.

Interviews for more in-depth study of selected sites required the participation of a number of purposefully selected participants. Participants were selected based on association with mine activities or host municipalities. There is the risk of the exclusion of key participants due to unavailability or unwillingness to participate. To deal with this, other suitable candidates were approached who were comparable in background, position and affiliation with the case study site. The researcher ensured that there was no deception of misinterpretation of the role of the researcher through initial introduction of the researcher, study and affiliation. This information also was included in follow-up correspondence about the study. Consent forms were signed by all participants before interviews were conducted, and each was informed of their right to terminate/withdraw from the study at any time. An example of the form can be found in Appendix D. Participants had the option of being anonymous in the study and no vulnerable populations or minors (persons under the age of 18) were included in the study. Debriefings of the interviews provided a follow-up opportunity to ensure the data collected was true to the participants' intentions and to reaffirm participants' rights, including the right to withdraw and the right to anonymity and confidentiality. The researcher and the participants should benefit from the study and a summary of the findings and conclusion of the study were circulated to the participants once completed.

Qualitative research, including interviews, requires that the research not guide or influence participants to a specific outcome or answer to fit the researchers pre-conceived notions (Babbie, 2001; Creswell, 2009). This includes considerations about facial expressions, gestures, appearance and demeanor (Babbie, 2001). Any clarifications of questions or probing for elaboration on answers must be done without influencing, coercing, or leading the participant to an answer (Babbie, 2001).

The same interviewer conducted all interviews, reducing inconsistencies or interviewers unfamiliar with the questions and material to misinterpret responses. It is important to not disrupt the flow of the conversation during interviewing and to give the participant a clear indication that the interviewer is listening and interested. This is especially important when attempting to redirect and refocus the participant to the main themes of the interview. It is also important for the questions asked and any cues given by the interviewer do not lead the participant to an answer or influence the discussion beyond providing the context for the discussion (Babbie, 2001). Good interviewing technique was used by the researcher/interviewer to limit any influence the interviewer might have on the participant.

3.5.2 Data Analysis and Interpretation

The choice of methods for the analysis and interpretation of data requires honesty, good planning and ethical choices in methodology, analysis and the dissemination of the information (Walliman, 2011). Ethical data analysis requires that the data are not guided to a preferred conclusion by the researcher. No data must be ignored or removed from the study and raw data cannot be altered to better 'fit' with preconceived notions and expectations (Babbie, 2001). Trends, results and findings must not be falsely created to allow for the researcher to support conclusions otherwise unfounded. To ensure that this did not occur, all data collected were included in the study and are available for review. Methodologies for data analysis were transparent and also available for review.

Participants in a study should benefit from the results and have findings made available to them. A summary of data, results and conclusions will be made available to participants through email or mail where appropriate and the full study was available by request in electronic form. The raw data collected in this study is stored securely through the use of secure computer protocols and will be destroyed after five years through appropriate means. This includes the interview recordings and transcripts to protect participants from misappropriation and misrepresentation in the future by others.

3.6 Limitations and Challenges

The study was limited by a number of factors; limited census data prior to 1991, a lack of certainty of inclusion of all mine sites, access to relevant participants, and information about the process of site reuse. The first limitation is the limited census data prior to 1991, including the exclusion of some communities and the eight categories of labour force (which grouped all resource sectors together). This limitation was addressed by reviewing secondary sources that identify mine-dependent communities and limiting the demographic analysis of the communities to 1991-2011. The second limitation is the lack of knowledge of previous mine sites that may have organically returned to nature. These sites may have been orphaned or abandoned and, therefore, subsequently redeveloped into spaces for nature-based tourism without records of the previous use as a mine. To overcome this limitation, a number of sources were consulted to create the initial database used for this study. Northern Ontario was selected as the study region to overcome this limitation, due to the widespread documentation of mine sites in Ontario, including the AMIS database. Another limitation was access to purposefully selected participants. Participants selected for the study were not always available, due to a number of reasons and were, therefore, not included. Where this occurred, another suitable participant was selected with similar background and association with the site[29]. The last major limitation was the limited instances of mine site reuse. There may also be no knowledge of the initial process if a site was abandoned before laws and mandates requiring greater transparency were introduced. Furthermore, in some cases, the process may not have been deliberate, but organic. Within this limitation is the culture of non-disclosure that has been developing as litigations become more common. The culture of non-disclosure can limit the publicly available information, especially from the corporate side. The researcher worked to overcome and minimize the limitations of the study where possible.

3.7 Summary

This chapter has provided a description of the research methods employed in the study to gain insight into the use of mine sites for NRBTR in northern Ontario. The methodology associated with each objective was reviewed and expanded on. The study begins with the creation of a new model for

[29] This occurred twice, in one instance an ideal participant had passed away (a replacement participant with similar background and experience was selected) and in the other instance the participant was not available for in person or phone interviews, but was available by email and provided a number of relevant documents.

assessing minetowns (objective 1). The model is then tested in communities identified from the inventory of northern Ontario minetowns (objective 2). Tourism businesses and NRBTR activities and businesses were identified from secondary sources, to assess the nature of diversification in northern Ontario's minetowns (objective 3). This provides the foundation for the selection of case study sites based on the use of a mine for NRBTR activities (objective 4). Documents, such as strategic development plans, are reviewed through a content analysis, and interviews with purposefully selected stakeholders conducted. All the information collected was synthesised to create a set of recommendations for minetowns interested in economic diversification through tourism and recreation, and the redevelopment of a mine site as one component of the effort (objective 5). This chapter provided the reader with the understanding of how the results in the following two chapters were collected, evaluated and analysed.

Chapter 4
Model and Inventory Results and Discussion

4.1 Introduction

This section addresses the first three objectives of this thesis. The results are separated into three sections. The proposed model for Canadian minetown development is first presented. This is followed by the presentation of the inventory of mine-dependent communities in northern Ontario, and the application of the model to these communities. Finally, the presence of tourism and recreation in the minetowns of northern Ontario is uncovered. The findings of this chapter address the identified gaps in the academic literature and are discussed at the end of the chapter.

4.2 The Lifecycle Model

4.2.1 Introduction

Resource communities are a part of Canada's heritage, and include communities founded for or became dependent at any point in development on mineral resource extraction. Mineral extracting communities are generally considered the most vulnerable to the boom and bust cycles typical of resource communities, and suffer the inevitable exhaustion of the non-renewable mineral resource (Bone, 1998). Existing models of resource community lifecycles are not suitable for understanding the integration of tourism into a mining community, most notably because models do not allow for the accommodation of tourism earlier than the diversification/alternative futures stage post-dependency. The models also assume a company-created community and do not include the possibility of a pre-existing community that transitioned to mining dependency, nor do they include the possibility of ex-situ mine employment. Given these deficiencies, a new model is required to describe the development of resource towns in Canada.

4.2.2 The Lifecycle Model

This study proposes a new lifecycle model and categorization for minetowns in Canada. Drawing on work by Lucas (1971), Bradbury (1984b), and Halseth (1999a), as well as work by Bone

(1998), Randall and Ironside (1996) and others, a new model for mining communities is developed that uses the portion of the labour force in mining operations as the model indicator. This new model is designed to accommodate the shift in rural development from a resource extraction focus to one including service-based industries. This allows for consideration of employment in mining (versus other sectors) over time and the inclusion of tourism at any stage of development.

The model changes the approach to resource community lifecycle from one of description with little predictive value, to one of categorization. The categorization has the benefit of defining a community's position in its evolutionary cycle. Figure 10 below provides a visual of the stages and the associated changes in the portion of the labour force employed in mining. The model has four different types of community: pre-mine dependent, mine dependent, transitioning, and mine independent. Each stage is described in detail below. The visual representation of the model is meant as an aid. Communities may move between and experiences stages a number of times during development, and each community is likely to experience a unique pattern of development. Figure 11 illustrates a possible pattern of development for a pre-existing settlement, and Figure 12 illustrates a possible pattern of development for a planned community.

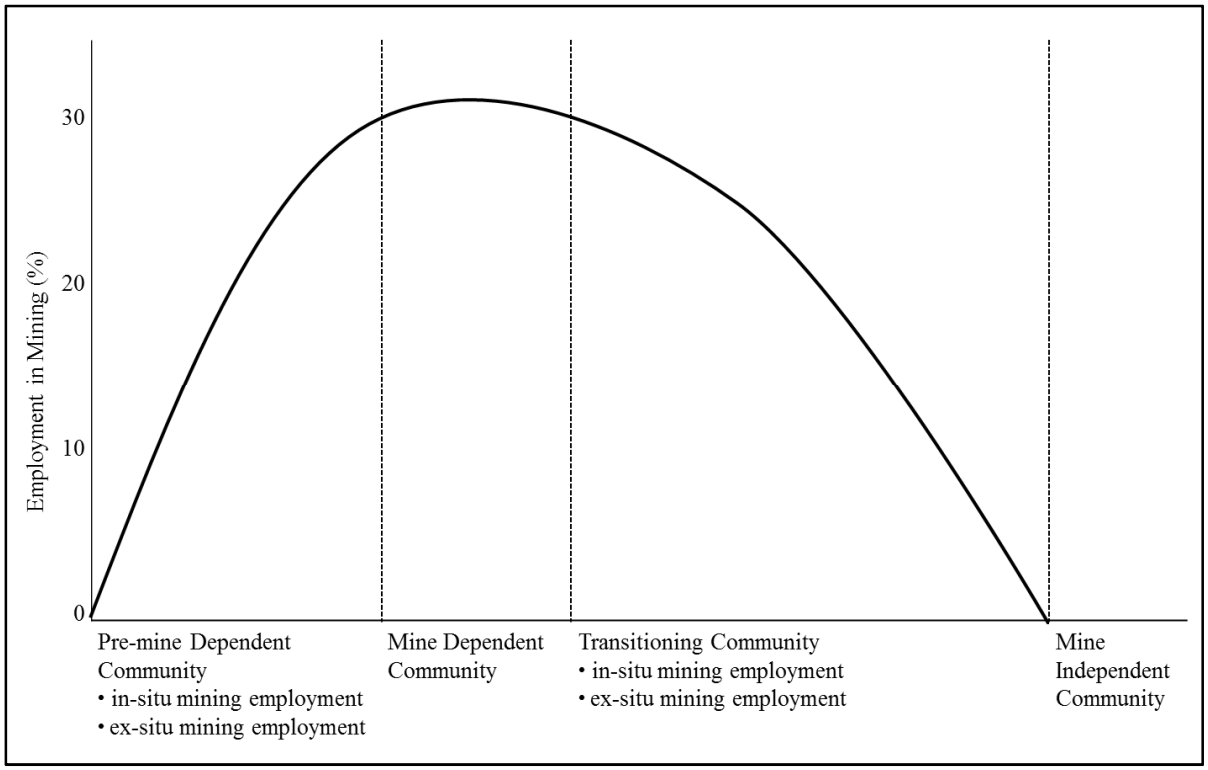


Figure 10: Minetown Model

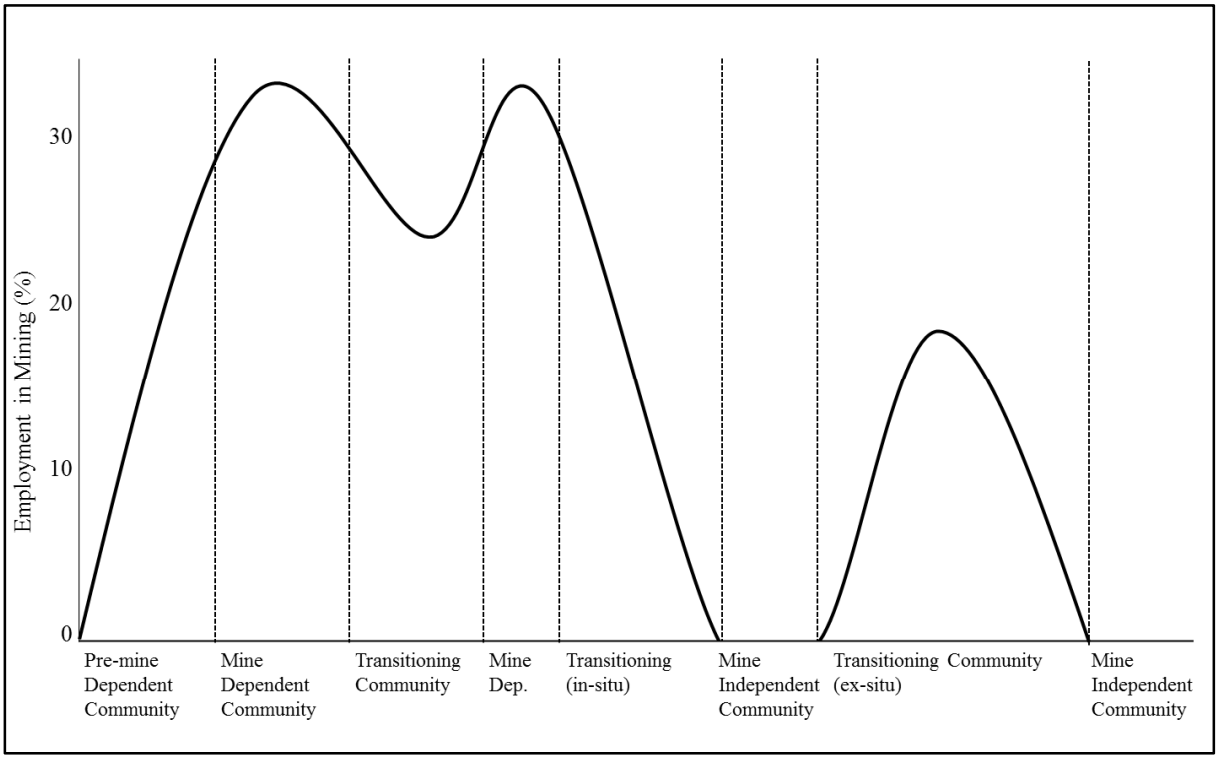


Figure 11: Possible Pattern of a Pre-existing Community Development

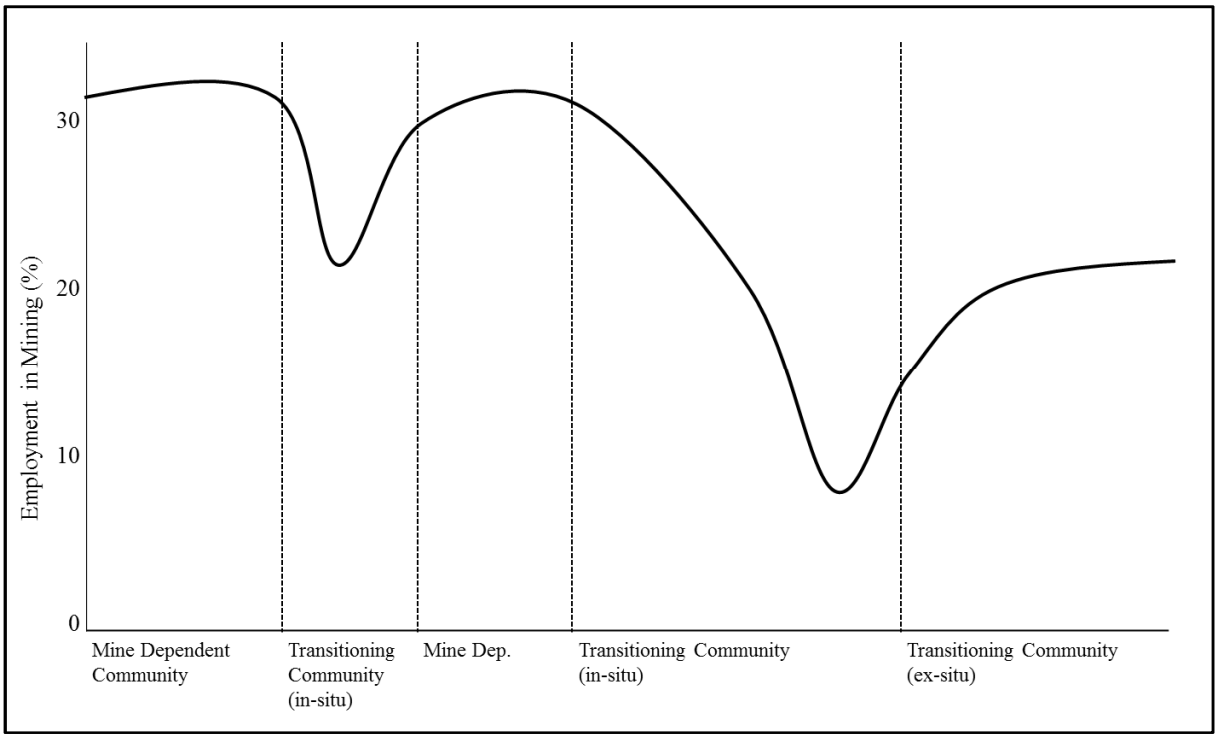


Figure 12: Possible Pattern of a Planned Community

Stage 1: Pre-mine Dependent Community

In the first stage of the model, the mining community is moving towards mine dependence. During this stage, the community would experience a shift in industry base as mining operations are started or begin to dominate the economics of the community. Mining employment can be in-situ at a local mine and ex-situ employment at fly-in/fly-out and LDC operations. The transition to a mine dependent community would be similar to the early stages of the Lucas/Bradbury model. Here, a major in-migration occurs due to the availability of jobs that occurs as a result of this new economic activity.

Some communities may not experience mining dependence, which is the identifying feature of a minetown, following the increase in mining employment. Such communities may begin the trajectory, but for many reasons (including diversification and reduced mine productivity) may not continue to the mine dependent stage. It is important to also note that this pre-mine dependent stage would not occur in a planned or company town since communities created for the extraction of mineral resources do not have pre-existing settlements. Such communities would begin in the mine dependent stage, as recognized in the earlier lifecycle models.

Stage 2: Mine Dependent Community

In the second stage of the model, the mining community has evolved according to Lucas/Bradbury model and is at the stage of maturity with stable mining operations and a permanent workforce (the peak in the diagram). The mine is the dominant employer with at least 30% of the work force employed during this stage. Communities that were created for resource extraction (Elliot Lake for example) would begin at this stage, while others might evolve to this state over a period of time as activity at the mine increases. This stage is the most likely of the four stages to experience a 'bust' due to market fluctuations; a situation that would have serious repercussions for the community because of the high rate of employment in the sector.

Stage 3: Transitioning Community (Post-mine Dependent)

In this transitioning stage, mine employment is now less than 30% of the labour force as the community is becoming less mine-dependent. In some communities, mining employment may still be local (in-situ), either at an operational mine, and/or one with initial mine closure and remediation projects (such as building removal, pit filling and land forming). In the former scenario, mine employment may have declined for one of three reasons. First is redundancy. In this scenario, the

mine has scaled back production leading to worker redundancy and supporting jobs are now relatively more important (Bradbury's 1984 winding down stage). Second is re-structuring. Here, the mine continues production but has restructured and adopted post-fordist production techniques that require fewer workers (Halseth's 1999 restructuring stage). The final reason is re-imaging. In this case, the community is undergoing economic change either towards diversification or specialization in another economic sector. Mining worker numbers may remain unchanged in this scenario, but are relatively less important or, alternatively, mining worker numbers may fall at the same time as jobs are created in other sectors (the stability or sustainable stage of Halseth 1999 and Halseth and Sullivan 2002). Jobs in other sectors may reflect different re-imaging responses: crisis response, pro-active, concurrent to closure (Table 17). In other cases, the mine may have closed but employment is still recorded since workers now commute (ex-situ) to other operating mines (this includes pick-up point communities for fly-in/fly-out and LDC operations). Table 17 provides a comparison of in-situ and ex-situ transitioning communities.

Table 16: Socio-Economic Comparison of In-situ and Ex-situ Community Transitions

	In-Situ	Ex-situ
Employment	In town, including site remediation and monitoring	Out of town, including FI/FO and LDC
Employees	Employees are present for day to day community activities and volunteer opportunities	Employees are not available for day to day community workings
Mining Heritage	Continues to play a local industrial or heritage role	No longer part of the local mosaic, or is only heritage focused

Table 17: Diversification Responses of Communities Transitioning From Mine Dependency

Stage	Industry	Community
Concurrent	Operational	Viable, reliant (pro-active)
Crisis	Closing, reducing	Viable, lingering effects of industry on economy
Declining	Closed	Declining status economically and socially, loss of population, experiencing lag time closure decline

Stage 4: Mine Independent Community

In mine independent communities, the mine (or mines) has closed and all workers are now outside the mining industry. These communities may have a very small portion of the environmental services labour force, which can include closed mine site monitoring and maintenance, but not in

active mining activities. This may be indicative of a diversified, sustainable stage if there is an increase in occupational categories with no one industry dominating; a specialization stage if more than 30 percent of workers are in a different industry (e.g. health care); or a winding down stage if there is a reduction in occupational categories and no dominant industry. The winding down stage is more likely with a declining response to diversification and unsuccessful, reactive diversification attempts. This would include an older population as the younger generation moves elsewhere for better employment opportunities.

4.2.3 Model Design

The proposed model uses mining labour force as a portion of the total labour force for the metric, but a comparative labour measure (the difference from the regional average), income-based measures or an economic input measure also could be used. The advantage to using labour force as the indicator is the ease of access to the needed information through census data on a case-by-case basis. A comparative labour force measure would require regional analysis, and in areas with elevated mining (such as Kenora), the community levels would be misleading for the vulnerability of the communities due to higher than normal reliance on the mining industry for employment. Economic input could, for example, be approached by income, output or surplus to local consumption. Given the need for refining minerals extracted, surplus to local consumption is not a viable metric. Output is not viable due to the fluctuations in mining productivity and ore body restrictions. Income and wages could be a viable metric for the model, but would reduce the ease of use, restricting the applicability of the model.

The model does not provide a measurement for the well-being of the community. Mining labour force is used to characterize the community and diversification responses are defined. These are not related to a well-being measurement, such as poverty, human skills, employment structure (part-time, wages, etc.), social structures or other typical measures of community well-being[30]. This is deliberate to prevent the model from providing a false ability to predict the outcomes of different community planning actions. The model does allow for comparative assessments based on the diversity of labour sectors and the dominant labour sector between communities in the same or different stages.

[30] There are cautions about using indicators for community well-being, partly because no one indicator or assumption can provide a relationship that captures the diversity and complexity of communities (Stedman, Parkins, & Beckley, 2004).

The model also allows for the inclusion of economic diversification at any stage of community development, and highlights that the reduction in mine employment must be countered with new economic activities. This makes the model suited to academic study as well as use by community members and governments, and does not shoehorn communities into development patterns. It instead allows understanding of mining employment development and can be used to simplify communication between stakeholders.

There is, perhaps inevitably, the question of what should be the defining feature of a resource town, and if it is a relevant label in the present Canadian socio-economic landscape. While resource extraction is very place-specific with inherent immobility, isolation and instability (Randall & Ironside, 1996), what separates a resource town from the rest of the rural northern communities is becoming harder to identify. Statistics Canada continues to use the thirty percent of the labour force as the threshold between dependent and non-dependent communities, but this does not in and of itself justify the resource town definition for the broader group, or over a community's varied industrial history. Only one or two communities were above the thirty percent mining labour force threshold in four of the five census reports used in this study[31], further suggesting that it is an outdated metric. Points have also been raised about the change in the design of resource towns to better accommodate young families (Ryser & Halseth, 2010), the fewer unifying features that work across different resource sectors (Stedman, Parkins, & Beckley, 2004), and using isolation as the defining feature (Randall & Ironside, 1996). Despite these potential weaknesses, there is value in using the thirty percent of labour as the threshold to maintain consistency with Statistic Canada and other government reporting in Canada (Canada Task Force on Mining, 1982).

4.2.4 Summary

The proposed model of minetown development, based on the portion of the labour force employed in mining, potentially provides a better description of the development realities of rural Canada[32] than previous models. The proposed model includes four distinct stages of minetown development: pre-mine dependent communities, mine-dependent communities, transitioning communities (in-situ and ex-situ), and mine-independent communities. These four stages allow for

[31] Other resource sectors in communities not included in the inventory were not examined in depth.

[32] The stages of the proposed model are designed for minetowns in Canada. Given the similarities of Australian and USA mining industries, the model is likely applicable in these locations as well.

the classification of communities with internal, external or past ties to mining operations. The model acknowledges that the portion of labour force employed in the mining industry is important for characterizing communities, but that this portion of the labour force no longer necessarily decides the fate of a community. The model also accommodates the introduction of tourism at any stage, better capturing the organic, incremental development of a tourism industry alongside other resource-based industries.

4.3 Minetown Inventory and Model Application

4.3.1 Introduction

The goal of the inventory was to identify communities in northern Ontario that have, at some point since 1950, been dependent on the mining sector[33]. This list was compiled using a variety of sources that identified mine and resource dependent communities[34]. Available census data (1991 – 2011) were checked for dependent communities to identify the portion of the labour force employed in the mining sector. Marathon was added because twenty-nine percent of the population was employed in this sector in 1991. Furthermore, the Hemlo Mines is a top employer for Marathon (though no labour force data were available from the 2011 census) (Marathon Economic Development Corporation, 2011). In this section, the inventory is first described. Population change in these communities is then described and compared to changes occurring regionally. The proposed model of minetown evolution is then applied and the relationship between population change, mine dependency and mining labour force is assessed. Lastly, the results are discussed and interpreted in the context of the academic literature.

4.3.2 The Community Inventory

The full list of identified minetowns included communities that have remained, been amalgamated, or been abandoned. The initial list was refined to create one that reflects the current

[33] Appendix B provides the detailed sourcing of the inventory communities.
[34] Other communities that had mining operations, possibly as a major employer, but without dependency on the mining industry, were excluded. These included forestry communities and other resource-dependent communities.

state of the communities. This was done through the use of public community records. Renabie was the only community to be abandoned[35]. The former community of Renabie is now within the boundaries of the Chapleau Crown Game Reserve. Twenty-four (50%) of the towns identified as having been mine-dependent (in the period since 1950) have amalgamated into larger municipal areas. This is more than half of all communities. The majority were absorbed by Red Lake, Sudbury, and Timmins. The amalgamated areas are listed in Table 18. Six of the nine communities that amalgamated did so before the mining labour force dropped below dependency status. Greater Sudbury (2001), Greenstone (2001) and West Nipissing (1999) amalgamated when they were no longer dependent on the mining industry, and in all three communities it was decades after they had been dependent. All three followed the Common Sense Revolution of 1995. All three were also much later than the other municipal amalgamations, which were between 1969 and 1980 (except for Red Lake, which was in 1998)[36]. These earlier amalgamations also occurred during Ontario's Conservative government period of restructuring that involved creation of two-tier municipalities.

[35] It is important to note that many of the earlier (including war time) mining towns and camps have been abandoned.

[36] Although many of the initial communities identified in the inventory amalgamated into larger municipal areas, some of the original settlements were abandoned. Central Patricia and Pickle Crow are examples of communities that amalgamated into a larger area, Pickle Lake, and are largely abandoned now as residents have moved into the central community.

Table 18: Amalgamated Municipal Areas

Amalgamated Municipal Area	Created	Amalgamated Mine Communities		Other Amalgamated Communities
Greenstone[□]	January 1, 2001	Geraldton	Leitch Mines	Longlac Nakina Beardmore
Black River-Matheson[°]	1969	Matheson	Black River	Kingham (1973) Playfair (1973)
Ear Falls[°]	1970	Bruce Lake		
Pickle Lake	1980	Central Patricia/Golden Patricia		Pickle Crow
Red Lake[□]	1998	Balmertown Cochenour Golden	Madsen McKenzie Island Starratt Olsen	
Sudbury[□+]	January 1, 2001	Capreol Coniston/Nickel Center Falconbridge Froods Mines	Levack Lively Onaping Falls	
Timmins[°]	1973	Pamour Schumacher	South Porcupine	Hoyle Mattagami Heights (1922) Mountjoy Tisdale Whitney
McGarry		Virginiatown		Kearns
Wawa*		Jamestown		
West Nipissing[37][□]	1999	Sturgeon Falls		Cache Bay Field Caldwell Springer

Years in brackets indicates amalgamation year which is different from major amalgamation
** township was renamed August 15, 2007. It was previously Michipicoten.*
[□] *amalgamation followed Bill 26: Savings and Restructuring Act, 1995 (Common Sense Revolution)*[38]
[°] *amalgamation occurred during or as a result of 1969-1974 Ontario municipal restructuring*
[+] *forced by provincial edict*

The municipal amalgamations in the 1990s (Greenstone, Red Lake, Sudbury and West Nipissing) were largely a result of the *Common Sense Revolution* of the Harris Government in the late 1990s. During this period, the provincial conservative government was focused on reducing the province's direct involvement with service delivery, reducing government overlap to increase efficiency and a fiscal focus (Graham & Phillips, 1998). Many municipalities felt they must restructure and amalgamate, or be forced to do so by the provincial government and commissioner

[37] The Corporation of the Municipality of West Nipissing annexed the Townships of Bertram, Latchford, Falconer, Loudon, MacPherson, Beaucage, Pedley, Kirkpatrick, Grant, Badgerow, Hugel, Fell, Bastedo, Gibbons, Crerar, McWilliams, Dana, the east portion of the geographic Township of Janes in the 1999 amalgamation.
[38] Following this the number of municipalities in Ontario was almost halved.

(Sancton, 2000). Many municipalities made decisions to amalgamate and consolidate under perceived duress during this time (Sancton, 2000). Others, such as Sudbury, were forced to amalgamate by provincial edict. The amalgamations of Black River-Matheson, Ear Falls and Timmins were during another conservative Ontario provincial government period (1969-1974) which also sought to create its particular brand of efficient government through the creation of two-tier regional municipalities (Graham & Phillips, 1998).

Amalgamations also occurred in Pickle Lake, McGarry and Wawa. Some of the amalgamated areas are now impoverished or nearly abandoned areas within the larger municipal center, such as Pickle Crow (now abandoned), which is in the amalgamated Pickle Lake[39]. The motivation for residents to move out of the original community and into the larger center of the amalgamated community or to a new community may include travel distance, access to services and employment. Cases of settlements being abandoned may also be a result of the central, more robust community absorbing the less organized one due to hazards the satellite community presents (Robinson, 1962). In many cases, a planned community is eventually forced to absorb the fringe community and provide services that the unplanned 'shacktowns' lack (Robinson, 1962). In some of the later planned communities, there were efforts made to prevent fringe settlements on the outskirts of the communities[40] (Robinson, 1962). This could be argued in Earl Falls and Pickle Lake as the underlying reason for the amalgamation, supported by the abandonment of the satellite communities.

4.3.2.1 Population Change

There are twenty-three communities in the final inventory, which are listed in Table 19 along with census population counts and changes between 1991 and 2011. A snapshot of the last twenty year of population for the inventory communities helps to determine if the communities have population growth or loss (which historically would have been tied to the mining sector). The regional comparison is undertaken to demonstrate consistency or divergence of the communities from the trends of all communities in the area. Understanding differences between community trends and

[39] Pickle Crow is roughly ten kilometers from Pickle Lake at the site of the Pickle Crow Gold Mine and had amenities such as a store, community hall and hotel in its hay-day. Very little is left of the settlement, most buildings have been dismantled or burned.

[40] A common approach to prevent this in the more recent planned communities (e.g. Elliot Lake) was to create a large buffer area around the town to allow for administrative control over the land surrounding the townsite (Robinson, 1962).

regional trends will help to identify consistencies and anomalies, as well as to explore the need for minetown modeling.

Table 19: Population and Population Change in Ontario's Mining Communities

	Population					% change[41]	
Community	**1991**	**1996**	**2001**	**2006**	**2011**	**91-11**	**01-11**
Atikokan	4,047	4,043	3,632	3,293	2,755	-31.9	-24.2
Black River - Matheson*	3,451	3,220	2,886	2,619	2,475	-28.3	-14.2
Cobalt	1,470	1,401	1,229	1,229	1,133	-22.9	-7.8
Dubreuilville*	983	990	967	773	630	-35.9	-34.9
Ear Fall	1,294	1,170	1,150	1,153	990	-23.5	-13.9
Elliot Lake	14,089	13,588	11,956	11,549	11,170	-20.7	-6.57
Espanola	5,527	5,454	5,449	5,314	5,275	-4.6	-3.2
Gauthier	149	152	128	133	50	-66.4	-60.9
Greenstone	5,795□	5,685□	5,662	4,906	4,680	-19.3	-17.3
Ignace	1,935	1,782	1,709	1,431	1,330	-31.3	-22.2
Kirkland Lake*	10,440	9,905	8,616	8,248	7,905	-24.3	-8.3
Larder Lake	1,030	982	790	735	684	-33.6	-13.4
Manitouwadge*	3,972	3,395	2,949	2,300	2,105	-47.0	-28.6
Marathon*	5,064	4,791	4,416	3,863	3,353	-33.8	-24.1
Matachewan*	453	402	409	375	270	-40.4	-34.0
McGarry□	1,139	1,015	787	674	345	-69.7	-56.2
Pickle Lake	654	544	399	479	420	-35.8	5.3
Red Lake*	4,623	4,778	4,233	4526	4,535	-1.9	7.1
Sudbury*	161,210□	164,049□	155,219	157,857	157,765	-2.1□	1.6
Temagami	939	871	893	934	805	-14.3	-9.9
Timmins*+	47,461	47,499	43,686	42,997	42,440	-10.6	-2.9
Wawa*	4,154	4,145	3,668	3,204	2,975	-28.4	-18.9
West Nipissing	10,923□	11,504□	13,114	13,410	13,870	27.0□	5.8

Source: Statistics Canada Census Data

** identifies communities with operating mines*

+ new operations that opened after the 2011 census

□ population is calculated by summing the pre-amalgamation community census data or from an alternative source (raw data used is available in Appendix C)

[41] % change was calculated throughout using the formula: [(newer value – older value)/lolder valuel] *100

Table 20: Population Change Summary

	1991-1996	1996-2001	2001-2006	2006-2011	1991-2011	2001-2011
Average population change	-4.3	-8.26	-5.09	-12.22	-28.5	-16.6
# with growth	6 (26.1)	3 (13.0)	7 (30.4)	2 (8.7)	1 (4.3)	4(17.4)
Average increase	2.2	6.1	5.7	1.8	27.0	5.0
# with loss	17 (73.9)	20 (87.0)	15 (65.2)	21 (91.3)	22 (95.7)	19 (82.6)
Average decrease	-6.6	-10.4	-10.5	-13.6	-28.5	-21.1
No change			Cobalt			

Note: number in brackets is percentage of total inventory count

As revealed in Table 19, 2011 population varies amongst the communities, ranging from 50 (Gauthier[42]) to 157,765 (Sudbury[43]) people. Most communities either have below 1,000 people (34.8%), or have between 1,000 and 10,000 people (43.5%). Only two communities have between 10,000 and 100,000 people (8.7%; Timmins and West Nipissing) and only one community (Sudbury) had more than 100,000 people. Sudbury is the largest community in northern Ontario (19.6% of the total population), and Timmins is the fourth largest (5.3% of the total population)[44].

The majority of the communities experienced population loss between each census reporting year (Table 20). Most of the inventoried communities (19; 82.6%) saw population decline between 2001 and 2011, and between 1991 and 2011 (22; 95.7%). This decline is due in part to out-migration from the communities (and region generally), often for work or education, which tends to leave an older, retired population and part-time residents, which causes a shift in the community make-up and mindset (Bruce, Ryser, & Halseth, 2005; Ryser & Halseth, 2010). This population loss also leads to a loss of human capital, reducing the social network and volunteer pool of the community[45] (Halseth, 1999a; Halseth & Sullivan, 2002). This is furthered exacerbated by the trend for full-time employment to be replaced with consultants, casual workers, and part-time employment (Ryser &

[42] Many studies require a minimum population size for inclusion in analysis. Gauthier was included because it was above 100 people between 1991 and 2006 and fell below 100 people between 2006 and 2011. This study also includes all mining communities and settlements that currently have residents recognized by the Government of Canada.

[43] Sudbury is an outliner in the inventory because of its large population. Sudbury as included because it is a major mining community comprised, through amalgamation, of many historic mining communities.

[44] 50% of the total population of northern Ontario lives in the top five communities (Sudbury, Thunder Bay, Sault Ste. Marie, Timmins, and North Bay).

[45] The impacts of population loss in rural communities are also experienced by nearby communities as consumers are lost from the surrounding area (Canada Employment and Immigration Advisory Council, 1987).

Halseth, 2010). Northern Ontario typically has large distances between communities, which reduces the ability for people to commute to work in other communities, forcing them to relocate for employment (Johnston & Lorch, 1996). There is the risk with population loss due to out-migration that rural poverty increases as residents with 'the least amount of education and job skills tend to stay behind' (Bruce, Ryser, & Halseth, 2005, p. 127). There is also an inherent transient base in resource communities and the perception of shallower roots compared to heartland communities (Johnston & Lorch, 1996). These factors increase the challenges to population retention and economic diversification communities' face[46].

Variations are also noted in population change. On average there was a population change of -16.6 percent between 2001 and 2011, and -28.5 percent for 1991 to 2011 (Table 20). The rate of average population decline has been increasing since 1996, more than doubling each period except for 2001 to 2006. This census period saw the largest number of communities with population growth (7; 30.4%[47]). The average rate of decline was higher than the average rate of increase for the same period in three out of the four periods. This indicates that communities, as a generalization, are in a state of population decline, and that the decline in communities is faster than population growth in communities experiencing population increase.

Sudbury, and other communities that develop into large population centers, are expected to have a different population model more similar to urban centers than to resource communities (Wallace, 1992). Rural residents moving into larger municipal areas such as Sudbury would have multiple effects on the communities; mainly, that Sudbury would gain the necessary human resources to drive economic projects and the source community would lose these people. The migrants are likely those looking for new employment, and as such, are likely the skilled, younger workers.

The largest population changes for 2001 to 2011 were noted for Gauthier and McGarry, both of which had a significant decrease in population (-60.9% and -56.2% respectively from 2001 to 2011). Gauthier and McGarry also have the smallest and third smallest populations respectively of the inventory. This makes them more vulnerable to population loss, and population changes have a higher proportional impact. Small communities are more vulnerable to declining populations in part

[46] In contrast, near-urban communities are more likely to experience population growth through in-migration than other rural communities (Halseth, 1999a).

[47] Cobalt had no population change during this period and was included in the total population count but not in communities with population growth or loss.

due to the reduced tax base for municipal services and the reduced ability for a small community to support employment options.

A minority of communities in the inventory has experienced population growth over the last two decades. Only West Nipissing had an increase in population between 1991 and 2011 (of 27%), which is, in part, attributed to its amalgamation in 1999. Four communities in the inventory had an increase in population between 2001 and 2011: Pickle Lake (5.3%), Red Lake (7.1%), Sudbury (1.6%) and West Nipissing (5.8%). The four communities with population increase also had an increase in mining employment (covered in the next section). Two of the four communities have active mining operations: Red Lake and Sudbury. Sudbury has a number of educational opportunities for young people (such as Laurentian University, medical training centers, and colleges) that most other communities in the inventory do not[48]. Pickle Lake and West Nipissing do not have active mining operations and the increase in employment is likely due to workers commuting to operations (likely Red Lake and Sudbury respectively, and possibly others)[49]. Pickle Lake has had an increase in population since 2001, but has had a decline since 2006, and the population increase from 2001 to 2011 is 5.3 percent, which amounts to less than thirty new residents since 2001. This supports the generalization that minetowns in northern Ontario are experiencing a population loss, with exceptions based on employment and education opportunities.

4.3.3 The Model Applied to Northern Ontario Minetowns

The inventory of northern Ontario minetowns provides a data set to examine the proposed model of minetown development. Using data from the past five censuses (1991, 1996, 2001, 2006, and 2011[50]), the temporal development of the communities can be reviewed. Table 21 provides the mining sector employment in each community, Table 22 uses the proposed model to categorize the communities, Table 23 provides the community count for each stage, and Table 24 provides the average labour force for each stage of development. This allows for an examination of the

[48] Timmins has College Boreal, Northern College of Applied Arts and Technology (with a campus in Kirkland Lake as well) and l'Université de Hearst campuses, Red Lake has a Confederation College campus, and West Nipissing has a College Boreal campus.

[49] Pickle Lake could be considered notable because it is the furthest north community in Ontario with year round road access (via highway 599). In contrast to Pickle Lake being the most northerly of the four communities, West Nipissing is the most southerly, located east and slightly south of Sudbury.

[50] Census data for the census subdivisions which amalgamated in 1991 to 2011 was summed for the pre-amalgamation years for ease of analysis pre- and post-amalgamation (available in Appendix C).

progression of minetowns through development stages of the proposed model, identifies possible refinement of the model, and assesses the robustness of the model. The pre-mine dependent stage is not examined because the mining communities in the inventory experienced the mine dependent stage prior to 1991 (expect for Dubreuilville[51]), and therefore are past the pre-mine dependent stage during the census years used in this study.

Table 21: Percent of Total Labour Employment in Sector 21 (1991-2011)

Community	Mine Closure	1991	1996	2001	2006	2011	% Change '91-'11	% Change '01-'11
Atikokan	1980	1.5	1.0	0.8	0.6	7.8	430.6	830.2
Black River-Matheson	-	14.7	19.2	10.6	12.1	19.0	29.4	79.7
Cobalt	1983	7.7	3.2	2.2	0.0	NA	-100.0▪	-100.0▪
Dubreuilville	-	0.0	0.0	0.0	0.0	**37.5**		Increase
Ear Fall	1986/○ *Red Lake*	7.3	5.4	2.4	2.1	19.4	167.6	719.4
Elliot Lake	Early 1990s	**34.2**	12.5	4.8	4.4	3.6	-89.5	-25.4
Espanola	○ *Sudbury*	1.3	1.3	0.4	1.6	2.8	124.0	642.17
Gauthier	1971	**37.5**	20.0	0.0	25.0	0	-100.0	0
Greenstone	1971	0.0□	0.0□	0.5	1.1	5.2		953.26
Ignace	1991	14.4	2.6	1.7	3.1	0.0	-100.0	-100.0
Kirkland Lake	-	9.3	10.4	7.6	11.1	14.0	50.4	85.5
Larder Lake	1990	**37.4**	14.1	10.6	20.0	NA	-46.5▪	88.50▪
Manitouwadge	-	**41.0**	**40.5**	**34.8**	25.1	NA	-38.7▪	-27.89▪
Marathon	-	29.0	28.2	26.2	22.8	NA	-21.3▪	-12.70▪
Matachewan	-	13.5	29.2	9.1	NA	17.9	32.5	96.4
McGarry	1996	**40.9**	**31.4**	18.2	18.4	12.0	-70.7	-34.0
Pickle Lake	1995	26.0	3.3	0.0	0.0	14.6	-43.8	Increase
Red Lake	-	14.3	17.9	23.7	**30.5**	**31.0**	116.2	31.0
Sudbury	-	9.9□	8.9□	6.2	7.0	8.4	-15.2	34.8
Temagami	1990	4.4	2.2	2.0	0.0	0.0	-100.0	-100.0
Timmins+	-	18.1	15.3	11.9	10.3	14.4	-20.5	21.0
Wawa	-[52]	13.6	13.5	2.7	3.3	9.5	-29.9	257.3
West Nipissing	○	2.2□	1.6□	1.5	1.4	1.9	-11.6	31.1

Source: Statistics Canada Census Data
Note: percentages above 30 are in bold
NA: no census data available
- identifies communities with operating mines

[51] Dubreuilville did experience the pre-mining stage until 2008 when Richmont Mines began production, and is identified as such in Table 22, but the pre-mining stage in not included in the remaining tables because Dubreuilville is mine dependent in the 2011 census.

[52] All operations shut down in 1998, but in 2007 there was renewed interest in gold and two operations have opened.

[+] *new operations that opened after the 2011 census*
[□] *employment calculated from separate communities (pre-amalgamation)*
▪ *change was calculated using 2006 census data in place of 2011 data*
○ *the community was/is satellite to mining operations nearby (with most common destination)*

Table 21 provides information on labour force change over time. It is revealed here that five communities had increases in the portion of the labour force employed in sector 21 greater than 100 percent from 2001 to 2011: Atikokan (830.2%), Ear Falls (719.4%), Espanola (642.2%), Greenstone (953.3%), and Wawa (257.3%). From 1991 to 2011 Atikokan (430.6%), Ear Falls (167.6%), Espanola (124.0%) and Red Lake (116.2%) had an increase in mining employment greater than 100%. Mining employment was eliminated in Cobalt, Gauthier, Ignace and Temagami. This begins to suggest that the minetowns of northern Ontario are not all in the same stage of lifecycle development, and that the shifts in mining employment that occur are not sequential.

Table 22: Categorization of Northern Ontario's Mining Communities (1991-2011)

	1991	1996	2001	2006[•]	2011[+]
Pre-mine Dependent	Dubreuilville	Dubreuilville	Dubreuilville	Dubreuilville	
Mine-Dependent	Elliot Lake Gauthier Larder Lake Manitouwadge McGarry	Manitouwadge McGarry	Manitouwadge	Red Lake	Dubreuilville Red Lake
Transitioning In-situ	Black River – Matheson Ignace Kirkland Lake Marathon Matachewan Pickle Lake Red Lake Sudbury Timmins Wawa	Black River – Matheson Elliot Lake Gauthier Kirklane Lake Marathon Matachewan Pickle Lake Red Lake Sudbury Timmins Wawa	Black River – Matheson Kirkland Lake Marathon Matachewan Red Lake Sudbury Timmins Wawa	Black River – Matheson Gauthier Kirkland Lake Manitouwadge Marathon Sudbury Timmins Wawa	Black River – Matheson Kirkland Lake Matachewan Sudbury Timmins Wawa

	1991	1996	2001	2006•	2011+
Transitioning Ex-situ	Atikokan Cobalt Ear Falls Espanola Temagami West Nipissing	Cobalt Ear Falls Espanola Greenstone Ignace Larder Lake Temagami West Nipissing	Cobalt Ear Falls Elliot Lake Ignace Larder Lake McGarry Temagami West Nipissing	Cobalt Ear Falls Elliot Lake Espanola Ignace Larder Lake McGarry West Nipissing	Atikokan Ear Falls Elliot Lake Espanola Greenstone McGarry Pickle Lake West Nipissing
Mine-independent*	Greenstone	Atikokan	Atikokan Espanola Greenstone Gauthier Pickle Lake	Atikokan Cobalt Pickle Lake Temagami	Gauthier Ignace Temagami

Source: Table 21
** less than 1% of labour force employed in sector 21*
• *Matachewan does not have available 2006 labour force data*
+ *Cobalt, Larder Lake, Manitouwadge, and Marathon do not have available 2011 labour force data*

Reviewing the stages of the model over the 1991-2011 period highlights the dynamic nature of mine employment in mining communities (Table 22). Communities move through the different stages as employment fluctuates, but post-dependent transitioning communities are the most common in the data set, with an average mining labour force between 8.8 and 11.7 percent of the total labour force (Table 24). Table 22 identifies that communities can move from mine dependent to mine independent (e.g. Gauthier and Ignace), go from mine independent to mine dependent (e.g. Dubreuilville), remain static in a stage (e.g. Black River-Matheson), or fluctuate between stages (e.g. Pickle Lake). The progression of communities through the stages is not sequential, contradictory to the existing lifecycle models (notably Halseth, 1999a and Bone, 1998). This provides support for the need for a new model better suited to the study of the development of minetowns.

Table 23: Number of Communities in Each Stage (1991-2011)

Stage	1991	1996	2001	2006	2011+
Mine Dependant	5 (21.7)	2 (8.7)	1 (4.3)	1 (4.3)	2 (8.7)
Transitioning	16 (69.6)	19 (82.6)	16 (69.6)	17 (73.9)	14 (60.9)
In-situ	10 (43.5)	11 (47.8)	8 (34.8)	9 (39.1)	6 (26.1)
Ex-situ	6 (26.1)	8 (38.8)	8 (34.8)	8 (34.8)	8 (34.8)
Mine Independent	2 (8.7)	2 (8.7)	6 (26.1)	5 (21.7)	3 (13.0)
Missing/NA	0 (0)	0 (0)	0 (0)	0 (0)	4 (17.4)

Note: percent of total count in brackets
+ *Cobalt, Larder Lake, Manitouwadge, and Marathon do not have available 2011 labour force data*

Table 23 shows the prevalence of the different stages in 2011. The most common stage experienced by communities was transitioning between mine dependence and mine independence. In-situ transitions were more common in 1991 and 1996, but more recently the ex-situ transitioning stage has accounted for the majority of transitioning communities. The year 1991 had the highest occurrence of mine dependent communities (5; 21.7%), but each subsequent reporting period has only had one or two mine dependent communities. This may be a result of communities diversifying their economic base and/or a reduction in mining employment needs. Mine independent communities were the minority of the inventory communities in 1991 and 1996 (one community in each case), but in 2001 and 2006 there was an increase to five and four communities respectively. There was a reduction in mine independent communities in 2011 due to renewed mining employment in Atikokan and Pickle Lake (previously mine independent communities in 2001 and 2006). This tendency for most communities to be either in-situ or ex-situ transitioning communities over the reporting period is expected. In in-situ transitioning communities, the active mine is local and sources employment locally. In the case of ex-situ transitioning communities, commuting to mining operations beyond the immediate local region is a viable option, especially in the cases of 'bedroom communities' for fly-in/fly-out operations and those within driving distance of a mining operation.

Table 24: Average Percentage of Sector 21 of Total Labour Force for by Stage (1991-2011)

Stage	1991	1996	2001	2006	2011
Mine Dependent	38.2	35.9	34.8	30.5	34.3
Transitioning	11.7	11.2	8.8	10.6	11.3
In-situ / Ex-situ	16.3 / 4.0	16.2 / 5.0	12.2 / 5.4	13.1 / 6.5	13.9 / 8.4
Mine Independent	0	0	0.3	0.1	0

Source: calculated from Table 21

Variations in the relative importance of the mining sector amongst communities at different stages are presented in Table 24. As revealed in this table, since 1991, there has been an increase in the mining portion of the labour force of ex-situ transitioning communities. This is compared to a decline in the 1990s and a relatively steady rate in the 2000s in in-situ transitioning communities. Major mining operations closed in six of the communities during the 1990s, only two of which (Ignace and Temagami) have since become mine independent (Table 21). The other four (Elliot Lake, Larder Lake, McGarry, and Pickle Lake) have become satellite communities for other mine operations (likely Kirkland Lake, Timmins, Sudbury and Red Lake).

Data for the year 2011 were used to create a recent snapshot of the characteristics of the different types of minetowns in the model. Table 25 identifies the types of communities in northern Ontario, Table 26 provides the population information, Table 27 identifies the economic characteristics of each community and Table 28 summarizes the labour force diversity for each stage. There is a clear shifting away from mine dependent communities in northern Ontario. Formerly mine-dependent communities have shifted to new dominant, but not dependent, industries. This includes communities with active mining within the local area, such as Timmins and Kirkland Lake.

Table 25: Types of Mining Communities in Northern Ontario (2011)

Mine dependent	Transitioning In-situ	Transitioning Ex-situ	Mine Independent
Dubreuilville (37.5)	Matheson (19.0)	Atikokan (17.8)	Cobalt*
Red Lake (31.0)	Matachewan (17.8)	Ear Fall (19.4)	Ignace
	Marathon (22.8)*	Elliot Lake (17.4)	Temagami
	Timmins (14.4)	Espanola (2.81)	Gauthier
	Kirkland Lake (18.6)	Greenstone (16.3)	
	Sudbury (13.6)	Larder Lake (20.0)*	
	Wawa (13.5)	Manitouwadge (25.1)*	
		McGarry (12.0)	
		Pickle Lake (29.2)	
		West Nipissing (15.5)	

Source: Statistics Canada 2011 census
Number in bracket () is the portion of the labour force employed in sector 21
** based on 2006 census data*

As Table 25 reveals, only two communities currently have a dependency on the mining sector: Dubreuilville and Red Lake with 37.5 and 31 percent of the labour force employed in the mining sector respectively (based on 2011 census data). No other community has this dependency, suggesting that the labour force profile has changed in these formerly mine-dependent communities. Removing Dubreuilville and Red Lake (the two mine dependent communities) from the data set, reveals that the remaining communities had an average mine sector employment of 8.9 percent. This decline in mining employment could be a result of a reduction in the available employment options or a move away from a mining-centric economic base. This conclusion does not, however, shed light on why or how labour activity is changing. In the former case it could be related to restructuring, either a smaller labour force required due to the addition of post-fordist techniques (Halseth, 1999), redundancy and the winding down of mining operations (Bradbury, 1984), or re-imaging of the

community to include more sustainable and diversified activities (Halseth and Sullivan, 2002). In the latter case, the relative importance of different labour force activities might have emerged organically, and been locally or externally driven (either reactively or proactively). It also does not shed light on the nature of the intervention, which could be proactive or reactive driven from within or external to the community.

Table 26: Population and Mine Sector Labour Force Characteristics of Four Types of Mining Communities

	Mine Dependent	Transitioning In-situ	Transitioning Ex-situ	Mine Independent
Average Population (2011) census	2583	35638 (31026)	4938 (4229)	780 (830)
Average % Population change ('01-'11)	-13.9	-12.78	-13.8	-31
Average % of labour force in mining sector (2011) census	34.3	13.9	8.4	0.00
Average % of labour force in mining sector change ('01-'11)	30.97	13.4	55.7	-66.7 (-50.0)

Source: calculated from Statistics Canada census
Data in () includes communities with only 2006 data using 2011 population

Population has been declining in all stages of minetowns for the 2001 to 2011 period (Table 26). The overall population trend in northern Ontario and the minetown inventory is of population loss. Mining labour force has been increasing during the same period for all stages, except in mine independent communities. The mine independent stage is characterized by the non-existence of a mining labour force, and so it is expected that it would have a reduction in mining labour force as communities move from transitioning stages to the mine independent stage. Unexpectedly, the largest increase in mining employment was in ex-situ transitioning communities. This indicates that a larger portion of the employed local community is commuting to mines for work.

Table 27: Economic Characteristics of Four Types of Mining Communities: Dominant Economic Sectors

Dominant Sector (AVG %)	Mine Dependent	Transitioning In-situ	Transitioning Ex-situ	Mine Independent
21 - Mining, quarrying, and oil and gas extraction [23.2□]	Dubreuilville (37.5) Red Lake (31.0)	Black River - Matheson (19.0) Matachewan (17.9)* Timmins (14.4)		
62 - Health care and social assistance [16.0]		Kirkland Lake (18.6) Sudbury (13.6) Wawa (13.5)	Atikokan (17.8) Elliot Lake (17.4) West Nipissing (15.5)	
91 - Public administration [20.4]			Pickle Lake (29.2)* McGarry (20)* Greenstone (16.3)	Ignace (16.0)
44-45 – Retail			Espanola (15.9)+	
23 – Construction				Temagami (17.1)
None				Gauthier (0)*

Source: Statistics Canada 2011 census
Note: labour force for both sexes used[53]
Number in brackets () is the portion of the community's labour force employed in the sector
Number in square brackets [] is the sector's average percentage of the total labour force in the inventory communities for sectors dominant in multiple communities
** likely experiencing a lag time in decline*
+ sectors 44-45 (Retail) and 31-33 (Manufacturing) has same amount
□ 17.7% without mine dependent communities (Dubreuilville and Red Lake)

There has been a shift in employment in the minetowns, and Table 27 provides the most common dominant labour force sector for each community. The current top three labour sectors for the communities are mining and quarrying (6), health care and social assistance (6) and public administration (4). No community would be classified as dependent on the dominant industry sector, although Pickle Lake is very close at 29.2 percent employment in public administration. The high occurrence of health care and social assistance, and public administration employment is expected. Randall and Ironside (1996) note the tendency for public service and administration to be the main

[53] Randall and Ironside (1996) reviewed the labour force in resource industry by gender in their study; a similar approach may provide further insight into the labour force changes as communities transition from mining to other industries.

rivals for resource employment because 'northern hinterland' communities lack value-added manufacturing employment. This is due to the reduced feasibility of manufacturing industries, mainly because of the large distances from the community to the major population centers and shipping locations (Randall & Ironside, 1996). Only six of the twenty-three communities have the mining sector as the dominant labour sector, which indicates that most of the communities have moved away from mine dependency. This suggests that communities have diversified their economic base, possibly preparing for a new stage of development, which includes a re-imaging away from the mining sector.

Nine communities from the list continue to have local active mining operations: Black River-Matheson, Dubreuilville, Kirkland Lake, Manitouwadge, Marathon, Matachewan, Red Lake, Sudbury, Timmins and Wawa. No labour force data were available for Cobalt, Larder Lake, Manitouwadge or Marathon for 2011. Cobalt and Larder Lake no longer have active mining, but Manitouwadge and Marathon do, with the Hemlo mine complex situated between the two communities[54]. None of these communities are dependent on the mining operations, but it is the dominant sector for Black River-Matheson, Matachewan and Timmins. Health care and social assistance is the dominant sector in Kirkland Lake, Sudbury and Wawa[55]. This supports that communities make an effort to diversify the economic base while mining operations are active.

Communities transitioning in-situ were split between a mining dominated labour force and a health care and social service dominated labour force[56]. In contrast, the labour force of communities transitioning ex-situ is no longer mining, but has shifted to service sectors of health care and social assistance, and public administration. This is expected in rural, northern areas because service industries are more likely to play a large role in economic diversification (Randall & Ironside, 1996).

[54] It is approximately 60 km to Manitouwadge and 40 km to Marathon.
[55] Based on 2006 data, education services was the dominant sector in Marathon (12.9%) and mining was the dominant sector in Manitouwadge (25.1%).
[56] This included Sudbury, which is the largest population center in northern Ontario and has a number of medical teaching and research operations.

Table 28: Industrial Base Characteristics of Four Types of Mining Communities

	Mine Dependent	Transitioning In-situ	Transitioning Ex-situ	Mine Independent
Average number of industries (2011 census) of 20	11	15.5	13.4	5.7
Percent change in average number of industries ('01-'11)	-26.7	-10.3	-18.4	-66.0

Source: calculated from Statistics Canada 2011 census

Transitioning communities face challenges due to economic uncertainty and the ability to retain community members. The largest diversity of labour force sectors was found in transitioning communities, both in-situ and ex-situ (Table 28). Northern Ontario communities transitioning in-situ were found to have a higher average number of labour force sectors with employment and a smaller loss of industries in the previous ten years. This may be due to mine employees working and living in the community, instead of commuting as they would in a community transitioning ex-situ. Being able to work in the same location as they live, mine employees are spending more time, and therefore have an increased opportunity to spend money in the community, creating a cycle of local business support[57].

The smallest diversity of industries was in mine independent communities (5.7 out of 20)[58]. Mine independent communities also had the largest reduction in labour force base and population between 2001 and 2011. This may be an indication of a declining community in a prolonged lag time with little or no opportunity to diversify. The mine independent communities also tend to have a smaller population with a faster rate of population loss then the other stages of minetowns (Table 26). This reduces the tax base of the community, the viability of businesses due to reduce local spending and an out-migration of young people for education and employment opportunities elsewhere. This creates a cycle of decline that can be very difficult for a community to escape from and can result in the *declining* response described in the model. This response is characterized by the loss of the major industry causing a major decline in the economics of the community due to the lack of diversity in the economic base. As communities transition away from mining dependence, it is important for alternative industries to be available to provide employment and income for the community.

[57] A review of local business, entrepreneurships, and local spending in in-situ versus ex-situ transitioning communities would provide an in-depth examination of this.

[58] Statistics Canada suppresses data when there are fewer than 10 employees, so a few employees may actually be present in some categories without reported employees.

Of note are Gauthier's, McGarry's, Matachewan's, and Pickle Lake's steadily declining diversity of labour sectors (Table 29). Declining labour force diversity from the period of transition onwards is likely an indication of a prolonged winding down period, and not an alternative future in the mine independent stage. This is coupled with population loss (Table 30), providing strong indication that a prolonged winding down period, or lag time effect, is occurring. This stage has a rapid out-migration at the end of operations similar to the original winding down phase described by Bradbury (1984a), but with has a slower, prolonged decline. The four communities are not in the same stage of development. Gauthier is mine independent, McGarry and Pickle Lake are transitioning ex-situ, and Matachewan is transitioning in-situ. Matachewan has shifted from mine independent to transitioning in-situ with the opening of the Young-Davidson Mine, and is likely having residual effects from the mine closure of the mid-2000s, which will be mitigated in the coming years. Pickle Lake is experiencing a similar event to Matachewan, but with increased mining employment ex-situ of the community. McGarry has had a rapid decline in population, and it is likely that there is an out-migration to larger urban centres with more employment opportunities (such as Kirkland Lake) as local mining employment continues to decline. Gauthier has no reported industries and the population has more than halved since 2006, indicating a large out-migration and limited opportunities for those who remain in the community. This greatly reduces the chance that Gauthier will be able to diversify and mitigate the prolonged lag-time decline. These four communities highlight the importance of proactive diversification for the mitigation of decline.

Table 29: Communities with Prolonged/Lag Time Winding Down Period: Industries Present

Community	1991	1996	2001	2006	2011
Gauthier	3	5	2	4	0
Matachewan	11	9	10	4	2
McGarry	12	12	13	11	2
Pickle Lake	13	12	10	8	5

Source: Statistics Canada census data
Out of 20 labour force categories

Table 30: Communities with Prolonged/Lag Time Winding Down Period: Population

Community	1991	1996	2001	2006	2011
Gauthier	149	152	128	133	50
Matachewan	453	402	409	375	270
McGarry	1139	1015	787	674	345
Pickle Lake	654	544	399	479	420

Source: Statistics Canada census data

Table 31: Relationship Between Population and Labour Force Change in Northern Ontario Minetowns

Population/Labour Force Change ('01-'11)	Mine Dependent	Transitioning In-situ	Transitioning Ex-situ	Mine Independent
-/- [7; 30.4%]	0 (0/0)	1 (14.3/4.3)	3 (30/13.0)	3 (75/13.0)
-/+ [12; 52.1%]	1 (50/4.3)	5 (71.4/21.7)	5 (50/21.7)	1 (25/4.3)
+/- [0; 0%]	0 (0/0)	0 (0/0)	0 (0/0)	0 (0/0)
+/+ [4; 17.4%]	1 (50/4.3)	1 (14.3/4.3)	2 (20/8.7)	0 (0/0)

Note: the number in round brackets is the percentage of within the category/percentage of total communities,
the number in square brackets is the total count for the category and the percentage of the inventory

Looking at the current rate of mining employment only provides a snapshot of the state of affairs. By examining recent trends, changes in mining labour force and population can be examined (Table 19 and Table 21) and are summarized in Table 31. The trends in population and mining labour force are contrasting: population tends to be declining while mining labour force tends to be increasing. The level of employment has risen in the mining sector in sixteen (69.6 percent) of the twenty-three communities for the 2001 to 2011 period. This includes Dubreuilville and Red Lake, but not McGarry. The level of mining sector employment has declined in seven communities (30.1 percent) for the same period. If the four communities without 2011 labour force data are excluded (Cobalt, Larder Lake, Manitouwadge and Marathon, for which 2001 and 2006 data were used), the percentage values change to 78.9 percent (15 communities) for increasing employment, and 21.1 percent for decreasing employment. This is opposite the trends in population: 81 percent of the communities have had a decline in population since 2001, and only 19 percent have had an increase in population (Sudbury, Pickle Lake, Red Lake and West Nipissing). Furthermore, population and mining employment increased in four (17.4%) communities between 2001 and 2011, population decreased and mining employment increased in twelve communities (52.2%), and both population and mining employment decreased in seven communities (30.4%) (no communities had a population increases with a mining employment decrease). Notably, both in-situ and ex-situ transitioning communities have a high rate of population loss with an increase in mining sector labour force. This further suggests that the communities are in different stages of the minetown lifecycle, and that labour force and population are no longer closely tied.

Using the proposed model for northern Ontario minetowns illustrates the ability of the model to identify communities with active mining operations that are transitioning to a more diversified

economic base. It also allows for the comparison of communities transitioning with in-situ mining and ex-situ mining. This is valuable given that planned resource communities are no longer created and mining companies must source employment from existing settlements. However, the diversification response (proactive, crisis or declining) is not easily apparent from the initial categorization of the communities. This would require a more in-depth review of dependence and post-dependence labour force and economics[59] of the community, as well as review of strategic plans and municipal records.

4.3.4 Summary

Northern Ontario has a long and prosperous history of mining that has left a number of communities with mining heritage. One community has been abandoned (Renabie), and twenty-four communities amalgamated into larger areas. This left twenty-three minetowns which either are, or have been, dependent on mining since 1950 for use in the inventory. Currently, only Red Lake and Dubreuilville are still dependent on mining operations. Of the remaining communities, seventeen communities are transitioning (73.9%); seven (30.4%) in-situ and ten (43.5%) ex-situ, and four are mine independent (17.4%). On average, transitioning communities currently had 11.3 percent of the labour force employed in mining (13.9% in in-situ, 8.4% in ex-situ) and mine independent communities had no employment in the mining sector. The proposed model highlighted the variations in minetown development and differentiated between communities transitioning in-situ and ex-situ. The review of northern Ontario minetowns in the model from 1991-2011 revealed that communities go through development stages in a non-sequential fashion, supporting the need for a new approach to resource community lifecycle modeling and the proposed model's ability to fill this gap.

[59] Tax base and business directories could provide a lot of data about post-dependence economics and industries.

4.4 Tourism in Minetown Communities

4.4.1 Introduction

Tourism and recreation is prevalent in northern Ontario; it is advertised throughout the region and online, as well as supported by government policies and documents. This section reviews the tourism data for the inventory of mining communities, as well as northern Ontario. This study has established that the majority of the communities are no longer reliant on mining operations for employment, and that there are a variety of occupations in its place (i.e: that the community has not become reliant on a different industry sector). NRBTR and tourism-related businesses and employment in the communities may be a component of the current economic stage of the communities. Tourism plays into the economic diversification plan of most rural communities, and perhaps the addition of tourism to the resource community is an indication of the assimilation of such communities into the larger rural lifecycle trends. The inclusion of tourism and NRBTR in the communities and the region is assessed. The role of tourism in the proposed model is also examined, using the minetown inventory for illustration.

In most communities there was some tourism and recreation component early on, but generally not as a significant economic driver. For example, Red Lake had tourism in the form of hunting and fishing outposts before World War II, and Elliot Lake had tourism beginning in the first few years of completion and is now rebranded as 'The Jewel in the Wilderness'. The level of employment and economic contributions of tourism are potentially a key component for the development of Canadian resource communities. Tourism developments can also help in the re-branding efforts of the community.

4.4.2 Tourism in Northern Ontario

Tourism is an important part of the northern Ontario economy. Although the number of employees in the tourism sector in northern Ontario (as well as provincially) has declined in recent years, data collected by the Ontario Ministry of Tourism, Culture and Sport[60] reveals that the portion of employment in the tourism sector is higher in northern Ontario than the provincial level[61] (Table

[60] Raw data available at http://www.mtc.gov.on.ca/en/research/rtp/rtp.shtml

[61] This change in the northern Ontario tourism industry is difficult to explain given the recent push for tourism development in the region. The overall number of employees in northern Ontario in all industries has been

32, Table 33, and Table 34). Differences are also apparent in trip duration and NRBTR-motivated visits (Table 35). Overnight visitors make up a larger portion of the regional total of visitors for northern Ontario than for Ontario, which may be explained by the larger distances that must be travelled in the north. The NRBTR share of the tourism market in northern Ontario is also much larger than Ontario (47.2% compared to 21.3%), which supports the literature that northern Ontario has a wilderness niche for tourism activities and businesses. Furthermore, although overnight visitors make up only 45.3 percent of the northern Ontario visitors, they account for 76.1 percent of the spending in the region (Table 36). Given that NRBTR visitors make up almost half of all northern Ontario's visitors and overnight spending accounts for more than three quarters of the spending, the inclusion of NRTBR activities, sites and businesses that promote multi-day stays in a community or region are important to the northern Ontario tourism industry.

Table 32: Employment in Northern Ontario

	All northern Ontario employees			All northern Ontario tourism employees			
Year	Employees	% change	% of Ontario	Employees	% change	% of all employees	% of Ontario
2011	36,522	-3.81	4.15	7,546	-19.62	20.66	5.10
2010	37,970	0.64	4.28	9,388	-0.17	24.72	6.29
2009	37,730	-0.33	4.32	9,404	-1.11	24.92	6.34
2008	37,854	-2.63	4.35	9,510	-3.67	25.12	6.38
2007	38,875	-3.48	4.41	9,872	-7.10	25.39	6.34
2006	40,278	-	4.66	10,627	-	26.38	6.56

Source: Ontario Ministry of Tourism, Culture and Sport Regional Tourism Profiles

Table 33: Ontario Tourism Employment

	All Employees		All Tourism Employees		
Year	Employees	% change	Employees	% change	% of all employees
2011	879,626	-0.73	147,868	-0.95	16.81
2010	886,137	1.50	149,291	0.72	16.85
2009	873,391	0.43	148,220	-0.51	16.97
2008	869,651	-1.27	148,983	-4.39	17.13
2007	880,842	1.99	155,817	-3.80	17.69
2006	863,622	-	161,976	-	18.76

Source: Ontario Ministry of Tourism, Culture and Sport Regional Tourism Profiles

declining, but the rate of decline has been more pronounced in the tourism industry. 2011 had the largest decline in the number of tourism employees in northern Ontario of the reported years, which was not mirrored in the Ontario total. The decline could be a result of a slump in the regional tourism market, a social shift away from consumptive activities such as hunting, and transportation costs.

Table 34: Changes in Tourism Portion of Total Employment Positions

Year	% tourism employees in northern Ontario	% tourism employees in Ontario	Difference	% Difference
2011	20.7	16.8	3.9	20.6
2010	24.7	16.9	7.9	37.9
2009	24.9	17.0	8.0	38.0
2008	25.1	17.1	8.0	37.8
2007	25.4	17.7	7.7	35.8
2006	26.4	18.8	7.6	33.8

Source: Ontario Ministry of Tourism, Culture and Sport Regional Tourism Profiles

Table 35: NRBTR Visitors in Ontario and Northern Ontario

	Total visitors			NRBTR		
Region	Visitors (% Ontario)	Same-day (%)	Overnight (%)	Visitors (% of regional total)	% of Ontario NRBTR	% of Ontario
Ontario	138,848,800	90,323,900 (65.1)	48,524,900 (34.9)	29,534,400 (21.3)	-	21.3
Northern Ontario	6,249,300 (4.5)	3,421,100 (54.7)	2,828,200 (45.3)	2,952,300 (47.2)	10.0	2.1

Source: Ontario Ministry of Tourism, Culture and Sport Regional Tourism Profiles

Table 36: Tourism Spending in 2011

Region	Total spending (% Ontario)	Overnight spending (%*)	Same day (%*)
Ontario	20,802,549,000 (100)	13,268,107,000 (63.78)	7,534,442,000 (36.22)
Northern Ontario	1,414,034,000 (6.8)	1,076,523,000 (76.13)	337,511,000 (23.87)

Source: Ontario Ministry of Tourism, Culture and Sport Regional Tourism Profiles
Note: spending values are in Canadian dollars
** - % of respective regional total*

4.4.3 Northern Ontario Minetown Tourism

Surveys of the identified minetowns for tourism and recreation businesses and activities required examination of a number of sources, including websites, business directories, tourism literature, marketing material, and community visits. The objective was to identify communities with tourism and NRBTR business to establish if tourism, and specifically NRBTR, is playing a role in the diversification of minetowns in northern Ontario (Table 59 in Appendix C provides a summary of the

data). All but one of the communities (Gauthier) in the inventory promotes tourism of some type. Very little information is available about Gauthier, which is not surprising, given it has a population of 123 people and is off the main artery roads. Gauthier is located at the north end of Tamiskaming Lake between Kirkland Lake and Larder Lake on Highway 66. There has not been a major increase or decrease in the population of Gauthier during the past two decades.

Nature- and resource-based tourism and recreation activities have been identified as a key type of tourism in northern Ontario (Bennett & Lemelin, 2010; Boyd & Butler, 1999; Johnston & Payne, 2005), and it is expected that communities promoting NRBTR will take advantage of this niche. NRBTR attractions were separated from NRBTR businesses for the inventory because they represent two different aspects of the tourism industry. NRBTR attractions are found in all but one community (again being Gauthier). Hiking trails, fishing and hunting were commonly promoted activities in the communities studied. Only three of the communities in the inventory did not have at least one NRBTR-oriented business. Thus, mining communities are capitalizing on northern Ontario's wilderness assets with the addition of tourism and NRBTR businesses.

Cobalt, Gauthier and McGarry are the three communities without NRBTR-related businesses. In the case of Cobalt (population, 1,133), most economic development has been centered at Coleman (population, 597), which does have NRBTR businesses. The two communities are often referred to as Cobalt-Coleman. Although the population of Coleman has increased (up 10.6% since the 2006 census), the population of Cobalt has declined (-7.4% since 2006 census). To offset its declining population, Cobalt has promoted mining heritage tourism (Hall & Stern, 2009), and some of the activities, such as the Silver Trail, have a nature-based component, but are not NRBTR-focused. Coleman Township covers a larger area then Cobalt, which includes a number of lakes offering fishing opportunities (including a resort lodge), suggesting that the area is marketable for NRBTR.

Having no tourism businesses means that Gauthier has no NRBTR businesses. Gauthier is twenty-three kilometres west of another community without NRBTR business: McGarry. McGarry is located at the Quebec border at Rouyn-Noranda. McGarry does have a tourist information center for the area, but no tourism-related businesses and only one accommodation venue (Hilltop Inn; a three room guest house). The population has decreased by 11.7 percent since the 2006 census. These two communities are along the same through-highway (highway 66), as Larder Lake and Kirkland Lake, both of which do have NRBTR businesses and larger populations. Small population and poor access may partially explain the lack of NRBTR businesses which are found in Gauthier and McGarry.

4.4.4 Summary

Northern Ontario has typically had a larger portion of NRBTR within its tourism market than the provincial average, and has been experiencing a decline in tourism and NRBTR employment over the last five years. Northern Ontario minetowns include tourism and NRBTR in economic diversification efforts. Only one community (Gauthier) did not have tourism businesses and three communities (Cobalt, Gauthier and McGarry) did not have NRBTR businesses. This indicates that the majority of northern Ontario minetowns are making efforts to diversify the economic base of the community through tourism (95.7%), and the efforts often include NRBTR activities and attractions (90.9% of communities with tourism, 87.0% of all communities), which have been identified as a niche market for northern Ontario. This is expected in light of tourism being a diversification strategy for rural, peripheral and 'hinterland' communities and that NRBTR has been identified as a valued asset to the tourism industry of northern Ontario (Bennett & Lemelin, 2010; Boyd & Butler, 1999; Butler, 1998; Johnston & Payne, 2005). It also indicates that communities in all stages of development include tourism and NRBTR activities and businesses. However, it does not indicate whether this effort is proactive, reactive, organic or planned.

4.5 Discussion and Synthesis of Inventory Results

4.5.1 Introduction

The aim of this study is to gain insight into the lifecycle of mining communities in northern Ontario, and the diversification efforts to include NRBTR. To date there is a large amount of literature on the transitioning of resource dependent communities in Canada to alternative industries, including tourism and recreation, with much of this focused on mining communities. The use of tourism and recreation is a widely acknowledged development strategy for rural areas, and northern Ontario has been identified as rich with nature- and resource-based tourism and recreation (NRBTR) opportunities (Boyd & Butler, 1999; Johnston & Payne, 2005). This section brings together the results of the inventory study and the academic literature to begin to address the identified gaps, predominantly the advancement of the resource town lifecycle models and NRBTR in minetowns.

4.5.2 Minetown Lifecycles and Development Discussion

Single industry towns in Canada have received much attention since Innis's work in the 1930s. A number of models have been designed to describe the lifecycle of Canadian resource communities. A review of the academic literature identified three major lifecycle models for Canadian resource communities. These are the Lucas/Bradbury/Halseth model (1999a)[62], the Bone model (1998), and the Bruce, Ryser, & Halseth model (2005). Historically the development of resource communities has been relatively consistent with a quick growth period, a stability or plateau stage (possibly with some operation suspension events), and a decline post-extraction. This was especially true for communities designed to support resource extraction, and those that started out as a company town. This pattern of community development no longer reflects the realities of resource communities, including mining communities, in Canada. This is because resource communities, including those in northern Ontario, are not the 'frontier towns' they once were, and the creation of a community for resource extraction is no longer seen as a valuable endeavour by the government (Wallace, 1992).

The three models have four major shortcomings in describing current Canadian resource communities: a standard growth pattern, the assumption of post-closure community abandonment, a lack of economic diversification during resource operations, and mining employment being the single major draw for population growth. Additional stages could be proposed to the newest restructuring stages of the models to better describe alternative economic futures, but this would not accommodate the inclusion of other major economic activities earlier in the community lifecycle or address the assumptions about the pattern of development.

The proposed model addresses the shortcomings of the classic models, as well as concerns raised by earlier studies, such as by Stedman et al. (2004) and Wallace (1992). The standard growth pattern assumed in previous lifecycle models is not assumed in the proposed model. The model moves away from the standard of using a population or population change metric as the community measure. Instead of population, the mining labour force portion of the total labour force is used to categorize minetowns in a method similar to the Bruce, Ryser, and Halseth model (2005). By using the portion of the labour force employed in the mining sector, the model bypasses the assumption that the community is created for mining, and instead focuses on the effect of mining on the community.

[62] The LBH model is notable for its prominence and longevity in Canada resource community studies. The longevity of the model is due partly to the revisions which occurred to update it to better suit the shifting reality of resource towns. The last major review of the model was by Halseth and Sullivan in 2002.

This allows for increased fluidity through stages while maintaining the ability to compare communities within the same stage or which have had a similar pattern of development. This allows the model to be used for mining without excluding other developing aspects of the community's industrial base. Post-closure abandonment is not assumed in the proposed model, which improves upon previous models by allowing for the incorporation of alternative economic drivers and industries at any point in community development. This also addresses the final shortcoming of previous models that resource extraction is the major in-migration and population growth driver while operational. These factors also make the model more accessible for general use by simplifying and quantifying the analysis required for temporal assessment and multi-community comparison, as well as supporting the contribution the model makes to the literature and study of Canadian resource community lifecycles.

Few case study communities (e.g. Halseth, 1999a and Bradbdury, 1984b) have been used to evaluate and advance the study of resource community lifecycles, as described above. The use of northern Ontario minetowns in this study was a valuable exercise because it examined vulnerable and 'typical' resource communities. It provided a data set that was varied across community histories, development and economics to assess existing models and test the proposed model with existing data[63]. This allowed for a view into different stages of the mining lifecycle, as well as the trends in a subset of resource communities, contributing to the study of Canadian resource community lifecycles.

The loss of people is common in the north, and may suggest that the mining communities are no longer unusual or differentiated from communities that were not originally resource-dependent. This may indicate that the resource lifecycle model may begin to overlap with rural north community models (the declining population is typical of northern Ontario, see sections 1.3 and 4.3.2.1). There is work that supports the view that resource-community specific models are no longer relevant in northern Ontario (or northern Canada) (Wallace, 1992). Given that only Renabie has experienced the 'winding down phase' (abandonment) of the Lucas/Bradbury/Halseth model, this may no longer be the norm, but instead the exception.

Most of the communities have population loss from census year to census year post-mine dependence. This indicates a high change in population, and that out-migration is not offset by equal

[63] Sector twenty-one labour force was used, which is not strictly mining, but also includes quarrying, and oil and gas. Northern Ontario has limited quarrying, oil and gas activities and therefore limited reported employment in these sectors. In regions with more economic activities in these sectors, mining specific labour force data would have to be used.

or greater in-migration of new residents. This population loss of the northern Ontario minetowns post-dependence is consistent with the trends for rural northern Ontario as a region as a whole. This suggests that even with economic restructuring and reimaging, the resource towns are continuing to lose members of the community. This is an option presented in existing resource community lifecycle models, but it is given equal weighting as population stability and population growth. The results of this study indicate that this is not the case, and population loss is the most likely of all the futures (including winding down).

The classic models assume that mining employment is the major draw for population growth through in-migration. The four communities with population growth also experienced an increase in the mining labour force over the same period (17.4%; 21.1% of communities with 2011 labour force data). This is expected as increased employment opportunities would act as an incentive for new residents to relocate. This is offset by the twelve communities that had an increase in mining employment with a decrease in population (52.2% of 23, 63.2% of the communities with 2011 labour force data[64]). This indicates that mining employment is not the major draw for new residents in the minetown inventory communities, supporting that the lifecycle models and resource community theories are becoming less applicable. This is further supported by the fact that many of northern Ontario's minetowns have different economic bases at different stages. The existing models need, at minimum, to be revised, but most northern Ontario minetowns (82.6%) have had a steady decline in population since the mining sector labour force has dropped below the 30% dependency threshold, indicating that the models are no longer descriptive of minetowns[65].

The inventory testing of the proposed model highlighted that communities do not progress in a sequential, prescribed fashion through the development stages, but instead may move between stages as economics and mining operations fluctuate. The model also highlights that communities can return to, or become, mine dependent (such as Red Lake and Dubreuilville have in recent years). This is a divergence from the typical thinking that communities move in a relatively predictable fashion, mainly away from resource dependence to a final abandonment stage. The proposed model does not differentiate between company towns and towns that existed before the resource company, but which were shaped by it and dependent on it. This is in recognition that planned communities and

[64] Using 2006 data for the four communities without 2011 labour force data would increase this count to 13 communities (56.5%).

[65] The models may no longer be descriptive of resource towns of any sector; this could be examined using the CASIT listings and census data from 1991-2011 to review the classic models.

company-towns are a thing of the past[66] (Goltz, 1992; Wallace, 1992). The model identifies communities based on historical mining dependence, but any community could be examined using the model for a temporal analysis of the role of mining.

In keeping with the literature, the model highlights the contrast between a mine dependent community and a transitional community. The average portion of the labour force employed in the mining sector in transitioning communities (in-situ and ex-situ) was approximately a third of that in mine dependent communities from 1991 to 2011. This supports the position in the academic literature that resource dependent communities have a significantly different economic and industrial base than other, diversified, communities. The majority of communities were transitional, and had the highest number of industry sectors present. This suggests that mining allows for community growth, but a dominant mining sector reduces the diversity of the industrial base of a community. This may be a result of community branding or the mining presence deterring certain opportunities for growth (Stern & Hall, 2010).

Minetowns are considered the most vulnerable of the resource communities and most likely to be affected by 'boom and bust' events (Bone, 1998; Johnston & Lorch, 1996). Mine independent communities were found to have the smallest populations, the fastest rate of population loss and the fewest number of local industry sectors. This supports the rhetoric that the closing of mining operations can, and often does, have severe consequences for the community. This was further supported by the lag time decline occuring in four of the communities identified by the declining population and loss of available local employment opportunities . The four communities were in different stages of the model, excluding mine dependent, highlighting that minetowns in different stages are equally vulnerable to decline.

The use of a regional dataset of minetowns in various stages of development provided further evidence supporting the conclusion that existing resource community lifecycles do not accurately address the present day reality of minetowns (Wallace, 1992). The proposed model was found to accurately capture the non-sequential transitions of minetowns and addressed the pre-mine-closure diversification of communities, which was lacking from existing models. This has advanced the academic literature and addressed the shortcomings of the previous resource community lifecycles, thereby addressing the first and second objectives of this thesis.

[66] This would also be the case with government-created planned resource towns which were also created to support a company's needs, such as Elliot Lake and Manitouwadge.

4.5.3 NRBTR, Minetowns, and the Mining Lifecycle

NRBTR does not intuitively align with resource extraction, especially of mineral resources. The mining process is often in jarring contrast to the surrounding landscape, especially in Canada, where mineral extraction tends to occur in areas of relatively pristine and natural beauty. This unspoiled beauty makes these areas a natural venue for economic development through tourism and recreation ventures, as well as resource extraction. That does not mean the two are not compatible, and in community diversification efforts, mining activities and NRBTR ventures must be reconciled and exist in the same locality without hindrance. Boyd and Butler (1999) make a compelling argument for the suitability of northern Ontario for nature-based tourism and wilderness recreation, including the expanses of untouched landscape with considerable vegetation and wildlife. They make a special note that the major economic drivers of resource extraction are not viewed as attractive or accessible by many nature- and eco-oriented tourists (Boyd & Butler, 1999). McKercher (1992) makes equally strong arguments for the suitability of remote and local resource-based and consumptive activities for tourism in northern Ontario. NRBTR and mineral resource extraction may not be as incompatible as often thought, considering the high rate of NRBTR in northern Ontario minetowns.

Tourism has been identified in the academic literature as a tool for rural diversification and development, and northern Ontario is making efforts to expand this market[67] (Reid, Taylor, & Mair, 2000). Northern Ontario lends itself to NRBTR with a variety of assets to attract visitors[68] (Boyd & Butler, 1999). Resource towns typically are at a disadvantage for the promotion of NRBTR activities due to the stigma associated with extraction operations (Colocousis, 2012). The majority of the minetowns in the inventory have NRBTR attractions and businesses offered in the community, countering this position and indicating that it may be a natural inclusion in the diversification effort, at least in northern Ontario.

This inventory assessment of NRBTR inclusion is a notable contribution of this study to the academic literature, due to the 'wide net' survey of tourism inclusion in minetowns. Many of the existing studies are single town case studies that review the process of tourism development. This

[67] For example, the 'Places to Grow' Act of 2005, the 'Discovering Ontario' report of 2009 and the 'Proposed Growth Plan for Northern Ontario' of 2011 all include tourism and NRBTR development in northern Ontario.

[68] Focus on inherent endowments such as location and natural resources, as well as the human 'interventions' in economic planning is increasingly emphasised in the regionalist literature (Markey, Halseth, & Manson, 2008b).

case study approach is important to gain insight into the various routes to success and the challenges faced during the development process, but it does not capture the state of tourism affairs of resource communities. By reviewing a subset of minetowns, the present day inclusion of tourism in communities with a historic mineral dependency can be evaluated and weighed against the various academic theories, shedding light on consistencies and inconsistencies between the northern Ontario minetown reality and the pre-existing notions.

The inventory results highlight the high level of tourism in minetowns, including NRBTR. Given the location of these communities, it is a natural expectation that they would capitalize on the surrounding area and assets to encourage visitors. This study found that only one of the inventory communities did not have an active tourism industry (Gauthier). It, along with two other communities (Cobalt and McGarry) did not have any NRBTR businesses. This suggested that there is an available tourism market for the communities and that there have been efforts to diversify the economic base of the communities.

The literature warns of the difficulties that resource communities, especially minetowns, face in the development of a tourism market, especially one oriented to NRBTR activities and attractions (Colocousis, 2012). The tourists' perception of the area is the most obvious and highlighted barrier (Boyd & Butler, 1999). Increased access and therefore use (and abuse) as a result of improved infrastructure and roads is one of the less obvious challenges that must be managed as well (McKercher, 1992). The majority of the northern Ontario minetowns were found to have tourism and NRBTR activities and businesses[69], superficially appearing to diverge from the expectations of the academic literature.

Two of the three communities without NRBTR activities were settled due to mining activities[70]. This doesn't necessarily indicate that mining communities are at a disadvantage for NRBTR activities: two of the three communities show signs of being in decline post-mining (Gauthier and McGarry). The decline in community economics and population is more likely the major barrier to NRBTR development (and for Gauthier's lack of tourism businesses of any kind). This is the position supported in the academic literature as well as by this study.

[69] How successful the businesses were, the visitor rate and the barriers to development were not explored in this thesis. Findings from similar studies focused on such topics may be more obviously in line with the prevalent academic notions.

[70] Cobalt was founded on 1903 with the discovery of silver; McGarry was founded at the turn of the century with an operational mill in 1908 and the Kerr-Anderson Mine (full production by 1938) (Smith P. , 1986).

The academic literature sometimes identifies and singles out communities with the 'will to live', many of which are the northern rural resource communities. Individual studies highlight inventory minetowns such as Cobalt (Hall & Stern, 2009), Ignace (Reed, 1994), Atikokan (Johnston & Payne, 2005), Elliot Lake and Manitouwadge (Johnston & Lorch, 1996). This community persistence to fight for survival may be a result of any number of community survival factors, but the theme of northern Ontario minetowns 'will to live' may help to explain the high rate of tourism and NRBTR activities and businesses in these communities. The community members may also have a strong attachment to the natural amenities around the community, which can be a benefit or a hindrance to NRBTR development (Petrzelka, Krannich, & Brehm, 2009). The inherent short lifespan and inevitable end to mining creates a mindset of having to find a solution in minetowns, including having to 'share' the natural amenities inherent in the area. An important role of tourism is the ability and use of marketing tourism as a method for re-branding the community and changing outside perceptions of a historically resource-based community (Colocousis, 2012). This may make NRBTR and tourism attractive options for minetowns. Changing the outside perception of a community, even within a region, is important for increasing visitation. This may all be a factor in shifting the mindset of minetowns from 'company care' and towards 'resilient survival against odds'.

Factors such as government support and regional partnerships also play a role[71]. Ontario has the *Management Guidelines for Forestry and Resource Based Tourism*, the *Resource-Based Tourism Policy* and a number of tourism and growth plans for northern Ontario. This is in an effort to capitalize on the natural tourism capital of the area, and to support the coexistence of resource extraction and tourism in the same area[72] (Johnston & Payne, 2005). Regional planning efforts can enhance the social networks of the area, and strengthen actions and initiatives to better address problems (Markey, Halseth, & Manson, 2008).

The vast majority of Northern Ontario minetowns have tourism, including NRBTR activities and businesses, present in the community. This does not conform to the general academic literature on rural and resource community diversification. However, it is representative of the expectations about nature and resource based activities in northern Ontario by Boyd and Butler (1999), Johnston and Payne (2005) and others. The 'will to live' identified in case studies of minetowns may be a factor in the high rate of tourism and NRBTR in northern Ontario minetowns, as well as government

[71] The role of the region and government support were not examined in this study, but have been examined in work across Canada including Johnston & Payne (2005) and Markey, Halseth, & Manson (2008b).

[72] Or at least give the impression of it through lip service, as the authors Johnston and Payne imply.

and regional policies and initiaitves supporting and promoting tourism for economic diversification. Each community is unique, but northern Ontario minetowns as a group have made efforts to overcome barriers and develop a tourism market.

The existing resource community lifecycles assume a standard pattern of creation, growth, industry plateau or closure before diversification efforts are initiated. The situation that exists in the minetowns of northern Ontario suggests that communities include tourism efforts during all stages of community development. This conflicts with the classical models but is compatible with the proposed model. In the classic models, tourism development would be the primary, or a supporting aspect, of economic restructuring. Additional stages or revisions to the restructuring stages of the Lucas, Bradbury, Halseth (LBH) model (including alternative economic futures) would not accommodate the inclusion of tourism or other major economic activities earlier in the lifecycle. Many of northern Ontario's minetowns had some NRBTR activities during boom years and continued to expand into the industry, illustrating that such a revision would not accurately represent the overlapping nature of tourism development[73]. It also would not accurately capture opportunity for concurrent tourism and mine development. It also risks fostering assumptions about subsequent development, which has more inherent challenges than concurrent development (Ballesteros & Ramirez, 2007; Martinez-Fernandez, 2010).

Mine independent communities that develop tourism are consistent with existing models. A common theme in the diversification literature is that diversification is ideally proactive while there is a strong resource-driven economic base. A better approach may be an overlap of tourism and mining in an effort by the community to be better prepared for mine closure, especially if viewed as one component of a larger initiative. The proposed model allows for tourism development at any point in the mining lifecycle. Many communities have some historical NRBTR offerings alongside the boom years of mining, supporting that this is the reality. This could act as a catalyst for either in-situ or ex-situ transitioning, though the literature is clear about the lack of ability for tourism to replace the role of mining in a community (e.g. Wanhill, 2000). Tourism in itself is not a clear stage of development, but is a component of a more robust economic base for the community. This reality is better supported by the proposed model, contributing to the academic literature on minetown lifecycles.

[73] Elliot Lake and Red Lake both have historical NRBTR (mostly in the form of hunting outposts) that have existed alongside mining throughout the community's history, including when these communities have been mine dependant.

This discussion about the inclusion of tourism into minetowns at different stages highlights a strong aspect of the proposed model: categorizing communities and differentiating between the financial and human resources available to the communities. Diversification efforts during the different development stages have varying time frames and different available resources to support the effort. By categorizing the communities in such a fashion, communities are more likely to be in a similar situation and be able to adapt lessons and plans from other communities. The minetown inventory review of tourism and NRBTR activities and businesses indicates that they are included in communities in all stages of development, contributing to the academic literature about minetown development and lifecycles. These findings satisfy the third objective of this thesis.

4.6 Summary of Model and Inventory Results and Discussion

This study found that the existing models of the resource community lifecycle do not address the current minetown reality. A new model was proposed that categorizes communities based on the portion of the labour force employed in the mining sector. An inventory of post-1950 minetowns in northern Ontario was created to assess the population and labour force trends in minetowns from 1991 to 2011, and test the proposed model. The inventory found that minetowns in northern Ontario were more likely to be amalgamated into larger municipal areas than to be abandoned. Only Renabie was abandoned (now part of the Chapleau Crown Game Reserve), whereas twenty-four communities amalgamated into or were absorbed by larger municipal areas. The timing of the amalgamations varied, as did the possible reasons. These reasons include provincial and municipal government reorganization, satellite settlement absorption, and regional restructuring.

The demographic analysis of former and current minetowns indicated that only two of the twenty-three communities are currently mine dependent (Dubreuilville and Red Lake). Communities in the inventory were in all stages of the proposed model. A review of data from 1991 to 2011 indicated that communities move through the stages of mine dependency in a non-sequential manner. Four communities (Gauthier, Matachewan, McGarry and Pickle Lake) show signs of a prolonged decline/winding down period. The characteristics of the northern Ontario minetowns supported the need for a new model and the suitability of the proposed model. Only Gauthier did not have tourism businesses, and only Cobalt, McGarry and Gauthier did not have NRBTR businesses. Communities

in all stages of the proposed model have tourism and NRBTR, indicating concurrent, rather than, post-mine development.

The proposed model addresses aspects of the existing resource community lifecycles that no longer reflect the realities of resource communities in Canada. As 'stereotypical' resource communities, the northern Ontario minetowns provided an inventory to test the proposed model and examine population and labour force trends. The inventory and model evaluation supported the introduction of a new lifecycle model to the existing work. The minetowns were found to have tourism and NRBTR businesses, suggesting that mining operations and NRBTR are not exclusive of one and other. This also supported the need for a model which allowed for concurrent economic development and diversification in place of the sequential classic models. One option for diversification is the reuse of a mine site to create a NRBTR attraction, which is explored in the following chapter.

Chapter 5
Case Studies Results and Discussion

5.1 Introduction

Thus far, this study has determined that minetowns are moving away from mining dependence, and that tourism, NRBTR, and NRBTR businesses are present in the majority of inventoried communities. In this chapter, the use of mine sites for NRBTR is further explored. Two locations that have developed formal NRBTR assets were selected from a larger list of former mining sites. In each case, an examination of the process of redevelopment, maintenance and use of the sites, and the actors involved, is conducted (objective 4), and recommendations for the future provided (objective 5).

The two sites selected were the Charleson Recreation Area (CRA) in Atikokan[74] and the Sherriff Creek Sanctuary (SCS) in Elliot Lake. The two sites and their respective communities are examined separately and then combined for comparison and contrast. The same format is used to present the results, with the narrative of each site being presented separately, and then the findings combined. The narratives begin with a short history of the community to provide historical context, followed by a more in-depth examination of the mine sites reused for NRBTR. Images and quotations are used throughout to illustrate key points.

A variety of information was gathered to create these narratives. The community and site information was collected through on-the-ground experience, document analysis (strategic plans, studies, narrative history collection, news articles, etc.), and interviews (relevant supplemental information is in Appendix D). Information was collected to identify how the mine site has been transformed into an NRBTR attraction, the process of redevelopment and the key project stakeholders. This information is used as the basis for discussion about minetown diversification and mine site use for NRBTR attractions. These case studies are meant to be illustrative, almost anecdotal, and not generalizable on a national or global scale. The goal is to begin to identify sites, understand some of the factors that may influence similar projects, and to identify similarities and differences between northern Ontario sites and the academic literature.

[74] Atikokan is officially the Township of Atikokan (ToA) but is commonly referred to as simply Atikokan.

5.2 NRBTR Mine Site Selection

While compiling the inventory of mine communities in northern Ontario, mines being used for NRBTR were identified and compiled[75]. The sites are associated with mine land (pits, tailing ponds, claim land) and are open to the public. is the final list of sites considered for further study, and the suitability of each site was evaluated using a points allocation system (provided in the methodology in section 3.4.3). Renabie Mine is within the Chapleau Crown Game reserve and is included in the site list. It was not considered for a case study site because Renabie is abandoned, and so there is no longer a community to support NRBTR businesses. Sites that were not officially accessible, but used informally, were not included (for example, the Sherman Mine in Temagami which has been used by locals as a swimming hole in the past). Sites that were classified as heritage attractions, but included some NRBTR activities, such as the Silver Heritage Trails in Cobalt, were excluded from the potential site list[76]. A number of communities had mine-related tourism offerings, with some in the urban center and others at the mine site (which provides a more natural setting, but not necessarily NRBTR). Sports fields and golf courses were also excluded from consideration due to being outside of the NRBTR category and requiring a high level of on-going vegetation maintenance.

The two sites selected for the case studies were the Charleson Recreation Area in Atikokan and the Sherriff Creek Sanctuary in Elliot Lake. The case studies are examined in sections 5.4 and 5.5, and the location of both is presented in Figure 13, along with the other considered sites. These two sites received the highest ranking due to a combination of site use, availability of firsthand accounts of the process, and that the completed project was expected to remain in use indefinitely. Both sites are advertised in the tourism literature for the communities and are identified as former mines freely in advertising material. The two sites also provided the opportunity to contrast a company-run development with a community-run development for the reuse of a mine site for NRBTR. The sites are identified in bold throughout this section.

[75] Shuniah Bike Trails in Thunder Bay was not included because Thunder Bay was not included in the minetown inventory.

[76] It is difficult to separate heritage from NRBTR, and the goal here was not to be exclusionary of heritage, but to select sites which focused on NRBTR. The sites may have some heritage features, but it was not the primary focus of the site. For example: the Wright-Hargreaves Park is named after the mine, and the Geraldton site includes a view of the headframe as well as information about the mining heritage of the site and area.

Table 37: Operational NRBTR Attractions Associated with Mine Land

Site	Town	Mine info	Project info
Renabie (abandoned)	Chapleau Crown Game Preserve	Gold mine, 1940 – 1991	First reclamation under new legislation, preserve pre-existing
Charleson Recreation Area	**Atikokan**	**iron mine 1958 – 1964**	**Multi-use recreational area**
Copper Cliffs Park	Sudbury	Copper, slag, smelter and smokestack	Park (adjacent to baseball diamond), has stackview
Griffith Iron Mine and Trails	Ear Falls	Iron, 1968 – 1986	Wetland, biking and hiking
Sherriff Creek Wildlife Sanctuary	**Elliot Lake**	**Uranium mine, 1958 –1964**	**Rio Algom/Denison**
Geraldton Headframe, Interpertive Center and walking trails	Geraldton/ Greenstone	Gold mines, 1936 – 1970	Barrick Gold and Martha Schwartz Partners[77]
Wright-Hargreaves Park	Kirkland Lake	Gold mine, 1921 – 1965	Park, war memorial
Coniaurum Mine, Goldcorp-Hollinger	Timmins	Gold, 1913 – 1961	educational tours, aboriginal activities, apiary
Gillies Lake, Goldcorp – Hollinger	Timmins	Gold mine tailings, 1917 - late 1960s	Conservation area, open access. 80% of the original lake was filled with mine tailings from the Hollinger Mine
McIntyre Mine Park and Trails	Timmins	Gold (some copper), 1912-1988	Recreational trails

Note: *Golf courses, baseball and soccer fields were excluded on the basis of being constructed spaces not dependent on the natural environment for the attraction of visitors. Heritage focused sites were excluded because the main attraction was not the NRBTR activities.*

[77] A summary of the work with excellent visuals of the project is in 'Recycling Spaces: Curating Urban Evolution: The Landscape Design of Martha Schwartz Partners' edited by Emily Waugh (2011) pages 151-169.

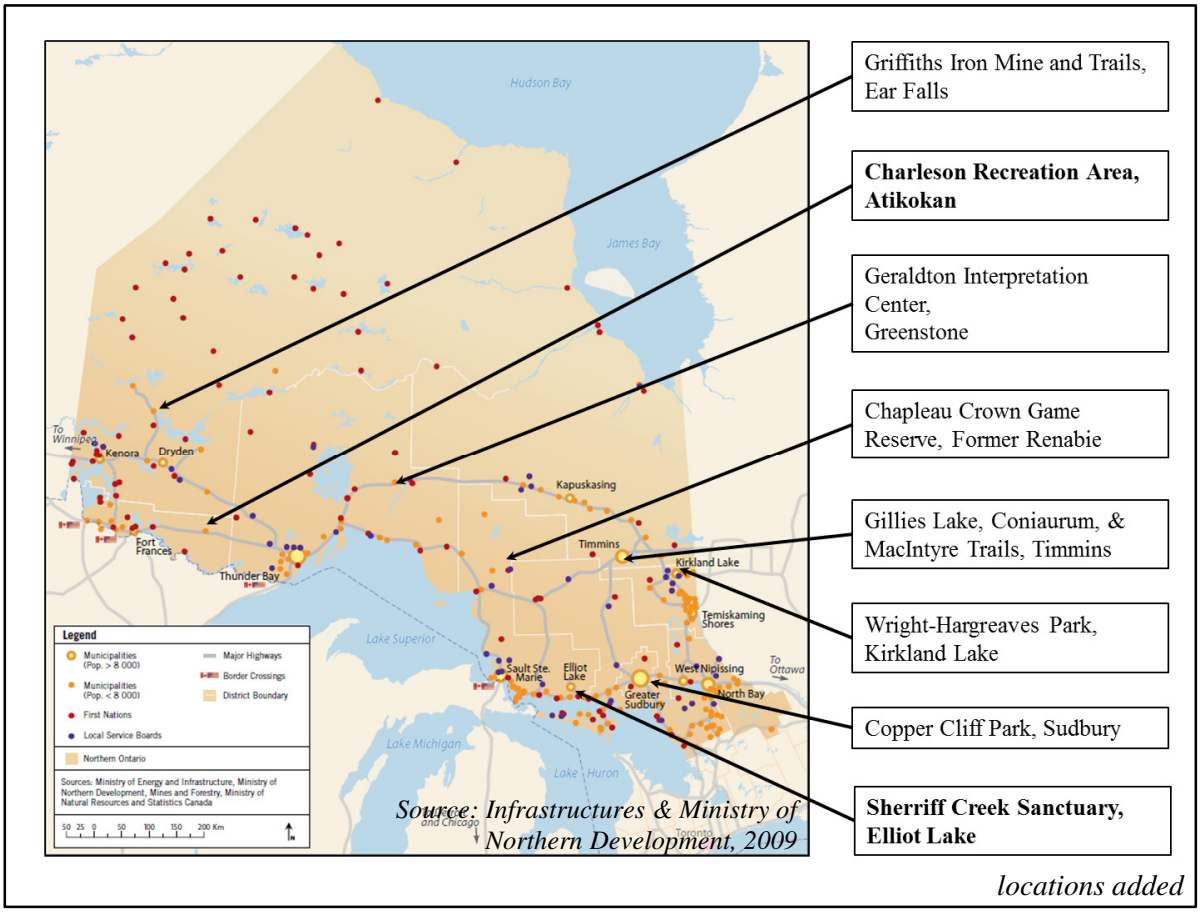
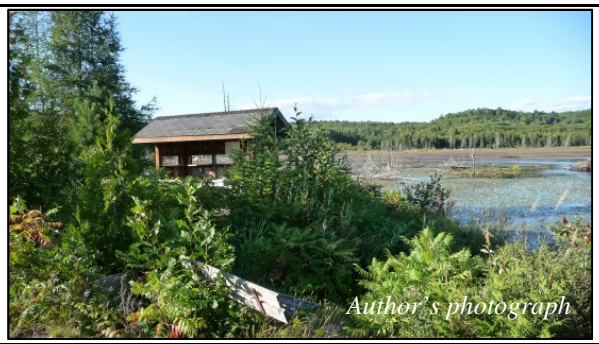


Figure 13: Location of Case Study Sites

The sites considered for case studies vary greatly in redevelopment, use, finances, mining history and actors. Table 38 provides a photo, as well as some notes, that highlight key points about each site. These sites provide a snapshot of possible post-mining land use for NRBTR purposes, with different end results and NRBTR uses. Charleson Recreation Area has the greatest diversity of activities on site. The rest of the sites are oriented for more passive and appreciative user activities (many of the sites features walking, hiking and snowshoeing as the main activities). There is a maintained aspect to many of the sites, partly due to the recent completion of many of the projects.

Table 38: Images of completed NRBTR Mine Sites

Site	Images	Notes/Use
Chapleau Crown Game Preserve	*No photo available from research field work*	
Charleson Recreation Area (Atikokan)	 *Author's photograph*	Multipurpose recreation and events
Copper Cliffs Park (Sudbury)	 *Author's photograph*	Public greenspace, mix of maintained areas with more natural stream Adjacent to baseball field
Griffith Iron Mine and Trails (Ear Falls)	*No photo available from research field work*	Wetland, biking and hiking trails
Sherriff Creek Wildlife Sanctuary (Elliot Lake)	 *Author's photograph*	Naturalized bird sanctuary
Geraldton Headframe, Interpretive Center and walking trails (Geraldton/ Greenstone)	 *Author's photograph*	Heavily landscaped/landformed nature trails and greenspace due to recent completion. Adjacent to a golf course (back nine holes also on mine site).

Site	Images	Notes/Use
Wright-Hargreaves Park (Kirkland Lake)	 *Author's photograph*	Small park with memorials
Coniaurum Mine, Goldcorp-Hollinger (Timmins)	 *Author's photograph*	Apiary, aboriginal events, limited public access
Gillies Lake, Goldcorp – Hollinger (Timmins)	 *Author's photograph*	Community asset, public swimming beach
MacIntyre Mine Park and Trails (Timmins)	*No photo available from research field work*	Includes Lions Walk Trail along abandoned ONR rail line, which passes by iconic head frame

Information about key events, responsibilities and financial aid for each site is provided in Table 39. A major issue with former mine sites is the monitoring and on-going maintenance requirements. These can limit the development and use of the site (Alker & Stone, 2005). While many of the mines closed decades ago, the development projects are all more recent, having occurred in the last two decades. This is the result of many factors, including improvements to mining regulations and agreements by current mining companies to become responsible for past operations as part of acquisition deals. An example of this is responsibility assumed by Goldcorp for many of the

legacy sites in Timmins (Tollinsky, 2013). This helps explain why so many of the projects have mining companies as major actors and financers that were not the operators of the original mine.

Table 39: Key Information about Operational NRBTR Attractions on Former Mine Sites

Site	Mine info	Date Constructed	Major Actors	Finances
Chapleau Crown Game Preserve (Renabie)	Gold mine, 1940 - 1991	1992-1996	Homestake Canada Inc. (Barrick as of 2006), Government of Canada	Homestake Canada Inc.
Charleson Recreation Area (Atikokan)	**Iron mine 1958 - 1964**	**2010**	**Charleson Recreation Association, Township of Atikokan**	**Northern Ontario Heritage Fund, in-kind support**
Griffith Iron Mine and Trails (Ear Falls)	Iron mine, 1968 - 1986	1986 (reclaimed)	Township of Ear Falls, Mogul Mines Ltd., Northern Iron Corp.	None, naturalized
Sherriff Creek Wildlife Sanctuary (Elliot Lake)	**Uranium mine, 1958 - 1964**	**1997**	**Rio Algom, PHFN, City of Elliot Lake**	**Rio Algom**
Geraldton Interpretive Center and walking trails (Geraldton/ Greenstone)	Gold mines, 1936 – 1970	1994-2000	Barrick Gold, Martha Schwartz Partners	Barrick Gold
Wright-Hargreaves Park (Kirkland Lake)	Gold mine, 1921 – 1965		Kirkland Lake	
Coniaurum Mine, Goldcorp-Hollinger (Timmins)	Gold, 1913 – 1961	2002-2008	Goldcorp, Timmins, local Aboriginal Community, local bee keepers	Goldcorp
Gillies Lake, Goldcorp – Hollinger (Timmins)	Hollinger mine tailings dump, 1917-late 1960s	1986	Goldcorp, Timmins, Mattagami Regional Conservation Authority	Goldcorp, Mattagami Regional Conservation Authority
McIntyre Mine Park and Trails (Timmins)	Gold (some copper), 1912-1988	2010	Goldcorp, Timmins, Mattagami Regional Conservation Authority	Mattagami Regional Conservation Authority, Goldcorp

5.3 The Model Applied to NRBTR Minesite Reuse

The proposed model does not restrict tourism development to any one development stage. Therefore, there is no point in which the redevelopment of a mine for NRBTR would be restricted to occur, be a pivot point for, or be an indication of, a stage in the proposed model. The communities' of the identified sites were examined using the proposed model. Table 40 provides the stage of the community at the time of the mine site redevelopment, and the current stage of the community. Most communities are transitional, with only two exceptions: Atikokan and Renabie. The Chapleau Crown Game Reserve is at the site of Renabie, the only abandoned community in the inventory. The Charleson Recreation Area in Atikokan was developed at a time when Atikokan was classified as mine independent, but Atikokan has now shifted to transitioning ex-situ and has a history of mine dependence in the 1950 to 1970s period.

The bulk of the mine site redevelopment projects occurred during transitional periods in the mining communities. The communities have continued to be in a transitional state since project completion (both in- and ex-situ). This prominence of communities transitioning during mine site redevelopment, and presently, is not unexpected. In both in- and ex-situ transitional communities, the role of mining has been reduced, when compared to its importance during the mine dependent stage. In the case of ex-situ transitioning communities, active mining is no longer present in the community. This means that transitioning communities are more likely to be exploring options for diversification alongside mine closure and reclamation work. This gives such communities advantages, which include access to earth moving machines, reclamation planners, company partners, and closing mine sites. Such communities should be making efforts to transition to new focused or diversified economies, and may be aware of the stigma and perceptions associated with mining communities. This would make the redevelopment of a minesite for a new use an attractive opportunity for re-imaging and help to set the community apart from other minetowns in the area (Cloke, Milbourne, & Thomas, 1996).

The model allows for development of NRBTR at any point in community development. This would include mine site redevelopments to support NRBTR activities and businesses. These developments could occur at any point in the model and might overlap with mining activities in cases where the extended claim area is used for NRBTR. The mine could not be redeveloped while operational, but the plans could be created and municipal support and infrastructure could be organized ahead of time for a smoother transition (the *proactive/concurrent* response is most

appropriate for the redevelopment[78]). Ideally the reuse of a mine for NRBTR should be done at the closure of the mine, and aid in the diversification to alternative futures available to communities. Proactivity in community development planning is espoused in the literature as critical to success in development, and the costly nature of mine reclamation and redevelopment compound this need.

Table 40: Model Stages for Communities with Operational NRBTR Attractions on Former Mine Sites

Site	Date Constructed	Community Stage at Mine Redevelopment	Community Stage Currently
Chapleau Crown Game Preserve (Renabie)	1996	Winding down	Abandoned
Charleson Recreation Area (Atikokan)	**2010**	**Mine independent**	**Transitioning ex-situ**
Griffith Iron Mine and Trails (Ear Falls)			Transitioning ex-situ
Sherriff Creek Wildlife Sanctuary (Elliot Lake)	**1997**	**Transitioning in-situ**	**Transitioning ex-situ**
Geraldton Headframe, Interpretive Center and walking trails (Geraldton/ Greenstone)	1994-2000	**Transitioning ex-situ**	**Transitioning ex-situ**
Wright-Hargreaves Park (Kirkland Lake)		**Transitioning in-situ**	**Transitioning in-situ**
Coniaurum Mine, Goldcorp-Hollinger (Timmins)	2010?	**Transitioning in-situ**	**Transitioning in-situ**
Gillies Lake, Goldcorp – Hollinger (Timmins)		**Transitioning in-situ**	**Transitioning in-situ**
MacIntyre Mine Trails (Timmins)	2010?	**Transitioning in-situ**	**Transitioning in-situ**

Atikokan and Elliot Lake were selected based on redevelopment mine site suitability. Both communities selected as case studies are transitional ex-situ communities. Both communities have transitioned away from dependence on the mining sector, and had major mining operations in the community (uranium in Elliot Lake and iron in Atikokan). It was not intentional to select communities in the same development stage; however, comparing two communities in the same

[78] Reviewing the diversification response of each project was not examined in this thesis.

phase enhances the suitability of the sites because it allows for a more direct comparison of the communities and the process of mine site redevelopment for NRBTR.

Comparing ex-situ transitional sites is valuable for a number of reasons. Firstly, the pressure to diversify is pronounced in such communities because of the loss of a major local industry. In such communities there is no active mining, but there continues to be a large portion of labour force employed in the mining sector. This means that a portion of the local population is commuting for work. Secondly, such communities often have mine sites that are no longer active and are unlikely to become active because there is no operational mine company in the area. This creates the opportunity to transform the mine areas to a new use. Finally, in the case of Atikokan and Elliot Lake specifically, both communities have made efforts to rebrand and are well positioned to use the redevelopment of mine sites for a new use as part of a heritage transformation effort.

5.4 Charleson Recreation Area, Atikokan

Atikokan developed in the early 1900s because of the railway and sawmills in the area (Township of Atikokan, 2012). Forestry and the pulp and paper industry were the major economic driving forces for the first four decades of Atikokan's history (Township of Atikokan, 2012). Mining preparation began in the 1940s with the draining of Steep Rock Lake and mining operations began in 1944 (Shuklana & McIntosh, 1972). The Steep Rock Mines and Caland Ore Company were the major mining operation of the area, and closed in 1980 (Kolton, 1981). Both companies gave advance notice, beginning in 1972, when the extraction of hematite ore was no longer economically viable. In 1973 a committee was formed to explore diversification opportunities available to the community ("Prospects for the Future", 1978; Paulson, 1993). Atikokan's efforts to diversify include a generating station (opened in 1985), a particle board plant, a Ministry of Natural Resources office, and tourism (Ellis, Et al., 2003; AI2; AI3). These efforts have often received attention, and are viewed to be the result of the perseverance and the optimistic attitudes that drive the 'will to live' in Atikokan (for example Johnston & Lorch, 1996). In 1982 Atikokan adopted the title of the 'Canoeing Capital of Canada' (Town of Atikokan, 2012). In 2012 the coal generating station was closed and is currently being retro-fitted to become a biomass pellet plant, which is expected to open in 2014[79] (Atikokan Centennial Museum, 2013; Ontario Power Generation, 2013). Atikokan's efforts to

[79] The generating station has been converted for 100% wood pellet biomass-fuel electric power generation, completed in summer 2014 and is operational.

survive include the innovative use of the old Canadian Charleson Mine area as the Charleson Recreation Area (Figure 14).

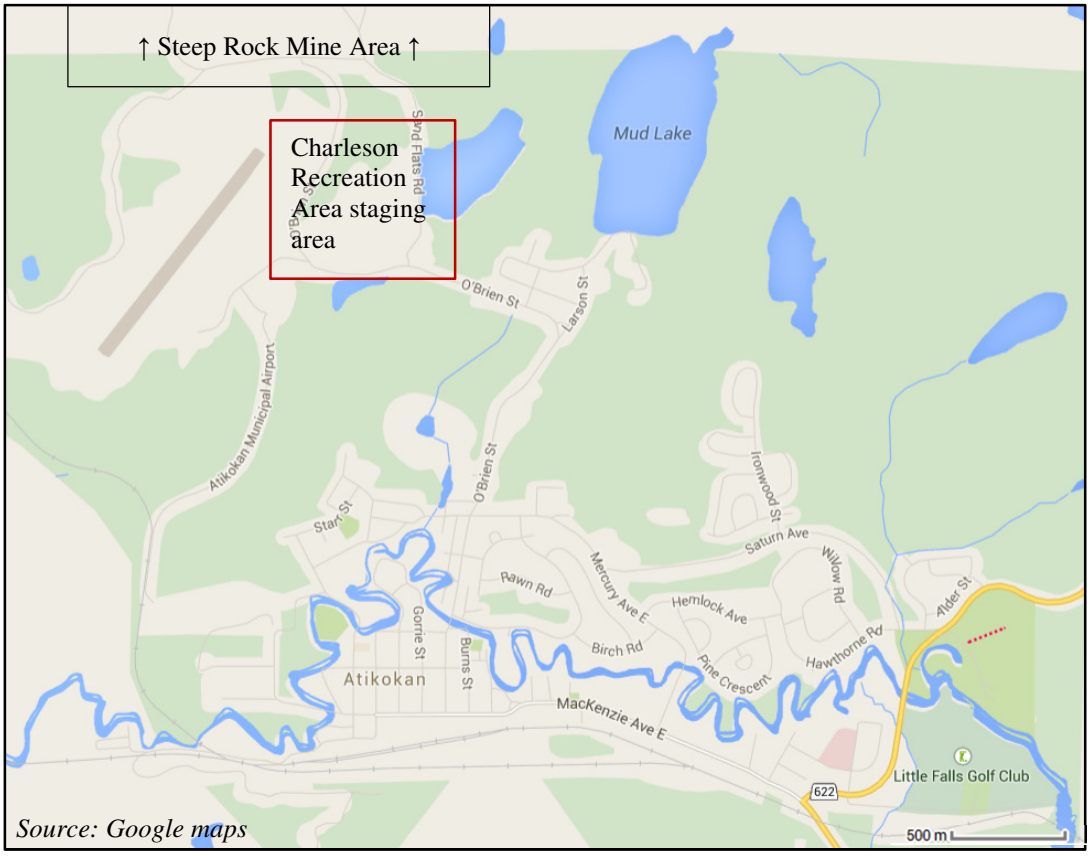


Figure 14: Atikokan and the Charleson Recreation Area

5.4.1 Mine Site History

The Charleson Recreation Area is at the site of the former Canadian Charleson Mine, just south of the Steep Rock Iron Mine and the Caland Mine sites (Shuklanka & McIntosh, 1972). The Charleson Mine site was originally expected to operate for twenty-five years, but only operated from 1957 to 1964 ("Canadian Charleson to Start Ore Shipments This Month", May 8, 1958; "Charleson Closing Down", November 26, 1964; Shuklanka & McIntosh, 1972). A total of 784,000 tonnes of iron ore was produced and shipped from the site (Shuklanka & McIntosh, 1972). The iron was produced by 'float', which left a large amount of aggregate material suitable for construction and cement use (CRA Booklet, 2010; Atikokan Museum, 2013). The Charleson Mine was operated by

the Canadian Charleson Limited company (owned by Oglebay North) in a 161 hectare area ("Charleson Not Opening This Year", May 9, 1963). There is little memory of, or monument to, the Charleson mine, although the two larger mines continue to have notoriety, even being called the 'Grand Canyon of the North' by some and create the Steep Rock Mine Area (SRMA) (AI4).

5.4.2 Process of Redevelopment

Prior to redevelopment as a formal NRBTR area, the Charleson mine had been left to return to nature. The reclamation efforts at the closure of the Charleson mine were limited to removing the buildings, equipment, stockpiles and useable aggregate building material (Shuklana & McIntosh, 1972). The area was used informally for activities by the locals of Atikokan and multiple user groups prior to redevelopment (AI3). This included mountain bikers, snowmobilers, horse riders, anglers, hikers, picnickers, snowshoers, and skiers. This resulted in some pre-existing development at the site, including the Sno Ho Chalet, MudFling run, a motorcross track and various trails, before the site was redeveloped in 2008-2010 (AI2; AI3). The pre-existing infrastructure and trails were all created or donated by users (AI3). A number of user groups also had activities and events at the site in the years leading up to the redevelopment, which brought in locals and outside visitors (AI1; AI2; AI3). The site had previously been identified as an area which was an asset to the community, and would benefit from development and improvement (Patrick Reed & Associated, 2006).

The Charleson Recreation Association was founded on June 28th, 2005 with the intention of consolidating the different user groups using the site (CRA P&P; AI3). The idea was to develop a site where all the user groups could cohabitate, ensure events did not overlap, and collaborate (CRA P&P). The policy of the Charleson Association is:

> *The Charleson Recreation Association will be an advisory committee to the council. The Association will be responsible for the co-ordination, development, management and provision of the recreation area's service, and event to meet the needs of all Atikokan residents. The Association shall encourage and support all interested groups, organization, agencies, institutions or individuals that contribute to the community & recreation area*
>
> *Policy and Procedures manual, C.1*

The Association included (and continues to include): the Sno Ho Club, the Steep Rock Mountain Bikers Club, The Motocross Club, the Mudslingers 4X4 Club, the Equine Trail Riders Horse Club, the Bow to Stern Canoe Club, and the Ride for Sight (CRA P&P). A local member of the Sno Ho

Club brought together the groups to co-ordinate the various activities, events and developments of the CRA (McKinnon, July 3, 2007; AI3). The goal was to take advantage of the site and maximize the opportunity it presented to the users and township (AI3). The same community member also approached the Atikokan Development Office about doing promotion for the CRA (AI2).

Once formalized, the Association identified several members to guide the CRA developments and act as liaisons between the user groups and the Association. The Association also engaged with other groups including the Township, Atikokan Economic Development Corporation (AEDC) and other stakeholders (CRA P&P; Charleson Recreation Association; AI2; AI3). The Association worked with the AEDC for guidance, and approached the township, as well as making a formal presentation to Minister Gravelle, about the proposed project at CRA (AI2; AI3; McKinnon, July 3, 2007). This came at a point in time when Atikokan was reeling from the province's decision to shut down the coal fire plant in an effort to go 'coal-free' (AI3). The development of CRA was endorsed by the Economic Mitigation Plan that was commissioned by the Township due to the plant closure decision (AI3). The project was seen as a win-win situation in which the recreation space would be upgraded and formalized, and the Township would receive the final asset (AI3).

Funding for the development largely came from the Northern Ontario Heritage Fund (NOHF). The fund typically allocates on a 50/50 basis, but the CRA project was funded 90/10 (AI2). NOHF provided $737,000 and the Township of Atikokan provided $75,000 (the Municipality of Atikokan was the applicant for the NOHF grant) (McKinnon, July 3, 2007; McKinnon, September 8, 2008). The Township's portion came from a $500,000 fund provided for economic development projects to mitigate the closure of the Atikokan Generating Station (McKinnon, March 24, 2008). The CRA site, and the infrastructure improvements funded, became property of the Township of Atikokan as part of the funding agreement (AI1; AI2; AI3; CRA P&P). Separate from the NOHF funding, the Local Initiatives Fund from the AEDC provided $1,701.20 (CRA P&P). There was also in-kind support from local contractors, businesses and volunteers, which stretched the funding (AI2; AI3). The human resources for financial tracking of the development project were provided by the Township (AI2). With funding in place, the work began in 2008 (CRA P&P; AI2).

The goal was for the CRA to provide a formalized multi-use area with facilities for locals and visitors (CRA literature, AI1; AI2; AI3). Events were already occurring at the site, and the upgrades would benefit visitors, participants and spectators (Figure 15 and Figure 16 shows the completed upgraded staging area) (AI1; AI3). The goal was to provide the community with an asset for local

use, and to draw in visitors and increase tourism (AI1; AI2; Smith, 2007, Patrick Reid & Associates, 2006). This is echoed in much of the CRA and Association specific material, for example:

> *In carrying out this primary purpose, the Association will operate with the following, as its primary goal/vision: To develop the CRA into a multi-use recreation area that is equipped to hold events for the user groups and to enhance tourism to the area for the benefit of the people and businesses of Atikokan.*
>
> *Policies & Procedures E.1*

The site was designed to provide revenue to the Township of Atikokan through event and user fees, and amenity rentals (AI1; AI2; AI3; AI4; CRA P&P; Atikokan Progress, 2010). This revenue was intended to help fund the maintenance and day-to-day administration of the site once the redevelopment was completed (AI1; AI2; AI3).

Figure 15: Charleson Recreation Area Staging Area

Figure 16: Minnow Pond in the Staging Area of Charleson Recreation Area

An intern was hired to focus solely on the development of the CRA (AI1; AI2). The intern was supervised by the township and the $30,000 salary was paid by the province (AI1; AI2). The intern's duties included supporting the committee during the development processes, creating the Policy & Procedures, Marketing, and User Agreement binders (AI2). The intern remained on the project for one year, during which time the development was completed (AI2).

The Association was the lead on planning and did the work; the township was not very (or at all) involved in the site development (AI2; AI3). A telling quote from the announcement of the provincial funding identified how important the volunteers are: "*We announced the money, but it all starts with a tremendous number of volunteers. At the end of the day, it's about supporting the work they are doing.*" - MPP Mauro ("We could make this better", August 9, 2010). Much of the development was primarily to make the site safer as a whole, and safer for the groups involved (for example: the watering system for the motocross) (AI2; AI3; AI4). Many trails in the larger area are based on old roads, and the old spur rail line (IA1: IA3; AI4). There was no remaining infrastructure, and so the CRA site does not use any Charleson mine infrastructure (IA1; IA2).

The completed project is a unique NRBTR asset that accommodated a diverse group of users. It was officially opened in August 2010 with the MudFling event (AI2; Atikokan Progress, August 9,

2010). The site is viewed as a successful project, and has been identified in subsequent Township material as well as consultant reports and plans, for example the 2012 Cultural Plan for Atikokan (Hume Communications Inc., 2012). The site was designed with the potential to bring in out-of-towners to provide revenue through site use and spending in the community (AI3; AI4; CRA brochure). The intention of the user groups was for the site to be handed over to the Township of Atikokan for management once it was completed (AI2; AI3).

Figure 17: Entrance Sign for Charleson Recreation Area

Table 41: CRA Key Redevelopment Process Information

June 28th, 2005	Charleson Recreation Association is formed
June 18th, 2007	Two local community members and one member of the Township presented the Associations' plan to the council
2007	CRA signs start going in
2008	NOHF agrees to cover 90% of the $800,000 for CRA redevelopment
August 2010	CRA officially opens
Champion	Local community members

Association Groups	The Sno Ho Club, the Steep Rock Mountain Bikers Club, the Motocross Club, the Mudslingers 4X4 Club, the Equine Trail Riders Horse Club, the Bow to Stern Canoe Club and the Ride for Sight
Upgrades	permanent washrooms, fencing, a clubhouse for the motocross club, major upgrades to the mud fling track, a 'pole' barn, portable bleachers, etc
Funding	Northern Ontario Heritage Fund, Township of Atikokan, Atikokan Economic Development Corporation
Infrastructure	Existing roads and rail lines used for paths
Potential risks	Steep Rock Mining Area continues to fill with water and pose safety threats
Risk mitigation	Signage, user cooperation, education
Motivation	Formalized use, reduced event conflicts, increased funding
Take-away feeling	The sense from documents is that CRA was a good investment and has lots of potential.

5.4.3 On-going Maintenance

The Township of Atikokan is the legal owner of the CRA and is responsible for the maintenance of the CRA land and infrastructure (CRA P&P). Atikokan is a small community, and the Charleson Recreation Area was developed in a time of upheaval, which has continued. This has limited the Township's ability to prioritize the site, in terms of dedicated financial and human capacities and its ability to maintain and promote the CRA (AI1; AI2; AI3; AI4). The site is recognized as an asset by Township employees and community members, but without the resources, there is no ability to properly advertise, promote or manage the CRA (AI1; AI2). The initial funding for the upgrades was a one-time deal (McKinnon, September 8, 2008). This has left the site with no secure source of on-going funding (AI2). Ideally, the site should be self-sufficient from generated revenue, but the available funds to cover the costs of initial marketing and promotion are limited (AI1). There is no dedicated portion of the Township's budget for the site; it is combined into the larger 'recreation' budget line (AI1). This has all lead to the situation where the Township's maintenance of the CRA is very reactive, instead of proactive (AI1).

The user groups have continued to maintain the site, especially the trails (AI2; AI3). They do it because they love using the site, and they love their hobbies (AI3). Parents' wanting their children to have fun is a major motivator identified for the maintenance and 'top-notch' event planning at the

CRA (AI3). This has meant that parents[80] who have been forced to seek work outside the region have less, or no, time to help at the CRA, reducing the volunteer pool (AI2). Unfortunately, in a community as small as Atikokan, volunteer burn-out is a significant issue and the volunteer pool for replacements is very small (AI2; AI4). This is compounded by the out-migration of some families and the remote working situation of some community members (such as working in Fort McMurray on rotation) (AI3). The big push during the 2008-2009 development exacerbated the volunteer situation; many people hoped to hand over the site to the Township (and take a break) and instead have found that the continuing dependence on their efforts is greater than expected (AI3).

The marketing and visibility of the site are an issue. The main issue for marketing and visibility of the site is, again, that there are limited human and economic resources at the Township to give CRA the needed attention (IA1). There is a sense among the volunteers that the big potential of the site to be a driver for tourism and help with economic development is not being tapped into (AI3). As one interviewee put it, it is not just a case of 'build it and they will come, there needs to be more' [ie: people need to know the site is there and available for use] (I2). The volunteers try, but the marketing and visibility of the site is not within their expertise or interest (AI2; AI3). New signs were placed strategically to ensure that visitors would drive through the main sections of town to increase the benefits to local businesses (Figure 18), but informal signage for events by-passes this route (AI2). The online presence is still maintained by the user groups and relies on in-kind support (AI3). There have been efforts made to survey visitors, spectators and participants at events to gain insight to help guide future planning, recommendation and upgrades to the site and events (CRA P&P).

[80] Fathers tended to be identified by interviewees.

Figure 18: Signage in Town to Guide Visitors to CRA

There is the hope, and expectation, that the CRA will have a better chance due to increased resources when the plant is back up and the economics of the town are better (AI2). This thinking is because there is the expectation of new families moving to town and return of locals commuting to operations on rotation, increasing the number of users and potential volunteers (AI2). More users also means that there will be better maintenance and trails are more likely to remain clear and 'burned in' from increased use (AI3).

The ongoing maintenance of the CRA site needs to include discussion about the Steep Rock Mine Area (SRMA) because of the close proximity and network of CRA trails in the SMA (Figure 19, Figure 21 and Figure 20). The STMA is currently managed by the Ontario Ministry of Natural Resources and Forestry (MNRF) (AI3). The CRA was consulted about the Steep Rock rehabilitation, where close to $7 million has been spent from 1988 to 2011 to protect the site and ensure public safety (Smith, 2011). This has also meant that some lookouts and trails have been redesigned or removed at MNRF's request due to safety issues (AI3; AI4). While users were disappointed by the loss of some excellent views across the SRMA, they do recognize that it is important for user safety, and that MNRF is allowing them to use the SRMA for trails (AI3; AI4). This user cooperation is important to the on-going use of the SRMA.

Figure 19: A View Across Steep Rock Mine

Table 42: Summary of maintenance of CRA

Land Owner	Township of Atikokan
Site Manager	Township of Atikokan (official), user groups (in-kind)
Main users	The Sno Ho Club, the Steep Rock Mountain Bikers Club, the Motocross Club, the Mudslingers 4X4 Club, the Equine Trail Riders Horse Club, the Bow to Stern Canoe Club and the Ride for Sight
Use	Recreational purposes, events
Trail maintenance	User groups
Funding source	Township of Atikokan, CRA revenue
Advertising	Print material, website, signage in city
Risks	STMA (managed by MNR)

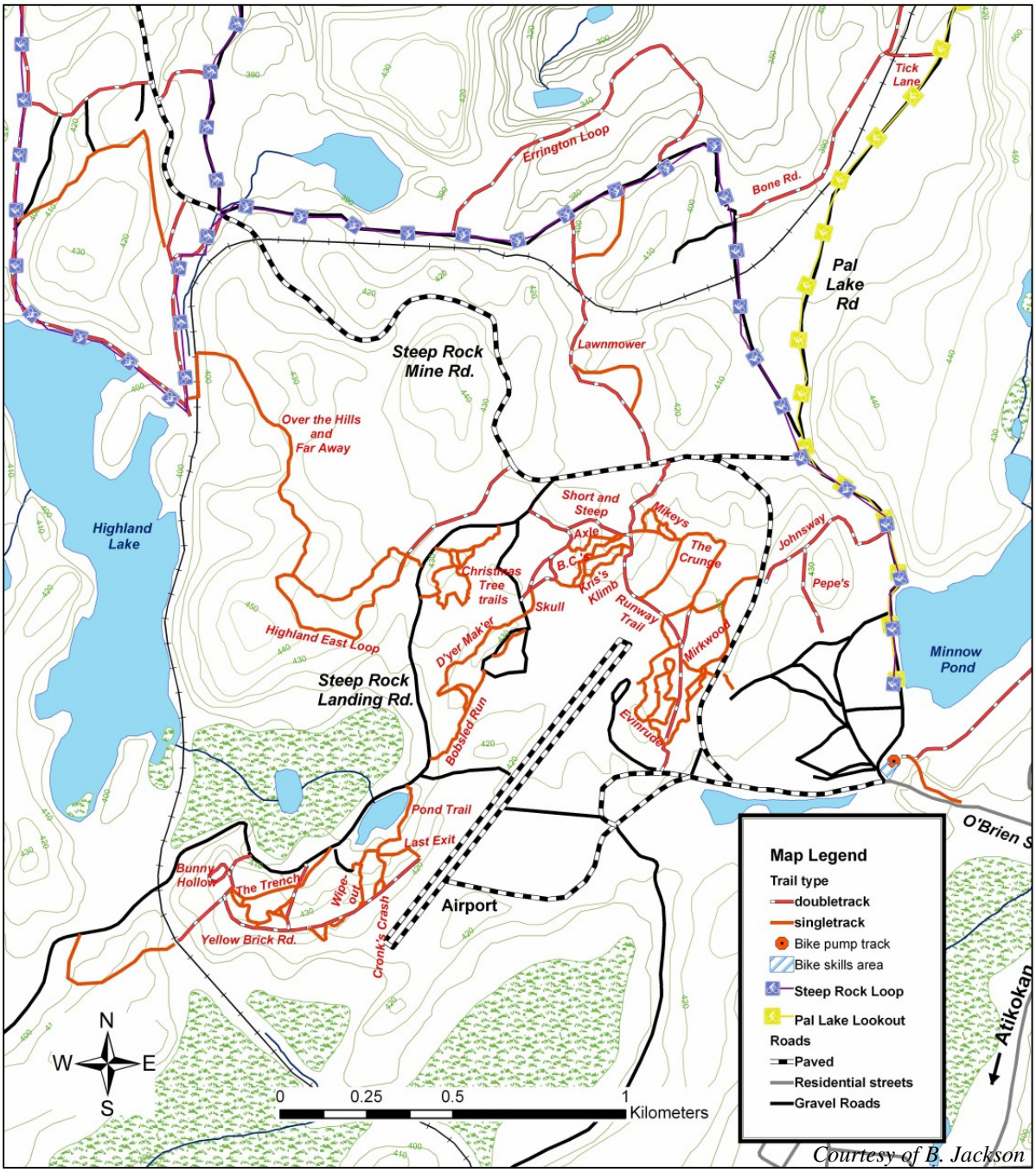


Figure 20: CRA map of the 'Airport Trails'

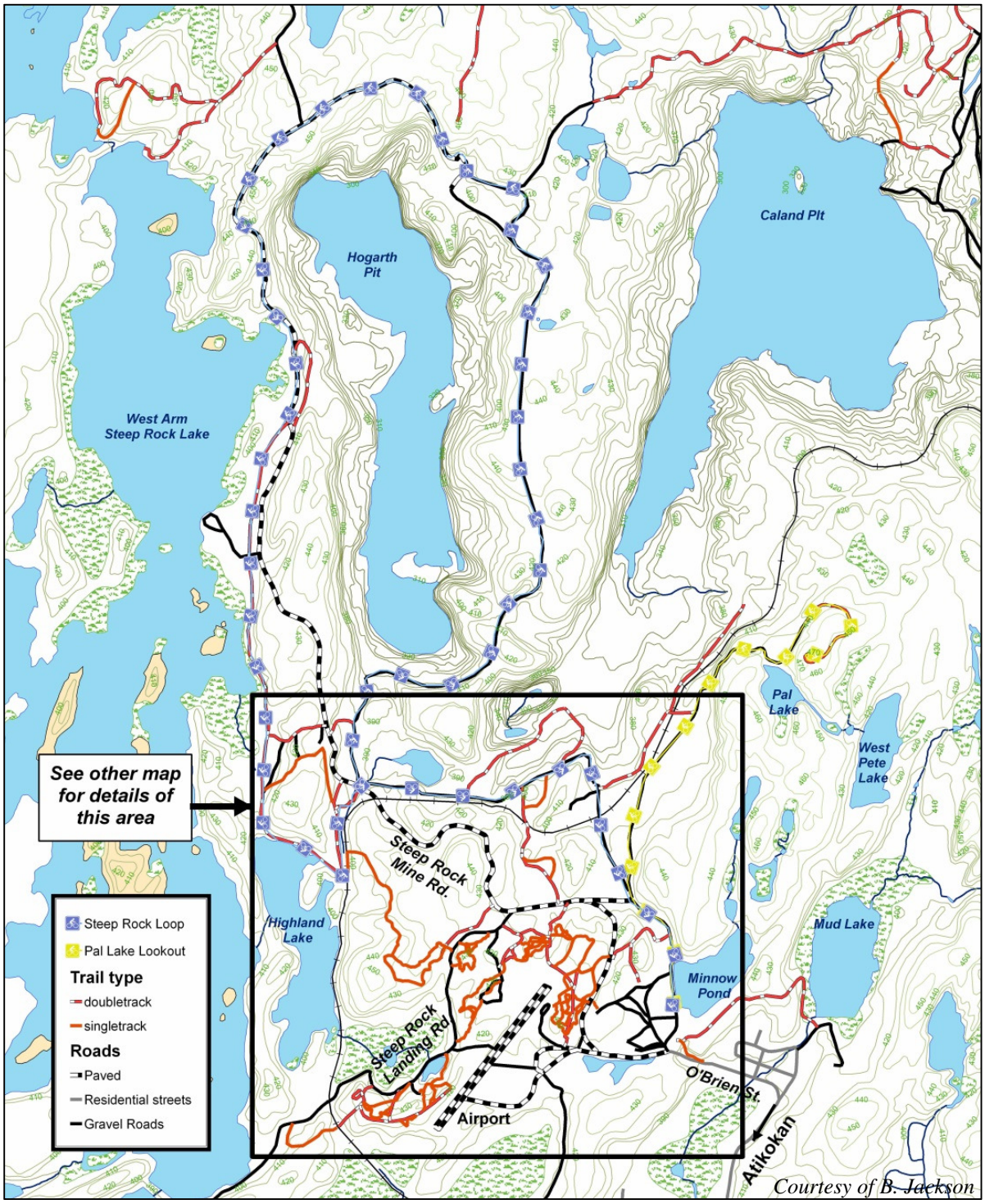


Figure 21: Charleson Recreation Area Trails

5.4.4 Site Use

The CRA is a well-used site. Despite being completed at a difficult time in Atikokan's development, the site continues to be well used and enjoyed by locals and user groups for recreational past-times and events (AI1; AI4; McKinnon, March 24, 2008). When redevelopment started in 2008, the CRA was hosting events roughly fifty days a year and was estimated to be generating $200,000 of direct visitor spending in Atikokan (McKinnon, September 8, 2008). The events hosted between fifty and two hundred people in 2007[81] (McKinnon, September 8, 2008). The Hume Communication Consulting group found that the CRA and the SRMA were two of the top five places for locals to take visitors to Atikokan (2012, p.14). This suggests that the site has the potential to be a great benefit to the Township of Atikokan. This view is supported by local opinions.

The Association and user groups continue to be committed to facilitating use at CRA. Often people interested in going to CRA will call a member of the relevant club (AI2; AI3). The Association and user groups make efforts to help direct inquiries to the township, as well as provide aid where possible (AI2). There is a lot of potential for use at the CRA, but there are limits to the available manpower and volunteer pool to fully utilize it (Hume Communication, 2012; AI1; AI2; AI3; AI4). As with maintenance, the more people who use it the better, and the volunteers try to facilitate increased usage were they can (AI3). There have been, and continue to be, efforts to increase the CRA's connectedness to larger trail systems to increase the opportunity for and draw of outside users (AI2).

Though easily defined impacts of the development may be hard to identify, the site has gone from local minor use to large visitor draw as a result of the events (CRA 5yr Marketing Plan; Hume Communication, 2012). The out-of-town visitors are perceived to bring in money (AI4; McKinnon, September 8, 2008). People often travel hours to get to the site for events, making overnight camping[82] and amenities important (AI3; AI4; CRA DVD). CRA is a staging area for events and brings people together (CRA DVD). The CRA is a recreational hub, and as awareness increases, it should[83] get more use (CRA 5yr Marketing Plan; AI3; AI4). There is a hope for repeat visitors, and given that most events have been growing in the number of participants, it is likely use will increase (CRA DVD; AI4). For example, the Horse Club has gone from 30 people when it first started to

[81] There is a lack of data to verify the visitation and financial benefits of the Charleson Recreation Area.
[82] Overnight visitors have been shown to have much higher spending at a location and should be encouraged to increase the economic benefit to the community and businesses.
[83] Interviewees all believe it WILL get more use once it is better known

100+ people in 2013 (AI3; AI4). Horse camping is fast growing industry and CRA is an excellent site for it (AI4). Spinoffs from the events are beginning to happen as CRA becomes recognized, as well as visitors who come for an event and then return to the site outside of events (AI3; AI4). An example is horse camping, which brought in approximately $500 to the township the first year it was allowed outside of organized club events (AI4).

One of the less obvious uses of the CRA is the draw it provides to people considering moving to Atikokan (AI3). Interviewees spoke of the increased recreational offerings available to new residents centered on hobbies and recreational pastimes the CRA offers (AI3). This draw is augmented by the user groups and social networks that new residents could join (AI2; AI3). While this benefit of the CRA was not a main driver of the redevelopment, it is an interesting secondary benefit, especially in light of the new bio-mass plant in Atikokan and the potential for new residents in the near future (AI3).

The former Charleson mine of the CRA has left little trace or risk, but the larger SRMA is monitored by MNRF and has associated risks that can impact the usability of the site (AI3). There are generally no issues with risk perception amongst the users (AI1; AI2). The site of the CRA is not considered dangerous, and the users are respectful of the limitations set by MNRF for safety in the larger Steep Rock area (AI3; AI4). Much the area is understood to be 'use at your own risk', with signage to that effect, but the consensus amongst the interviewees is that it is doubtful whether locals or visitors consider the former use as a mine as creating any more risk than would otherwise be present (AI3). User groups have their own insurance because the town requires two million dollar liability insurance every time they use the facility (AI1; CRA P&P). Each group is careful about the risks of the sports they participate in (for example, the motocross group makes sure the track is watered down to minimize raising dust from the sand track) (AI3).

The site was designed to provide revenue and, in theory, become self-sufficient (AI2; AI3). User and non-user groups pay a fee to the Township to hold events at the CRA ($75/day) (CRA P&P). The goal is for money to be accumulated for CRA and used to offset costs associated with the site (CRA P&P, CRA 5yr Marketing Plan). Damages and clean-up fees can be charged to groups (CRA P&P). In terms of access to amenities, user groups can use everything, non-user groups (those not a part of the Charleson Recreation Association) have to ask permission (CRA P&P; AI3). This reduces the risk of abuse and damage to the CRA amenities (AI3). Non-association groups who use

the CRA (but not necessarily the stuff) include Beaten Paths Cross-country skiers, and ATV riders (CRA Brochure).

Table 43: Summary of use of CRA

Event planning	User groups
Revenue collection	Township of Atikokan
Liability	User group's responsibility
Public access	Yes, free
Amenities available	Yes, for rent (portapotties, trail cutting equipment, bleachers, picnic tables etc)
Risk mitigation	Signage, barriers at high risk points of the SRMA Use at own risk

5.4.5 Summary

The Charleson Recreation Area (CRA) is at the site of the firmer Charleson Mine, adjacent to the Steep Rock Mine Area. The mine operated from 1957 to 1964 and left few traces. The site became naturalized post-closure. The site was used informally for recreation once mining in the area stopped. This includes events that brought in outside visitors. The CRA was formalized when seven of the user groups came together and began the process of seeking funding and upgrading the site. The Northern Ontario Heritage Fund (NOHF) provided 90 percent of the $800,000 of the project, and the Township provided the other 10 percent. The formal multi-use recreation site was developed in 2008-2009 and officially opened in 2010. Trails for mountain biking, horseback riding, snowmobiling and ATVing, traverse Charleson Mine and the SRMA. Measures have been put in place to ensure that users are aware of, and do not enter, high-risk areas, and respect MNRF's limitations of site use. A number of events continue to be held at the site including MudFling, motocross races and equestrian events.

The volunteers put in many hours during the year of redevelopment, and were able to proudly hand the site over to the Township of Atikokan. The site was designed to provide revenue to the Township of Atikokan, with the intention that it could be self-sufficient in time. Atikokan is in the midst of an upheaval, and volunteers continue to provide in-kind support for the site. The hope is that once the new biomass plant is operational and the economics of the Township are more stable, a larger effort to promote the site can begin and draw in more users and visitors to the site, and community.

5.5 Sherriff Creek Sanctuary, Elliot Lake

Elliot Lake owes its existence to the Backdoor Staking Bee[84] of June and July 1953 that caused a subsequent staking rush for uranium ("Jewel in the Wilderness", 1980; Smith, 1986). Elliot Lake was incorporated in 1955 and was the last of the planned mining communities to be built in Canada (Robinson, 1962). It evolved from township status to a town on January 1, 1976. There is a clear sense of 'can-do' among the community members and officials, as well as in community documents, with no sense of blame for closing the mine operations on the mining companies[85]. In fact, there is often a sense of thankfulness that the mines caused of the creation of Elliot Lake and an understanding that everything possible was done to keep the mining going as long as possible[86].

Elliot Lake took proactive measures to weather the two major lows in uranium demand. The first efforts to diversify in the 1960s focused on tourism. The second efforts in the late 1980s, included the Retirement Living[87] program in 1987, and various tourism efforts, including activities of the Tourism Development Committee ("Jewel in the Wilderness", 1997), throughout that decade. In the early 1990s, the last of the uranium mines faced closure and though the diversification efforts were not able to replace all the mining jobs lost, they did show Elliot Lake as a forward-thinking community ("Jewel in the Wilderness", 1997). As the uranium mining came to a close, Retirement Living, tourism, and a world class drug and alcohol rehabilitation center transitioned Elliot Lake into a new economic chapter ("Jewel in the Wilderness", 1997). This included the creation of the Sherriff Creek Sanctuary[88] (Figure 22).

[84] Backdoor staking is the term given to covert staking. In the case of Elliot Lake, a team of men staked a large number of claims in the area in 1953 in partnership with Preston East Dome Mines Limited. The efforts included planes carrying men and supplies following different routes into the area of the 'Big Z' uranium deposit. Mining licenses were also purchased from different areas of the province to maintain secrecy. All claims were prepared within the same 30-day required limit and submitted together on July 11, 1953.

[85] It should be noted that Elliot Lake received "…a $250-million adjustment fund intended to ease the transition for whoever was left in Elliot Lake into a post-industrial economy." (Lowe, 1995, p. 154)

[86] This is especially apparent in Jewel in the Wilderness, 1997, pages 34 and 35.

[87] Retirement Living is a seniors-focused industry which is a major source of revenue in the community. An interesting undertaking in Elliot Lake was the use of surplus mine owned housing which was purchased by the city for one dollar and sold to Retirement Living to encourage the program and the economic diversification it provided.

[88] Sherriff Creek Sanctuary, or SCS, is used throughout, though the site is referred to as the Sherriff Creek Wildlife Sanctuary, Sherriff Creek Bird Sanctuary, and Sherriff Creek Nature Sanctuary in different source material.

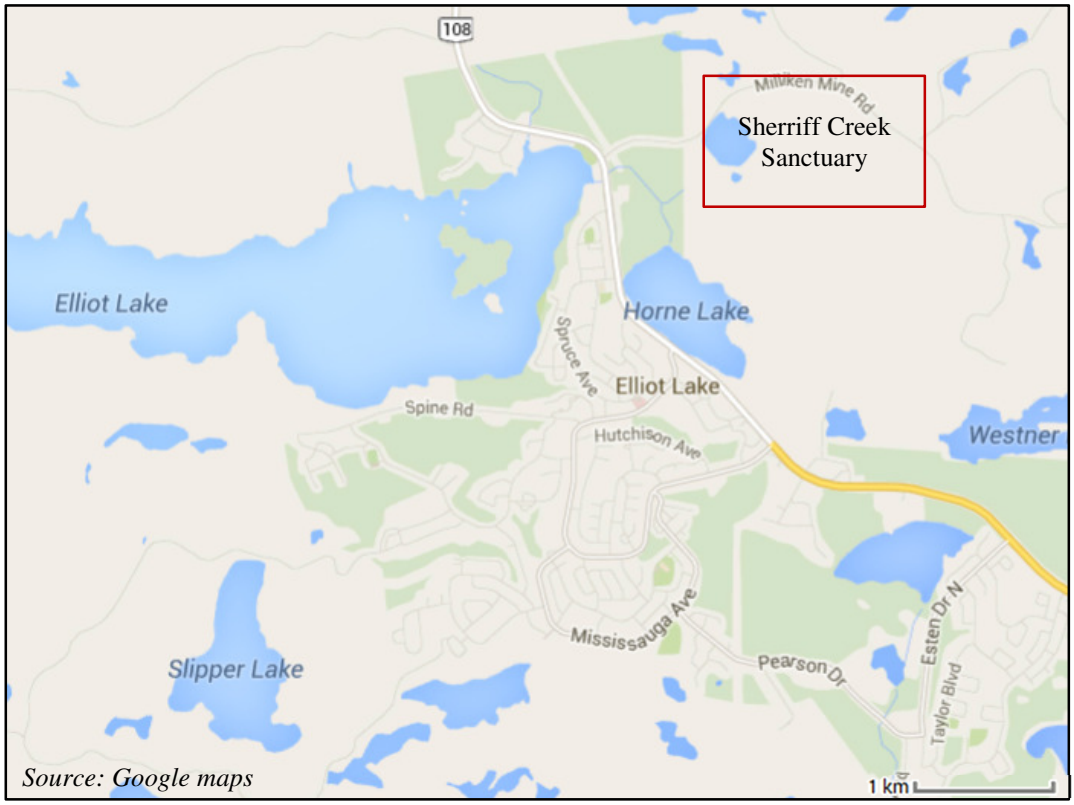


Figure 22: Elliot Lake and the Sherriff Creek Sanctuary

5.5.1 Mine Site History

The Sherriff Creek Sanctuary has been through a number of changes since the mining boom of the 1950s and 1960s. An estimated 76,500 tonnes of tailings were released into the Sherriff Creek area over the course of the Milliken Mine operations from 1958 to 1964 (Larmour, September 1, 2010). This area was rehabilitated into the Milliken Tailing Management Area (TMA) in the late 1970s (OMA, 2011). A portion of the seventeen hectare area was covered with sandy gravel to create playing fields and the rest was flooded, creating a wetland (OMA, 2011; Buchanan, 1998). The playing fields were used from 1978 until the area became the location for the Sherriff Lake Equestrian Center (OMA, 2011; "Jewel in the Wilderness", 1997). The area was also used for jumping practice and competition space, and Milliken and Stanleigh Mine buildings were used by the group[89] (OMA, 2011; "Jewel in the Wilderness", 1997; Buchanan, 1998). The site was identified in the 1989 Community Assist for an Urban Study Effect (CAUSE) report as a tremendous asset to the

[89] The buildings had been left with the expectation that the mine would reopen. The Milliken Mill was not demolished until 1995 and all other remaining buildings were demolished in 1996.

community with potential for recreational and educational opportunities (Ontario Association of Architects, 1989).

5.5.2 Process of Redevelopment

In 1997 the Penokean Hills Field Naturalists[90] (PHFN) entered into a stewardship agreement with Rio Algom Ltd. for the use of the Sherriff Creek area as a bird sanctuary (IEL1; IEL2; OMA, 2011; Buchana, 1998; "Elliot Lake Wins Mine Reclamation Award", 2010). Erwin Meisner, the president of the PHFN at the time, saw the potential of the naturalized mine TMA for bird watching, primarily because of the diversity of habitats and the relatively untouched and unused aspect of much of the site (IEL1; IEL2). The PHFN put forward a proposal to Rio Algom and Elliot Lake City Council in March 1996 for use of Sherriff Creek Park as a bird sanctuary and interpretive center (IEL1; IEL2). There was much interest in the project, in part because of the timing: it came as the last of the mines in Elliot Lake were being decommissioned and demolished. In the end, the site was developed as a bird sanctuary but the interpretive center was not created (IEL2).

The stewardship agreement between PHFN and Rio Algom Ltd. was signed in May 1997 after negotiations were completed (OMA, 2011; Larmour, 2010; "About the Sherriff Creek Wildlife Sanctuary", 2010). Work began immediately to create a publicly accessible space (OMA, 2011; Larmour, 2010; "About the Sherriff Creek Wildlife Sanctuary", 2010). The requirements of the Canadian Nuclear Commission (CNC) for the maintenance and use of uranium mines and affected lands caused negotiation challenges during the creation of the agreement for the site use between the PHFN and Rio Algom (ILE1; IEL2). Rio Algom maintains ownership of the land, and therefore the liability of the site and the in-perpetuity requirements of storage of uranium tailings in the wetland (IEL1; IEL2). Due to this, Rio Algom did the major construction projects, including the bridges.

In 1997 a berm was constructed to ensure that the wetland stays flooded and the tailings remained saturated (this and the spillway were upgraded in 2000) (OMA, 2011; Larmour, 2010). Having the TMA fully submerged is a key component of the site design to maintain the integrity of the TMA. Ensuring a safe water level can require the removal of beavers (IEL1). This is the reason

[90] The PHFN group was founded in 1995 by Erwin Meisner, and is supported by the Ministry of Natural Resources (through Mississagi Provincial Park), Rio Algom Ltd. and the City of Elliot Lake.

the site is a bird sanctuary and not a wildlife sanctuary (IEL1; IEL2). If the site were a wildlife sanctuary, the beavers could not be removed and the safety of the TMA site would be compromised by dam building which changes the water flow, and therefore water level, of the site (IEL1). The goal of the PHFN was to create a birding site, which was the original vision of Erwin Meisner. This seemed to have caused few, if any, issues in the initial planning of the development.

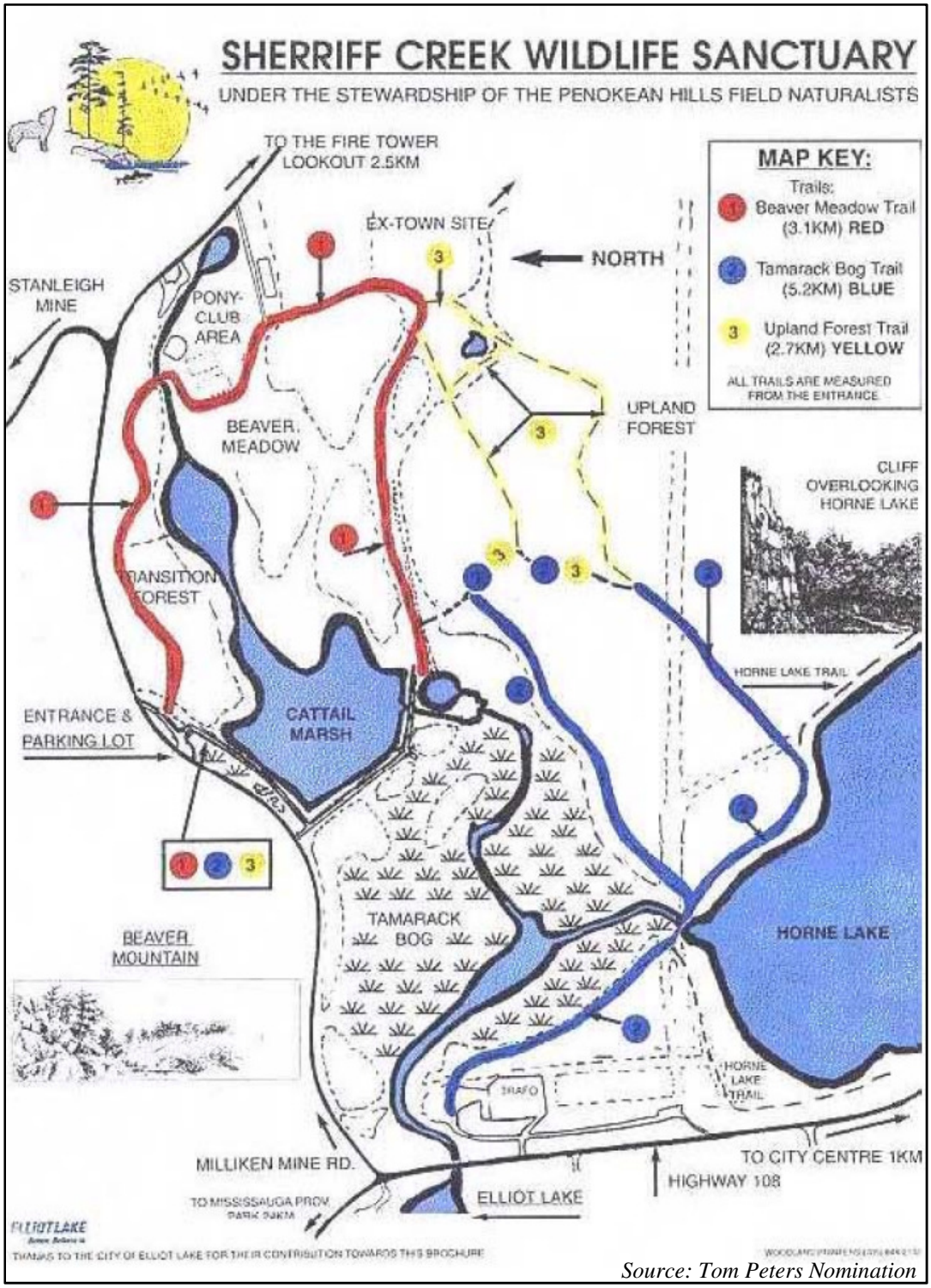
In 1997 and 1998 trails were developed in the sanctuary (Figure 23) (OMA, 2010). These included causeway bridges and lookout blinds, shown in Figures 23 and 24 (OMA, 2010). In 1997 Rio Algom built the entrance causeway, bridges, viewing posts, and a parking area on Milliken Road at the entrance of the site. Rio Algom also provided financial assistance for the trail cutting (IEL1). The City of Elliot Lake has assisted financially to provide attractive signs and a colour brochure (Figure 23), which is available at the entrance (PHFN website; site visit, 2013). PHFN members built and erected loon and goose nesting platforms and bird boxes. The site is summed up well with a quotation from Debbie Berthelot:

> *We entered into the partnership and the role of the Penokeans is to provide the support to make it not only a tailings management facility, but also a recreational resource for the community. –Debbie Berthelot, Rio Algom Ltd.*
> *(Sudbury Mining Solution Journal, September 1, 2010, page 21)*

The site was officially opened on May 16, 1998, and the consensus is that the SCS has turned out as it was envisioned (IEL2; Nature Sanctuary website).

Table 44: Summary Table of the Development Process for Sherriff Creek Sanctuary, Elliot Lake

1995	PHFN if formed
1997	Stewardship agreement between Rio Algom Ltd. And PHFN is signed
May 16, 1998	Sherriff Creek Sanctuary Officially opens
Champion	Erwin Meisner
Actors	Erwin Meisner, PHFN, Rio Algom, City of Elliot Lake
Funding	Rio Algom Ltd.
Land owner	Rio Algom Ltd.
User groups	Locals and visitors, youth education groups
Motivation	Suitability of site
Risk mitigation	Posted information, guided walks, PHFN meetings
Infrastructure	None used



Source: Tom Peters Nomination

Figure 23: Sherriff Creek Sanctuary Map

Figure 24: Sherriff Creek Sanctuary

Figure 25: Sherriff Creek Sanctuary Bird Blind

5.5.3 On-going Maintenance

The SCS land is still owned by Rio Algom Ltd. (purchased by BHP Billiton in 2000), making them responsible for the site (IEL1; Larmour, 2010). They are not able to sell the land, and the Canadian Nuclear Commission has authority over the site requirements (IEL1). Denison Environmental monitors the mine tailings and integrity of the site, and ensures that water levels and berms stay within requirements. The water covering the tailings continues to be safe for waterfowl and there has been removal of beavers (to maintain the water level over the tailings) (Larmour, 2010). In 2010 Rio Algom Ltd. won the Tom Peters Memorial Mine Reclamation Award presented by the Canadian Reclamation Association and the Ontario Mining Association for the completed Sherriff Creek Sanctuary (OMA, 2011; Larmour, 2010; "Elliot Lake Wins Mine Reclamation Award", 2010).

The PHFN volunteers do basic trail maintenance and minor repairs to bird blinds (IEL1; IEL2). The members of the PHFN have volunteered over 10,000 hours of time to maintain the site (IEL1; "Who We Are", 2009). The hours volunteered by PHFN are documented and shared with Rio Algom Ltd (IEL1). The PHFN worked with the Elliot Lake Horticultural Club to create a hummingbird and butterfly garden (PHFN website, 2009). The PHFN continue to work on improving the biodiversity and educational value through signage (Figure 26) and public outreach (OMA, 2011; IEL1). The group also documents birds, wildlife and vegetation. This information can help with ongoing research and conservation efforts at the site (IEL1). The City clears the parking lot of snow in the winter, as well as donating funds and staff time to help with the hiring of labourers to upgrade infrastructure for the trails (Larmour, 2010). In 2009, a new bridge and boardwalk for the "Red Trail" were installed with a grant from the Ministry of Training to PHFN, Rio Algom and the city (Larmour, 2010).

Figure 26: Informational Signage in Sherriff Creek Sanctuary

Table 45: Summary of maintenance of SCS

Land Owner	Rio Algom Ltd
Site Manager	Dension Environmental (monitoring)
Trail maintenance	PHFN, volunteers
Funding source	Rio Algom, City of Elliot Lake, fundraising
Advertising	Tourism print material, website
Risk mitigation	Water level monitoring (beaver removal)
Other considerations	CNC regulations

5.5.4 Site Use

The SCS is well used by residents and visitors in Elliot Lake, and is exclusively for non-motorized use (City of Elliot Lake Tourism, 2014). The city also makes sure that there are alternate ATV and snowmobile trails that stay outside the sanctuary. The SCS guest book had over 1,400 signatures in the first two months of being open (IEL2). There has continued to be a high level of visitation at the site by residents and tourists from all over Ontario, Canada and Europe (many residents of Elliot Lake have European heritage and host foreign family members)[91] (IEL1; IEL2). PHFN have created trail maps for the site (Figure 23), which are at the entrance board (Figure 27) and

[91] There is a lack of data to verify the visitation rate at the Sherriff Creek Sanctuary.

in printed material, such as 'Discover Elliot Lake' and 'Explore: Elliot Lake Trail Guide'. The city is the primary promoter of the site and it is prominent in Elliot Lake tourism material. It is a promotable attraction with a unique history that showcases Elliot Lake's residents' ability to think outside the box when it comes to the mining history of the area (MacGillivray, 2010).

Figure 27: SCS Entrance Maps and Signs

Education has been the strongest tool for controlling risk perception at the SCS (IEL1). The risks of site use are very minor, and there has been a large effort made to ensure that people are educated about mine safety (IEL1; IEL2). Most of the user risk perception is focused on the uranium mine and possible radiation (which is negligible) (IEL1). It tends to be newcomers who are most worried about the risks, 'old-timer miners' aren't worried because they used to work at the sites

(IEL1). Early on there was big push to help newly arrived seniors take advantage of the site, which included partnered activities with Retirement Living (IEL1). This was done with guided walks and making sure that the seniors felt safe and that the trails were accessible and easy to walk (IEL1). Along with PHFN education efforts and guided walks of SCS, there are also decommissioned mine tours by Denison which help newer members of the community learn about the mine sites in the area (IEL1; IEL2). The PHFN also have specialists and experts come to the meetings to give talks to keep members and locals updated and informed (IEL1; IEL2).

When the SCS was first created, there were some issues with hunting on the land, but signage and clearly communicating about the changes to the site use rules have successfully addressed the issue (IEL1). There are still many issues surrounding dogs and dog walkers, including not cleaning up after dogs and letting dogs run free, which scares the wildlife and birds (IEL1; Frigault, 2010; Clark, 2010). Off-leash dog activities are restricted by city bylaws, but many people do not adhere to this policy (IEL1; Frigault, 2010). It is a sanctuary, and not a dog park, but many people do not respect this, which gives a sense of a constant battle that is wearing out the volunteers who clean up the site[92].

Figure 28: Sherriff Creek Sanctuary Viewing Platform

[92] Much of the clean-up is of dog excrement.

Table 46: Summary of use of Sherriff Creek Sanctuary

Public access	Yes, free access
Users	Passive recreation, naturalist groups
Risk mitigation	Posted information, use at own risk
Conflicts	Dog walkers

5.5.5 Summary

The Sherriff Creek Sanctuary (SCS) won the CLRA's Tom Peters Memorial Mine Reclamation Industry Award in 2010. Developed on the site of the Milliken Mine Tailing Management Area by Rio Algom Ltd., the site is currently managed by Denison Environmental and stewarded by the Penokean Hills Field Naturalists. Milliken Mine operations released tailings into the Sherriff Creek from 1958 to 1964 and the area was remediated into the tailing management area (TMA) in the late 1970s. The TMA was subsequently used for sports fields and equestrian activities. In 1997 Rio Algom Ltd. and Erwin Meisner and his newly founded Penokean Hills Field Naturalist group signed the stewardship agreement which is still in place. This agreement created the foundation of a unique, and positive, company/community partnership for site management. The site is a bird sanctuary (to allow the removal of beavers) and is a well-used and well promoted feature of the Elliot Lake area. Though it does not directly create revenue for the community, as a community asset it provides a well signed and used trail space, and is advertised in Elliot Lake marketing material.

5.6 Synthesis of Case Study Data

5.6.1 Community Comparison and Synthesis

Atikokan and Elliot Lake have both weathered industry fluctuations and times of uncertainty. Both communities have managed to survive when the outside world expected them to decline and possibly be abandoned (Johnston & Lorch, 1996; Paulson, 1993). Elliot Lake has often been presented as the 'poster child' of single industry town diversification and survival, in part because of Retirement Living. Atikokan, in contrast, has become notorious for its perseverance in the face of economic obstacles (Johnston & Lorch, 1996). Since their post-mining revival, both communities are marketed as, and considered to be, exceptional destinations for outdoor recreation and tourism. Elliot Lake now has the label 'Jewel in the Wilderness', and Atikokan has re-branded as the 'Canoeing

Capital of Canada'. A snapshot of key information for both communities is presented in Table 47. Both communities had a number of mining downturns, but did have advance notice of the final closures of the mines in the community.

Table 47: Snapshot Comparison of Case Study Communities

	Atikokan	Elliot Lake
Established	1899	1955
Population (2011 Census)	2,787	11,348
Ten Year Population Change	-23% (3,632)	-5% (11,956)
Population Peak (Year)	6,386 (1965)	24,887 (1960)
Population Lowest (Year)		6,664 (1966)
Mine–Dependent Stage	1950s-1970s	1955-1991
In-Situ Transitional Stage	1970s	1990s
Ex-situ Transitional Stage (when mines closed)	2006-present	2001- 2011
Mine Independent	1980s-2006	NA
Current Dominant Economic Sector	62 (Health care and social assistance) 17.8% of labour force	62 (Health care and social assistance) 17.4% of labour force
Number of Hotels at time of study	3 (White Otter Inn, Quetico Inn, Atikokan Inn); 1 municipal campground	1* (Hampton Inn); 2 B&B; 1 municipal campground
Distance from Major Population Centers (by road)	151 km – Fort Frances 206 km – Thunder Bay	160 km – Sudbury 201 km – Sault Ste. Marie

** there was a second large hotel that was attached to the mall which had to be demolished after the Eastwood Mall (formerly Algo Mall) collapse in 2012.*

Atikokan and Elliot Lake had their respective mining boom years during the same period (1950s-1960s). A major difference between the mining history of the two communities is that Elliot Lake is a relatively recently planned town (for mining) with people alive who remember the start-up[93], whereas Atikokan had a more organic development with the mines as a major influence, but not the original driver for community development (which was fur and logging in the area). This creates

[93] This in itself may have changed the sense of community and the mining companies' role and responsibility in Elliot Lake, but that is outside the focus of this study. (The creation of Mount Dufour may be a good example of the possible increased responsibility and role in tourism development of the mining companies in Elliot Lake.)

a different 'social fabric' or mindset in the community. Elliot Lake's shift to focusing on Retirement Living (a seniors living and lifestyle company) has also meant that the community has a different structure and focus now than it did as a mining community, or than Atikokan currently has as a working community with LDC residents. This has created a more mature residential community in Elliot Lake compared to the labour heavy 'bedroom' community of Atikokan.

In the proposed model, Elliot Lake began as a mine dependent community, progressed sequentially through the stages of development and is presently an ex-situ transitioning community. This progression is typical of the classical lifecycle models. Elliot Lake was also a planned community, exactly the sort of community the lifecycle models are designed to describe. Atikokan, on the other hand, was originally a pre-mine dependent community that became mine dependent and has moved through the stages, including mine independent, and has now become an ex-situ transitioning community. There is also large scale gold exploration on-going near Atikokan with the potential to shift the community from ex-situ to in-situ transitioning. This makes Atikokan atypical of the classic lifecycle models, but exemplifies a shortcoming of the linear lifecycle assumption.

The closure of the mines is also a point of difference: Elliot Lake was able to capitalize on the mining housing to establish a retirement community, and many of the mines closed after newer regulations for monitoring were in place (also, being uranium mines, there are different regulatory bodies involved, mainly the addition of Canadian Nuclear Commission[94]). The new regulations were put in place in part because of the Steep Rock Mining Area (SRMA)[95] (Smith, March 2, 2011). The Ministry of Natural Resources (now the Ministry of Natural Resources and Forestry) accepted responsibility for the SRMA in 1998 (Smith, March 2, 2011). Elliot Lake, in contrast, continues to have support from the mining companies for the decommissioned mines. This provides stability in the community and a sense of partnership with the mining companies instead of abandonment. It also provides stability for the project through the shared responsibility and the available expertise the mining company offers.

Both communities have made efforts to rebrand and market to the NRBTR tourist market. Both communities are in close proximity to a provincial park (Mississagi and Quetico Provincial Park

[94] This difference also includes the Atomic Energy Act which applies to the Elliot Lake mines, but not the mines in Atikokan.

[95] The Steep Rock Mine was one of three mines which left massive environmental challenges that promoted the changes to the Mining Act, mainly closure plans, remediation plans and post bond to cover the costs of closure and remediation (Smith, March 2, 2011).

in Elliot Lake and Atikokan respectively), but the market access of the two communities is different. Both communities are located between major population centers: Elliot Lake is between Sudbury and Sault Ste. Marie, and Atikokan is between Thunder Bay and Fort Francis. Elliot Lake is further south than Atikokan and is located between larger population centers and with the proximity to draw in visitors from southern Ontario. There is also a shorter distance between Elliot Lake and the population centers compared to the population centers nearest to Atikokan. Elliot Lake also has greater notoriety, due to having supplied a large portion of the world's uranium, and is known on a larger geographical scale then Atikokan. Elliot Lake now has a new notoriety with its Retirement Living focus and the implication that it is a senior friendly place to visit (and live).

5.6.2 Site Comparison and Synthesis

The Charleson Recreation Area (CRA) and the Sherriff Creek Sanctuary (SCS) in Atikokan and Elliot Lake respectively are both built on former mine sites. Both the CRA and the SCS are outside the towns' core area, which is expected of a former mine site, but are accessible: both sites are less than five kilometers from the main street (Figure 14 and Figure 22). The CRA and the SCS are built at the different mine sites with different end uses. CRA is currently a multi-use sports, recreation and leisure area that can hosts events. It is built at the site of a former iron mine, the Canadian Charleson Mine. SCS, on the other hand, is a nature sanctuary with trails for low-impact recreation and leisure, and is built at the site of a uranium mine tailing management area (TMA). Both projects were developed at naturalized mine sites[96]. This required that the plan worked with the existing landscape because remediation land forming was completed, and limited the options available for redevelopment. The end uses were fairly natural and obvious due to existing uses. A summary of key information is presented in Table 48.

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[96] Both sites have been returned to nature in the sense that the vegetation is not being controlled. The effort to return the area to a natural ecosystem was purposeful in Elliot Lake but not in Atikokan.

Table 48: Comparison Charleson Recreation Area and Sherriff Creek Sanctuary

	Charleson Recreation Area (Atikokan)	Sherriff Creek Bird Sanctuary (Elliot Lake)
Current Use	NRBTR, local recreation, events	Walking trails, wildlife viewing and conservation
Former Mine	Canadian Charleson Mine	Milliken Mine (Rio Tinto, then Rio Algom in 1960)
Mine Commodity	Iron	Uranium (tailings management area)
Mine Operating Period	1957-1964	1958 - 1964
Reclamation Year	2008-2009	1970s-1996
Site Redevelopment Year	2008-2010	1997-1998
Catalyst for redevelopment	User groups, CRA Association	PHFN
Funding for Redevelopment	NOHF, ToA	Rio Algom Ltd
Management	ToA	Rio Algom Ltd., Denison Environmental, PHFN
Monitored by	CRA: ToA, SRMA: MNR	Dension Environmental
Management Funding	ToA, CRA revenue	Rio Algom Ltd
Former Mine Risks	CRA: minimal, SRMA: moderate	minimal
Major Events	Yes	No
Promotion as tourist asset	Yes	Yes
Promotion as local asset	Yes	Yes
Maintenance Costs	ToA, CRA revenue	Rio Algom Ltd
Proximity to Main Street	3 km	3 km
Seasonal Uses	4 season	4 season
Site Size	162 hectares	30 hectares
Identified User Groups	The Sno Ho Club, the Steep Rock Mountain Bikers Club, the Motocross Club, the Mudslingers 4X4 Club, the Equine Trail Riders Horse Club, the Bow to Stern Canoe Club and the Ride for Sight	Penokean Hills Field Naturalist Group Horticultural Club Schools?
Previous post-mining uses	Informal recreation and events by individuals and clubs	Ball field (late 1970s) equestrian sport (late 1970s)

The critical role that champions and volunteers play in the redevelopment of the sites was a major theme in the case studies. In the projects at both sites, a community member championed the current site development, and other community members joined in to drive the projects to completion. In both communities, the town council was also on board with the project once it was proposed. In the case of SCS, the company partner was approached before the Township of Elliot Lake because it

was company-owned land. This collaboration is essential for a smooth project, and clear communication is a key building block of such a collaboration (Carlson, Koepke, & Hanson, 2011; Lintz, Wirth, & Harfst, 2012).

Both site redevelopments were motivated by a sense of opportunity that the sites provided and their ability to be an asset to the community without making major changes. The projects were seen as opportunities that would benefit everyone, not just a select few or a specific user group. This has been identified elsewhere in the mine redevelopment literature (and tourism literature) as a vital part of such initiatives (Shaw, 2002). Though the CRA user group leans towards active recreation and the SCS use is passive recreation, both sites were motivated by hobbies and passions of the champions and main community actors. Both projects also came at times of upheaval: the closure of the last of the mines in Elliot Lake and the closure of the power plant in Atikokan. This provided incentive to outside actors and funding bodies to be involved in the projects.

The champion of both projects was a member of the community working as a volunteer with a team of volunteers (the Penokean Hills Field Naturalists in Elliot Lake and the Charleson Recreation Association in Atikokan). The heavy reliance on community members and volunteers has the risk of volunteer burn out, which is the experience at the CRA. Atikokan has a much smaller volunteer and community pool to draw on than Elliot Lake. Atikokan also does not have a company to help push it through and provide additional resources, increasing the need for people to give their own time and the draw on human resources and expertise within the limited pool. The development at the CRA had additional pressure from the financial deadline of the NOHF, which added to the pressures for potential volunteer burnout.

It is important that the roles and responsibilities surrounding the use and maintenance of the site are clear once the redevelopment is completed. All actors in the redevelopment of the SCS were clear about the roles they would play once the project was completed, and continue to believe that the roles are clearly delineated and fulfilled. This was, in part, because of Rio Algom Ltd.'s (and therefore Denison Environmental's) responsibility to maintain the integrity of the TMA area. This has translated to limited or no sense of friction about the responsibilities for the site now that it is in use[97]. This is in sharp contrast to the CRA where unclear responsibilities and expectations are compounded by upheaval in the community and volunteer burnout (as well as limited financial resources), creating tension and discouragement.

[97] There is quite a lot of friction with dog walkers, but that is a user issue, not a responsibility issue.

The CRA in Atikokan did not have a company partner, but did have strong provincial support for the redevelopment, but not ongoing efforts[98]. SCS in Elliot Lake, on the other hand, does have a company partner. The financial differences between having an industry partner at SCS as compared to no partner at the CRA, are discernible. Though the Charleson Recreation Association and the Township of Atikokan have a plan, the people and money are limiting factors. While the two sites did not reference each other in documents or interviews[99], the benefit of a financial partner through Rio Algom Ltd (RAL) was consistently brought to light, and the limiting factor of no financial partner at CRA was routinely highlighted as a barrier. CRA has the potential for revenue through user and event fees, which can help to cover the costs of maintenance and upkeep, but this requires increased human resources either through a paid position (currently unlikely) or increased volunteer commitment (also unlikely). SCS on the other hand has no revenue stream and will require continued outside financial support, but has lower on-going running costs and requirements.

Both sites are open access sites that do not have onsite personnel. This is a mixed blessing. Though no additional costs are required for an onsite attendant or manager, it also reduces the day-to-day monitoring of the sites and requires dedicated site visits by the personnel responsible for the site. This is less of a concern at SCS where there is little or no risk of damage (other than off trail walking and dog excrement and the required TMA monitoring) than it is at CRA, where there is equipment and buildings on site and for rent. This puts the responsibility for appropriate use and reporting issues on the users.

The CRA and SCS are within five kilometers of the main street of their respective community core. This proximity to the community core allows for easy access to the sites, increasing the value as a community asset and marketable tourism product. The signage for the CRA leads people through the main areas of Atikokan, which increases the chance of visitor spending in the community. Elliot Lake has not taken the same approach but, instead, provides detailed maps and information about the site and trails for sale to visitors. Both sites are open to visitors year-round and both have no entry charge, which also increases user access.

The ongoing real and perceived risks and risk mitigation strategies at both sites do not hinder user activities. This may be in part because the sites were naturalized, and did not directly move from

[98] The Northern Ontario Heritage Fund provided a one-time injection of funds for the redevelopment of the site. All further financial responsibilities fall to the ToA and CRA users.

[99] Generally, the impression from documents and interviews was that the two sites were not aware of each other, or the other redeveloped mine sites to support NRBTR in northern Ontario.

mining to NRBTR, but instead had a transitional period between uses. This provides the community with time to separate the former mining use of the land from the current recreational use. It also allows the site to progress organically between uses. It could also be a result of being located in mining communities. Neither site hides the heritage of mining, but neither do they make it obvious. Those who do know of the former use are proud of what was done with the land, and those who do not are glad it is available[100].

The potential of the SCS and CRA as catalysts for further development and investment in their community was a fascinating point that came through in the documents and interviews. While neither site in its own right could replace the economic or larger role of mining in the community, both acted as a way to highlight the community's innovative approach to community development and a positive way of interacting with the mining heritage of the area. Both sites also worked within the existing landscape and did only minor changes to the area (as opposed to large-scale landscape changes or remodeling, such as at Geraldton). This is consistent with the literature including the work in the Lusantia Lakelands and Ruhr Valley (IBA, 2010a; Lintz, Wirth, & Harfst, 2012; Shaw, 2002; Wrede & Mügge-Bartolović, 2012).

Since the completion of the projects, Elliot Lake has continued to prosper, and Atikokan has continued to face economic challenges. This further exacerbates the difference between sites with and without clearly defined roles and responsibility, and an industry partner. Elliot Lake also has a much larger community base to draw from, reducing the risk of volunteer burn out and the same few people always being the main actors. (Elliot Lake currently has a population of 11,348 compared to Atikokan's population of 2,787). This will likely have an impact in the long term on the two sites.

5.6.3 Summary

The Charleson Recreation Area (CRA) in Atikokan and the Sherriff Creek Sanctuary (SCS) in Elliot Lake are innovative reuses of former mine sites. Both communities experienced mining boom years during the same period, but Atikokan was a pre-existing logging settlement whereas Elliot Lake was a planned community to support the uranium mining of the area. The CRA and SCS are NRBTR sites designed for local and tourist uses, geared primarily to user-driven passive

[100] This could be the basis of an interesting study into the heritage commodification and transformative abilities of the sites, or of creative destruction.

recreation. The CRA was upgraded and formalized with the intention of continuing to host revenue-generating events. The SCS on the other hand is supported by Rio Algom with much lower running costs and no revenue-generating potential. Both projects were volunteer-driven initiatives that capitalized on naturalized sites which needed upgrades, not major landform changes.

5.7 Post-Mining Land Use Synthesis and Discussion

Mining is a destructive industry by necessity: to reach the ore body a large amount of earth and rock needs to be moved. There is little opportunity to change this. What can be changed is what happens to the mine site after mining operations have ended, that is, working with the environment and community. Advances have been made in reclamation practices, and there is the opportunity to create a new landscape that provides a post-mining, asset-driven land use. The use of tourism and recreation is a widely acknowledged development strategy for rural areas, and northern Ontario has been identified as a region rich with nature- and resource-based tourism and recreation (NRBTR) opportunities (Boyd & Butler, 1999; Johnston & Payne, 2005). Less discussed or identified is the use of post-mining land for the purposeful creation of a NRBTR asset for a community. The literature focused on the reuse of mine sites for NRBTR developments is limited and the process-oriented subset of this even more so. Two examples of mines in northern Ontario were used to illustrate the process of reclaiming a mine after initial remediation to address this gap. This study of mine site reuse for NRBTR was the first of its kind in Canada.

5.7.1 NRBTR Post-Mining Land Use Inventory

It is no longer acceptable for mining companies to leave a legacy of environmental damage post-closure. Increasingly the focus is, and should be, on the sustainable, positive legacy a mining operation can create and leave (Shaw, 2002; Worrall, et al., 2009). One option is to create a new value-added recreational landscape (Lintz, Wirth, & Harfst, 2012; Cloke, Milbourne, & Thomas, 1996). Typically, mine site restoration requires re-vegetation of the area (Bradshaw & Hüttl, 2001). This makes reuse with a naturalized landscape a more intuitive choice. NRBTR activities and businesses are present in nearly all the northern Ontario minetowns, making it a reasonable market to examine. There is very limited academic literature on the reuse of mine sites for tourism, recreation or leisure, and many studies provide abstract ideas without concrete examples (for example:

Soltanmohammadi, Osanloo, & Bazzazi, 2010). This study has provided an inventory of examples of mine sites redeveloped to support NRBTR. This provides concrete examples and possible sites for future research. This is the first review of such sites in northern Ontario or Canada, and as such has contributed to the academic literature.

Many of the sites were oriented to passive, non-motorized recreation, with a focus on open access nature trails. The re-vegetation of mine sites is a typical practice globally with varying levels of requirements (Bradshaw & Hüttl, 2001; Bridge, 2004). The prominence of such passive recreational sites may be due, in part, to reclamation requirements that limit the option for site reuse, coupled with liability concerns. This is especially clear when compared to options such as land redevelopment for industrial activities where clean-up and future liability may be a deterrent for possible purchasers (Alker & Stone, 2005).

The communities with mine sites redeveloped for NRBTR were in a state of transition. This is at odds with the literature, which predominantly identifies projects in communities in which mining no longer occurs (these communities may be ex-situ transitional or mine independent communities). The bulk of the projects are in countries that have moved away from mineral and resource dependence, with many studied projects located in Germany, the UK and the USA (see Appendix A). Northern Ontario is shifting from resource extraction to service-based industries, following this trend, but the area still maintains a high level of resource employment and extractive industry ties (Ministry of Northern Development and Mines, 2012).

The few inventories of such sites tend to be relatively superficial with limited examination of the different functionalities of the site (social, economic, and environmental). This can improve the accessibility of the information and allow for a number of projects to be broadly overviewed quickly, as in Pearman's (2009) book. The IBA also took this approach by documenting the changes in the Lusatia region. Lusatia was seen as a wasteland without leisure facilities by the rest of Europe; part of the IBA's goals is to change this perception by enhancing cultural and tourism opportunities (IBA, 2010a). The cataloguing of sites in the Lusatia Lakelands, Germany was simplified because the IBA was the driving force behind many of the projects in the area. Three books were released based on the area: Post-Mining Landscape[101] (2010b), New Landscape Lusatia (2010a), Redesigning Wounded Landscape (2012). The inventory of northern Ontario mine sites redeveloped for NRBTR is similar in that it is a catalogue of sites, but highly differentiated in that the project drivers were not connected

[101] This is the conference proceedings of the Opportunity: Post-Mining Landscape at International Building Exhibition Terraces in Großräschen in September 2009.

in any way[102]. This is more similar to Pearman's approach (Pearman, 2009). All inventories provide an overview of a number of projects, which is valuable for communities considering such a development by providing a number of examples to open discussions, and to researchers by providing concrete examples.

5.7.2 Case Studies of NRBTR Post-Mining Land Use

Understanding the process by which a mine site is transformed to an NRBTR asset provides information for those considering such a project. Very few studies have examined such projects as a case study, and none have previously been conducted in Canada[103]. Two Canadian case studies were examined: the Charleson Recreation Area (CRA) in Atikokan and the Sherriff Creek Sanctuary (SCS) in Elliot Lake. The main elements of the case studies were similar to those conducted elsewhere. These included the inability for such projects to replace the economics of mining, the reimaging aspects, and community support. Less emphasised in the literature was the role of volunteers and community actors, and of clearly defined responsibilities post-completion.

The in-depth assessment of mine redevelopment projects in northern Ontario echoes the position of the tourism literature that tourism, especially NRBTR, cannot replace the economic driver of mining, partly due to the long lead-up time to a strong, final tourism product (Lintz, Wirth, & Harfst, 2012; Shaw, 2002). It also requires a different skill set, and has a different employment style (often seasonal and part-time) (Koster & Lemelin, 2009; Wanhill, 2000). Successful tourism and recreation diversification requires time and an understanding that the change will be a benefit over the long-term (Koster & Lemelin, 2009; Lintz, Wirth, & Harfst, 2012).

The ability of such sites to act as re-imaging, place-making and perception changing projects is stressed in the literature (for example: Franz, Güles, and Prey 2008; Shaw 2002; Cloke, Milbourne, and Thomas 1996; Lintz, Wirth, & Harfst 2012; and touched on by others). This place-making ability was identified in the case studies, especially CRA, where the role of the site to draw new residents was identified in the interviews (AI2; AI3). Place-making is highlighted in social and environmental

[102] So much so that in every case people associated with one site where not familiar with any other with the exception of the Sherriff Creek Sanctuary, which won an industry award and, therefore, was known to those in the industry.

[103] Dewar & Miller (2011) and Otchere et al. (2004) do identify Canadian sites in their work (geotourism at former mine site in New Brunswick, and the informal recreation at the Steep Rock Mining Area respectively) but do not provide information about the process of site development or maintenance. In both articles, the end-use of the site is identified.

perception internal and external to the community (Franz, Güles, & Prey, 2008; Cloke, Milbourne, & Thomas, 1996; IBA, 2010a). This place-making ability also extends to indirect economic benefits such as increased property values in the immediate area (Ling, Handley, & Rodwell, 2007), improved functionality of the land (Cloke, Milbourne, & Thomas, 1996), and increased tourism and recreation services (Zhang, Fu, Hassani, Zeng, Geng, & Bai, 2011). This is further supported by the overwhelming dominance of projects that occurred in communities transitioning in- and ex-situ.

At odds with some of the literature was the lack of push-back about the projects. Conflicts due to attitudes about the symbolism of the produced place, which were noted in the literature, were not identified in the case studies (Franz, Güles, & Prey, 2008). The motivation to improve the quality of life, on the other hand, was identified as a strong driver in mine redevelopment projects (Franz, Güles, & Prey, 2008). It was also viewed as a win-win situation by the mine company, where present, the community and users (EL1; EL2; AI2; AI3).

The essential role of volunteers and community members in the projects was established in the literature, but not emphasised to the level found in the case studies. Community members are identified as stakeholders and actors in the process around the world (Lintz, Wirth & Harfst, 2012 stress this point, and the need to include them). It would be impossible to discuss such projects without at least a cursory discussion of the community affected by it, but Carlson, Koepke and Hanson (2011) and Wrede and Mügge-Bartolović (2012) specifically emphasize the importance of local initiatives and local involvement as a driving force in NRBTR redevelopment of mine sites. The case studies of CRA and SCS left no doubt as to the importance of community members and volunteers in driving the redevelopment, including the initial proposal for the project.

The same studies also stressed the importance of clear roles and communication between the stakeholders and actors (Carlson, Koepke, & Hanson, 2011; Lintz, Wirth, & Harfst, 2012). Mine closure planning literature emphasises the importance of clear communication (in part because of its role in improving the mine-community relationship) (Carlson, Koepke, & Hanson, 2011). Clear communication also helps improve the alignment of goals amongst the stakeholders and actors, and increases the overall inter-regional competition by allocating different tourism functions (Lintz, Wirth, & Harfst, 2012).

To summarize, a number of conclusions about the case studies echo the academic literature. This includes the inability of a NRBTR former mine site to replace mine economics, the role that place-making mine site redevelopment can have, the underlying motivations for such projects, and the importance of clear communication. More emphasis was placed on the critical role of the volunteers

and the need for clear roles after the major redevelopment has been completed in the case study findings.

5.8 Summary of Case Study Results, Synthesis and Discussion

Only a handful of mines in northern Ontario have been redeveloped into formal NRBTR offerings. The inventory of northern Ontario mine site redeveloped for NRBTR use provides concrete examples of such projects. Such examples are important to the study of mine reclamation and provide much needed functional examples to support more theoretical positions. Of the potential sites, Charleson Recreation Area in Atikokan and the Sherriff Creek Sanctuary in Elliot Lake were selected as case study sites. Both site redevelopment projects were driven by local volunteers and champions, and the benefits of a corporate partner at the Sherriff Creek Sanctuary are noteworthy. The champion of both projects was a local member of the community who volunteered their time because they were passionate about the potential the site offered to the community. Both sites were redeveloped in a large part due to the efforts of volunteers, and continue to be maintained by in-kind volunteer efforts. The strong reliance on volunteers and the need for clear roles and responsibilities once the project is completed were emphasised as a higher priority than was suggested in the academic literature. Both sites provide the community with an innovative way to interact with the mining heritage of the area and to re-brand for a new economic future, a position supported by the academic literature. The redevelopment of mine sites to support NRBTR is a relatively uncommon undertaking, but has a number of benefits which make it a constructive conclusion to the mining process.

Chapter 6
Recommendations and Conclusions

6.1 Introduction

This chapter provides the study's conclusion. It begins with a restatement of the research objectives, the study rationale and methodology. This is followed by a brief summary of research findings. Academic and practical implications are then presented, and future research topics proposed. The chapter ends with concluding remarks about the lifecycle of mining communities in Canada and the reuse of mine sites for nature- and resource-based tourism and recreation (NRBTR).

6.2 Research Objectives, Rationale, and Methods

The goal of this thesis was to addresses the overarching issue of the economic diversification of mining communities in Canada, including the redevelopment of mine sites to support NRBTR activities. It focused on the specific research question '*How can mine-site NRBTR be incorporated as a diversification strategy in northern mining communities?'* The study was based in northern Ontario and was guided by the following objectives:

1. to develop a mining lifecycle model that accommodates diversification;
2. to apply the model to northern Ontario minetowns, and to describe how population and labour force changes as communities move through the model's stages;
3. to determine when tourism, specifically NRBTR, is introduced during minetown evolution;
4. to assess the process by which a mine site is transitioned, maintained and used for NRBTR in two case study sites; and,
5. to provide recommendations to mining community stakeholders for including NRBTR at reclaimed mine sites, as part of a diversification strategy.

Northern Ontario provided the ideal setting for this study due to the long history of mining in the area, the large share of the Canadian mineral extraction production, and the strong ties to NRBTR in the region.

The study was conducted to address identified gaps in the academic literature. A review of academic works identified a number of Canadian resource community lifecycle models, including the Lucas, Bradbury, Halseth (LBH) model (Halseth, 1999a), the Bone model (1998), and the Bruce, Ryser, and Halseth model (2005). The lifecycle models of Canadian resource communities highlight the vulnerability of mining communities, and the expected patterns and stages of development. While these models have merit, they do not accurately capture the current realities of resource based communities. One such realitity is the inclusion of tourism, particularly NRBTR, for economic development before the closure of mining operations.

The redevelopment of mine sites for NRBTR activities has had limited in-depth academic study. Only a handful of works provide a list of examples or focus on the process of a specific site; more studies considered the abstract possibility or technical landforming components of the creation of such sites. Many of the studies on individual or selected sites were based in Germany, the UK and the USA. The studies which identified and discussed such sites made note of the opportunity to reuse existing infrastructure for the benefit of the community tourism and recreation initiatives (Buultjens, et al., 2010), the need for clear communication to ensure the redevelopment fits with the overarching goals of the community (Carlson, Koepke, & Hanson, 2011), and that such developments cannot be a stand-alone replacement for the mining operation (Lintz, Wirth, & Harfst, 2012; Shaw, 2002).

A mixed methods approach was used to meet the objectives of this study. This began with the qualitative creation of a new lifecycle model. A quantitative inventory of post-1950 minetowns in northern Ontario was compiled, which included twenty-three present-day communities. The population and labour force from 1991 to 2011 for the communities were examined using the proposed model. The inclusion of tourism and NRBTR in minetowns in the different development stages was identified and assessed. NRBTR reuses of mine land within the inventory were identified and the two most suitable sites selected for case studies. The case study was a qualitative, examination of the process of mine site redevelopment, maintenance and use for NRBTR. These components lead to the following findings and recommendations.

6.3 Research Findings

The mixed methods employed in this study provided data needed to meet each of the study's five objectives. A new lifestyle model was created to more accurately capture the non-sequential

progression of community development and the introduction of new economic activities before mine closure (objective 1). The minetowns of northern Ontario were identified and found to have experienced a decline in population over the past two decades. These communities were examined using the proposed model, which was found to better capture the current realities of the communities, including their non-sequential lifecycle (objective 2). Nearly all minetowns in every stage of development were found to have tourism and NRBTR activities and businesses (objective 3). This indicates that mining and NRBTR are not mutually exclusive activities.

The prominence of NRBTR in northern Ontario minetowns supported the position that the opportunity exists for minesites to be redeveloped as NRBTR assets. Sites were identified in the inventory communities and two were selected for use as case studies: the Charleson Recreation Area in Atikokan and the Sherriff Creek Sanctuary in Elliot Lake. Both sites were driven by volunteer community members motivated by recreational passions. The sites were not stand-alone economic drivers but acted as place-making and reimaging catalysts which allowed for innovative interactions with the mining heritage of the two communities (objective 4). General recommendations were provided from the proposed model, the inventory of northern Ontario minetowns, and the case studies of mine site reuse for NRBTR (objective 5).

6.3.1 Academic Implications

This study has a variety of implications for the academic community. First, it has provided and tested a new minetown lifecycle model. Second, it inventoried and examined minetowns in northern Ontario, highlighting the population decline and non-sequential development of these communities. Third, it found that tourism and NRBTR were present in nearly all minetowns and in all stages of development, suggesting mining and tourism are not exclusive. Finally, the catalogue of mine sites reused for NRBTR attractions identified examples for the selection of two case studies. The case studies examined the process of redevelopment, and site maintenance and use.

This study found that the existing lifecycle models do not capture the non-sequential progression of community development and economic diversification, the long decline times found in communities with lag-time effects of the closure and winding down stages, or the disconnect between mine labour force and population changes. A new model was proposed that uses the portion of mining labour force in a community without a chronological axis to describe mining community development, and three diversification responses. The proposed model shifts away from the prevalent

population-based, sequential resource community lifecycle models, which assumed company or planned town development with mining as the major population change driver. This satisfies objective one of this thesis and furthered the academic literature on the lifecycles of resource-dependent communities in Canada, with a focus on the existing models and alternative futures proposed by Halseth (1999a), Bone (1998), and Bruce, Ryser, and Halseth (2005).

An inventory of all minetowns in northern Ontario with a current or post-1950s historic dependency on the mining industry was created and the 1991 to 2011 population and labour force data was examined. Population was found to be declining in the majority of the communities. This is expected; the literature notes the declining population in rural, resource-focused areas. The proposed model was examined using the inventory, and it was found that the mining portion of the labour force fluctuated. This is expected because resource communities typically have labour force fluctuations, which are tied to commodity markets. The new model was found to provide a better framework to study the trends in minetowns, specifically the non-sequential development through various stages of mine dependence, and it allowed for economic diversification at any stage in development. The inventory communities were assessed for the inclusion of tourism and NRBTR businesses and activities, and it was found that the majority of the minetowns had tourism businesses, NRBTR activities and NRBTR businesses. This implies that mining and NRBTR are compatible and can have concurrent development. This review of minetowns in a large region provides an assessment of minetowns in different development stages, including twenty years of population and labour force data, and the current state of tourism. This satisfies objectives two and three of this thesis and addresses gaps in the academic literature.

This thesis has also contributed information about the process of redeveloping mine sites for value-added end uses. Having found that NRBTR was prevalent in the mining communities, this study identified former mine sites used for NRBTR within northern Ontario minetowns, and created a database with basic site information. This inventory of sites provides a list of NRBTR mine reclamations in northern Ontario, something which did not exist prior to this study. From this list, the two most suitable sites were selected as case studies to examine the process of redevelopment, site maintenance, and site use of mine sites for NRBTR attractions. This allowed for the creation of recommendations for communities and groups interested in remediating mine sites for such purposes, including considerations for viability. There is limited Canadian-based or global academic study of the process by which mine sites are redeveloped to support NRBTR. This study has contributed to

the global studies of mine site redevelopment for NRBTR and has contributed a much needed Canadian study to the academic literature. This satisfies objectives four and five of this thesis.

6.3.2 General Community Recommendations

This study also has implications for practitioners. In keeping with the literature, key recommendations for communities are to diversify as early as possible, while the community has the economic driver of the mine[104]; to create and regularly update a strategic plan which is cohesive and accepted by the community, and to work collaboratively with the region to maximize the potential length of visitors' stay in the area. All communities should conduct an analysis of the barriers to tourism and recreation to identify and address their unique challenges faced in the development or expansion into tourism and recreation markets. A SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis would allow communities to identify and address barriers such as the distance from major population centers and the lack of a unique attraction to draw in a large visitor base. This study identified the prolonged winding down period experienced by some communities. This further supports the key recommendations in the literature that early diversification is important to mitigate the chances of such decline. Using the categories of the proposed model, the aspects of, and recommendations for community diversification into tourism and recreation are examined (objective 5).

Mining dependent communities can plan mining developments for future uses by creating infrastructure that would continue to serve the community after mining operations end. The infrastructure deficit faced by rural and northern communities has been identified as a barrier to economic development and diversification (Markey, Connelly, & Roseland, 2010). Planning integrated infrastructure developments would be a possible and positive option to mitigate this barrier. Infrastructure, tourism and recreation development, while a community is mine dependent, would also allow the community to take advantage of the tax base and economics of the mining operations and employment (Ryser & Halseth, 2010). This would also allow communities to begin to plan for diversification efforts and be better prepared for the closing the mine operation.

[104] More recent closure planning for mines attempts to incorporate economic diversification through corporate social responsibility (McAllister & Fitzpatrick, 2010).

Transitioning communities are both in-situ and ex-situ, either of which may be making efforts to diversify or be experiencing a decline in mining employment without replacement economic activities. Tourism can help with economic stimulation, but requires a start-up time that may not address the immediate concerns and needs of the community (Mayer & Greenberg, 2001). The alternative employment that tourism and associated businesses provide would encourage some community members to stay in the community post-mine closure (Johnston & Lorch, 1996). Tourism generally cannot replace the economics and wages associated with mining, but it can offer the opportunity for entrepreneurial ventures (Johnston & Lorch, 1996; Koster & Lemelin, 2009; Wanhill, 2000). Transitioning communities should be prepared for a change in the population, including core population members, and a possible shift in community identity.

There is a unique opportunity in in-situ transitioning communities to market industrial tourism at an active mine, which could be used as an indicator for interest in the mine site a heritage tourism offering post-closure. An example of this is the Goldcorp tours of active and reclaimed mine sites in Timmins. If it is found to be a large draw, the site could be considered for industrial or heritage tourism post-closure, and if it is not found to be a strong driver of tourism, the site could be reclaimed or redeveloped. This would take advantage of the large tax base provided by the mine. In-situ transitioning communities would face challenges with stigmas (environmental and 'rough frontier' mainly) and community mindsets, on top of the often mentioned barriers to tourism such as location, seasonality and low wages. Ex-situ transitioning allows a community to diversify while locals are commuting to mine operations. As tourism developments increase, members of the community would have more opportunities available for employment within the community, and more industries may develop as a result. The community may face challenges initially with a reduced local work force and volunteer pool and should be realistic about goal setting (as is the case of Atikokan, Ear Falls and others) (Bruce, Ryser, & Halseth, 2005).

Mine independent communities could possibly face the greatest challenges in creating a tourism market[105]. Tourism and recreation would be a viable addition if the communities had transitioned to an alternative economic base and were economically viable, mine-independent places. If a community was mine independent without an industrial base, efforts to include tourism and recreation (and likely, other economic activities) would face greater challenges, possibly the greatest

[105] This may be where much of the stigma about minetowns has come from and what causes it to linger. Classic company-owned or movement planned communities may have reached a mine independent stage without alternative economics in place and continue to perpetuate the inability of minetowns to diversity.

challenges of any of the communities. The viability of tourism as an economic driver in a mine independent community would likely have to be assessed on a case-by-case basis with a review of the existing industries and economic stability of the community.

Communities in all stages of development need to maintain a long-term view of their goals and act accordingly. Mining communities have historically been considered the most vulnerable of the resource-based communities and, as such, should ensure that they take advantage of the economic upswings of mining to promote economic growth and diversity. Mining typically occurs in more rural or remote areas, which in Canada have high environmental capital that can form the basis for NRBTR activities and businesses. Identifying potential opportunities can allow for strategic and collaborative planning between the community, mining company and entrepreneurs.

6.3.3 General Mine Site Reuse Recommendations

The recommendations for mine site redevelopment fall into three categories: the process of redevelopment, ongoing maintenance and management, and the role of the site in the community. Reclaiming a mine site for a new use is still relatively uncommon, and it is important that stakeholders considering such a project are well informed and realistic about the project and outcome. It goes without saying that clear communication, innovation and a willingness to collaborate are all important to the process of mine site reuse. The stakeholders and actors involved in, and affected by, the project should be identified and efforts made to bring them to the table. These include community stakeholders, government representatives, industry representatives, and user group representatives. These representatives need to consider social, economic and environmental issues associated with the mine site reuse. Clear communication and strong collaboration initiatives increase the chance of success.

It has been documented that the earlier closure planning begins, the more cost-effective and inclusive the efforts can be (Warhurst & Noronha, 2000). There would be a greater opportunity to plan for purposeful developments at a mine site transitioning at closure to a value-added use. Alternative closures, such as the use of post-mining land for NRBTR assets is likely to require more time and encounter more challenges than standard reclamation of creating a landscape similar to the pre-mining landscape. This is in part because there will be greater planning requirements and a greater need for community involvement, including the incorporation of the site into the overall

strategic plan for the community. Planning efforts should include assessments of the site's ability to overcome existing barriers to tourism and recreation in the community, including the potential for the site to increase visitor draw from major population centers and the distance and transportation from the community center.

A company partner can be a benefit to the redevelopment process. A major benefit of having a company partner is the ability to incorporate the plan into the closure efforts, the availability of the expertise, finances, and equipment needed to reclaim a mine site (Carlson, Koepke, & Hanson, 2011). This would be especially true for a value-added post-mining land use. Working with an industry partner provides the opportunity to create an interdisciplinary group to design such sites, as well as create agreements for long-term use, maintenance, monitoring and funding. Having comprehensive agreements in place helps to make projects straightforward and appealing to mining companies. This has implications for improved mine closure planning and better company-community relations. Risk mitigation and risk perception would also benefit from a company partner, ensuring the integrity of the site long-term. Working with an industry partner also increases the chance that risk management issues and limitations will be addressed and respected. This includes informing users that the site is safe for use, and of any limitations to help ensure user safety and satisfaction.

Once completed, the maintenance and management of the site needs to be clearly defined and communicated to those involved. This will help ensure that goals and expectations are realistic, and allow for better delegation and allocation of tasks to volunteers and employees. It is also important that there is clear communication with users about the limitations of the site and any special requirements (such as the removal of beavers at Sherriff Creek Sanctuary in Elliot Lake). This would be aided by a comprehensive agreement created with the community. For large sites with high maintenance costs, user fees have the potential to help offset financial needs. This would help with added on-going costs above and beyond a standard reclamation and should be included in planning exercises.

The role of the site needs to be understood before development by those involved, including the limitations of the direct economic benefit of the site. Redevelopments are highlighted in the literature as providing a springboard for further development, but are not in themselves enough to save a community or region (Shaw, 2002). This is important to communicate to ensure that the redeveloped site is not expected to be a revival remedy. The Sherriff Creek Sanctuary was never intended to provide direct economic benefit, but the Charleson Recreation Area was, and still has the

potential to provide revenue. That being said, a NRBTR redeveloped mine site can provide a way for the community to interact with the mining heritage and history in a new and innovative way, and be an asset for community re-branding. The site can help update the image of the community, and show the proactivity of the community in finding and using opportunities, welcoming change, and driving advancement. This could act as a draw for investors, tourists and new residents, and help set the community apart from other resource communities in the area. This re-branding can act as a pivot point between the industrial past and the post-industrial or diversified future of the community.

Redeveloping mine sites for NRBTR is beginning to be included in more recent closure plans for operation mines and legacy mine sites projects. Although such redevelopments are becoming more common, they have received limited academic study or general public exposure. Developing NRBTR at post-mining sites allows the community to celebrate its mining heritage and can help in re-branding efforts. The earlier planning for such a development begins to occur, the better the chances of success. Such projects can take a long time, and clear communication between all stakeholders is critical to a positive process. Strategic infrastructure planning that addresses mining needs as well as incorporates the planned post-mining use will help ease the transition. With collaborative, cohesive planning, mine sites can be redeveloped post-mining to provide and NRBTR asset to the community and help support economic diversification.

6.3.4 Atikokan Specific Recommendations

Atikokan has weathered a number of economic rough patches and will soon see the biomass plant operating and new mines north of the community open. Atikokan has rebranded the community as the 'Canoe Capital of Canada', putting to good use the surrounding wilderness and proximity of Quetico Park. The Charleson Recreation Area fits into the efforts to draw in NRBTR tourists by providing a multi-use recreational area. The Charleson Recreation Area is an asset to the community that is being underutilized, due to a lack of human and financial resources dedicated to promoting, maintaining and managing the site. A partnership similar to that at Elliot Lake would provide the needed support for the site. A number of companies have previously considered gold mining in Atikokan, and there has been renewed interest recently, including planning by Osisko to open a mine[106]. This creates an excellent opportunity for a mining company to partner with the Township

[106] The deposit is roughly 35 kilometers north of Atikokan.

and the Charleson Recreation Association to provide resources or an internship to help with the site. It would create an excellent community collaboration opportunity and strengthen future partnerships. The intern could handle the day to day operations of the CRA including event organization, administration, advertising and website maintenance. This would alleviate the pressure on volunteers, allowing them to focus on their hobbies and clubs, and reduce the risk of volunteer burnout. The mining company would benefit from improved community relations and collaboration, positive PR and a positive show of corporate social responsibility.

6.3.5 Elliot Lake Specific Recommendations

Elliot Lake and the Sherriff Creek Sanctuary are shining examples of a minetown transitioning to a new economic landscape and of mine site reuse. Elliot Lake has never shied away from its mining heritage, best exemplified by the 'Uranium Heritage Festival' held annually in June and the Nuclear Mining Museum[107]. Elliot Lake has balanced mining heritage with other tourism and recreation aspects very well. Most mining heritage is self-guided with no industrial heritage sites that require much higher maintenance and upkeep costs. The Sherriff Creek Sanctuary is a unique bridging of this history and would benefit from increased recognition, from the public, industry and government. Capitalizing on the 'pioneering' project would show that Elliot Lake was innovative in its use of mine sites as well as mine housing [for Retirement Living]. The options to pursue similar projects at other sites, including butterfly gardens, could be explored.

6.4 Future Research

Future research should continue to further the Canadian study of resource-based communities, including the reuse of a mine site. Options include the application of the proposed model in other regions, tourism and NRBTR assessments nationally and across resource bases, and further research opportunities on mine site redevelopment for NRBTR. All of these components would help guide community diversification and development.

The proposed model is designed for Canadian community development, and tested in northern Ontario minetowns. Northern Ontario was selected for this study due to the availability of

[107] The Canadian Mining Hall of Fame is also housed in the Nuclear Museum.

information through AMIS, the Ontario Ministry of Natural Resources and Forestry, and Ontario Ministry of Northern Development, including a number of government reports. Similar information sources exist in other provinces and could be used for a similar study allowing for a cross-country comparison of minetowns (this could include the model, tourism and mine site reuse). A similar study could also be done for other resource-based communities to compare renewable resource communities (such as forestry) to non-renewable minetowns. By applying the model to mining communities across Canada and to communities with different resource bases, the prevailing academic notions of resource communities would be updated.

Northern Ontario minetowns have often been identified as having a 'will to live', which may be a factor in the high inclusion rate of tourism and NRBTR. This may or may not be unique to the region or resource base. An evaluation of tourism and NRBTR in mining regions across Canada would help to identify if this is a trend nationally. To further this, the inclusion of tourism and NRBTR in other resource-based communities (for example fisheries or pulp and paper processing) to identify if there is a disconnect between the expected exclusion of NRBTR activities in resource-based communities, as there was with mining communities. Forestry communities have made advances in incorporating tourism and NRBTR, and it may be found that it is more common than expected.

The inventory of examples (academic or otherwise) could be used to assess the costs and logistics of NRBTR mine site redevelopments by examining a large group of NRBTR reclamation projects[108]. This could include a cost-benefit analysis of these sites and the level of offset needed from user fees, etc. to cover monitoring and upkeep costs. Similar studies have been conducted for heritage and industrial tourism mine sites, but not for NRBTR projects. A real-time study of the costs and processes could be conducted of the Hollinger super-pit being developed in Timmins by Goldcorp which is currently planned to be reclaimed as a community recreation space and lake, expected to begin in 2020 (Goldcorp Porcupine Mines, 2012). Similar studies could be conducted in other regions of Canada, particularly those with a high level of field inspection and assessment rates such as Newfoundland and Labrador, Quebec, and Saskatchewan. A wider assessment of sites and improved information about the logistics of such an undertaking as part of a closure plan would allow for the creation of a framework and decision making tool for the redevelopment of mine sites.

[108] There are at least three operational golf courses in northern Ontario built on mine tailings. These are likely much more economically productive and similar studies, or general performance assessment studies could be conducted.

Understanding the impacts of mine site reuse for NRBTR is important for planners to be able to identify the option best suited to the community. Studying the community and visitor perceptions of mine site reuse for NRBTR (or a different reuse) can build on lessons learned and encourage positive outcomes in the future. This study addresses the process, which is only part of the overall context of mine site reuse. A study of tourism in communities with NRBTR mine site developments could be completed though surveys of the sites' draw for tourists, new comers, and established community member with attention to use, perceived value and impressions. Possible foci could be who is using the sites, and the motivations behind visits, community identity shift, and changes in social/cultural elements when the monument for the memory (such as headframes) is included into a different landscape (i.e. tourism-oriented instead of industrial-oriented). This could include if the attraction had special draw or impact on the decision to visit to the community. It could also include changes in the communities' perception of the legacy of mining as a result of having an NRBTR attraction at a former mine site. Case studies, social impact assessments and economic impact assessments would help in understanding site repurposing for use in nature-based tourism and recreation activities. A greater understanding of the process, the benefits, maintenance and use of existing sites will help these projects become a more viable option in closure planning.

This study has focused on minetowns in northern Ontario, but there are research opportunities across Canada and resource-bases to further the academic literature. It is also possible to conduct similar studies in developing and resource-dependent countries/regions globally and to examine the implications of value added reclamation at mine sites. Increasingly, the global collection of data allows for more robust research and an exchange of ideas. Improving the ability of communities, companies and governments to make effective, positive decisions about resource-based communities and their development requires a strong foundation of knowledge available only through ongoing research.

6.5 Concluding Remarks

This has been an exciting and rewarding research project. This research ties together the trends in minetowns with the lifecycle models, and the innovative reuse of mine sites in these communities. The study of resource communities and their lifecycles is an important component of understanding Canada's diverse landscape. A new model was proposed to capture the current

minetown situation and helped to advance this area of study. The inventory of northern Ontario minetowns supported the need for a new model, as well as highlighted the population loss occurring in such communities. Minetowns in northern Ontario were found to have NRBTR activities and businesses, which is a staple of rural community diversification efforts. The reuse of mine sites in current and former mining-dependent communities is an exciting opportunity to bridge the mining past with the innovative future of these communities. Though these sites are not dominant in Canada, or around the world, they do offer the unique opportunity to create purposefully designed landscapes, which not only suit the needs of the community, but are a marketable asset designed to complement the strategic goals of the community. By seeing mining operations as temporary custodians of the land used, new land use opportunities can follow.

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Note about case study source material: many sources were consulted in this study and some sources which were consulted, but not referenced in the study are included in the list in the interest of transparency and thoroughness.

Appendix A

Supplemental Literature Information

A.1 Section 2.4.2 NRBTR Mine Site Use Supplemental Information

Table 49: NRBTR Sites Identified in Academic Literature

Source	Site	Use	Former Mine	Location
Bell, 2001	Wetland Center		mineral sands	Capel, WA, Australia
Box, 1999	East Shropshire		Coal	Telford, UK
	Telford Town Park		coal, iron	Telford, UK
	Oxlow Rake	hill walking	Lead	Derbyshire, UK
Burton et al, 2012	Langford Park	lake and picnic area		Western Australia, Australia
Carlson, Koepke & Hanson, 2011	Mesabi Iron Range	wilderness play-space	Iron	Minnesota, USA
Chang, Lu, Li, Wang, 2010 (IBA book)	Pang-Zhuang Coal Mine	recreational park	Coal	Juili, Xuzhou City, China
Cloke, Milbourne & Thomas, 1996	English Midlands National Forest		Coal	Leicestershire/South Derbyshire, UK
	Rother Valley Country Park		Coal	South Yorkshire, UK
	Hauxley Nature Reserve		Coal	Northumberland, UK
Conesa, Schulin & Nowack, 2008	Cartagena-La Union Mining District	geo-mining/ archeological park with walking paths		Spain
Davison, 1997	Watergate Colliery	Country Park		Gateshead, UK
Dewar & Miller, 2011 (MH&T)	Fundy Trail Parkway	geotourism		New Brunswick, Canada
	Joggins Fossil Cliffs World Heritage Site	geotourism	Coal	New Brunswick, Canada
	Copper Mine Trail, Fundy National Park	Vernon copper mines	Copper	Canada

Source	Site	Use	Former Mine	Location
Frost, 2011 (MH&T)	Castlemaine Diggings National Heritage Park		Gold	Victoria, Australia
Gardner & Bell, 2007	Squaw Creek Coal Mine	bird conservation	Coal	Indiana, USA
	Arch of Illinois	part of Pere Marquette state park	Coal	Illinois, USA
Hospers, 2002; Kuhn, 2010 (IBA book); Ling, Handley & Rodwell, 2007, and others	Emscher Park IBA	greenspace	Lignite	GroBraschen/Grossraschen, Germany
Ling, Handley & Rodwell, 2007	Colliers Moss			St. Helens, Merseyside, UK
	Dearne Valley	wetlands, greenspaces	Coal	Dearne Valley, UK
Lintz, Wirth & Harfst, 2012	Sentfenberg Lake	earlier lake creation	Lignite	Lausitz Lake District, Germany
Martins & Matos, 2010 (IBA book)	Iberian Pyrite Belt	Geological tourism	pyrite	Portugal
Otchere et al, 2004	Steep Rock Mines	Informal recreation	Iron	Ontario, Canada
Digby, 2010; Korostoff, 2010 (IBA book)	AMD&ART	greenspace, trails, open-air art	Coal	Vintondale, Pennsylvania, USA
von Bismarck, 2010; Lienhoop & Messner, 2009; Lintz, Wirth & Harfst, 2012	Lausitz Lake District (Lusatia)	waterscape	lignite	Lausitz Lake District, Germany
Waggitt, 2011	Lichtenburg Park	park	uranium	Ronneburg, Germany
Wrede & Mugge-Bartolovic, 2012; Hospers, 2002	Ruhr Area National Geopark	geotrails		Ruhr, Germany

Source	Site	Use	Former Mine	Location
Perelli et al, 2011 (MH&T)	Geomining Historic and Environmental Park	UNESCO park	lead, zinc, limestone	Sardinia, Italy
Reeves et al, 2011 (MH&T book)	Payette National Forest		gold	Idaho, USA
	Otago Goldfields Park		gold	South Island, New Zealand
	Macrae's Flat Area	wetland trails, art installations	gold	South Island, New Zealand
	Gold Trail		gold	Victoria, Australia
Ruiz-Ballesteros et al, 2009	Cabo de Gata-Nijar National Park		gold	Andalusia, Spain
Rumpel & Slach, 2010 (IBA book)	Darkov Sea, Ostrava-Karvina	Darkov - rec lake	Coal	Karvina, Czech Republic
Rzetala & Jagus, 2011	Upper Silesian Lake District		many	Poland
Waggitt, 2011	Puy de L'Age	Sports Angling	uranium	France
Xiao et al, 2011; Xie et al, 2013	Huaibei	Wetland Park		Huaibei, China
Zhang, Wang & Wang, 2011	Tangshan Nanhu Wetland Park	wetland and eco-park	Coal	Hebei, China

Appendix B

Inventory Data

B.1 Mine Town List and Source

Table 50: Communities Identified with >30% Mining Labour Force (1991-2011)

Community	Portion of labour force employed in mining sector 1991	1996	2001	2006	2011	Notes
Abitibi 70		33.3				reserve
Duberville					37.5	
Elliot Lake	34.2					
Gauthier	37.5					
McGarry	40.9	31.4				Virginiatown
Golden	46.5	45.1				Red Lake
Larder Lake	37.3					
Manitouwadge	41.0	40.5	34.8			
Onaping Falls	32.5					
Pic Mobert North		66.7				reserve
Red Lake				30.5	31.0	
Marathon	29.0	28.2				

Table 51: North American Industry Classification System (NAICS) 2007

11 Agriculture, forestry, fishing and hunting	54 Professional, scientific and technical services
21 Mining, quarrying, and oil and gas extraction	55 Management of companies and enterprises
22 Utilities	56 Administrative and support, waste management and remediation services
23 Construction	61 Educational services
31-33 Manufacturing	62 Health care and social assistance
41 Wholesale trade	71 Arts, entertainment and recreation
44-45 Retail trade	72 Accommodation and food services
48-49 Transportation and warehousing	81 Other services (except public administration)
51 Information and cultural industries	91 Public administration
52 Finance and insurance	
53 Real estate and rental and leasing	

Table 52: Northern Ontario Minetowns Identified in Literature

Source / Town	RbtIotLG, 1953	TFoM, 1982[109]	Marsh, 1970	Robinson, 1962[110]	Randall & Ironside, 1996[111]	Notes
Atikokan (Don Park Colony)	✓		✓	✓	✓	
Balmertown		✓				Red Lake
Bruce Lake		✓				Ear Falls
Capreol		✓				Sudbury
Central Patricia	✓		✓	✓		
Cobalt		✓				
Cocheneur	✓		✓	✓		Red Lake
Coniston	✓		✓	✓		Sudbury
Copper Cliff	✓		✓	✓		Sudbury
Creighton Mine	✓		✓	✓		Sudbury
Ear Falls		✓			✓	
Elliot Lake		✓	✓	✓	✓	
Espanola		✓			✓	
Falconbridge	✓	✓	✓	✓		Sudbury
Frood Mines	✓		✓	✓		
Geraldton					✓	
Haley	✓		✓	✓		
Ignace					✓	
Jamestown (Wawa)	✓		✓	✓		
Kirkland Lake		✓			✓	
Leitch Mines	✓		✓	✓		
Levack	✓		✓	✓		Sudbury
Lively	✓		✓	✓		
Madsen	✓		✓	✓		
Manitouwadge		✓	✓	✓	✓	
Matachewan		✓				
Matheson		✓				
McKenzie Island	✓		✓	✓		
Onaping Falls		✓				

[109] Sourced from (in source's order): Government of Canada, Department of Regional Economic Expansion. (1979). Single-Sector Communities: Occasional Papers.; Department of Energy, Mines and Resources. (1982). Principal Mining Areas of Canada: Map 900A.; Statistics Canada. 1981 Census of Canada: Catalogue No. E 485: Census Subdivisions on Decreasing Population Order.; Statistics Canada. 1976 Census of Canada: Catalogue No. 92-806: Population Geographical Distribution.

[110] Sourced from (in source's order): Institute of the Local Government. (1953). Single Enterprise Communities in Canada. Ottawa: Central Mortgage and Housing Corporation.; Lash, S.D. (1985). Planning of Recent New Towns in Canada. The Engineering Journal. XLI:45; Bank of Nova Scotia Monthly Review. (June 1957). Canada's Big Resource Projects.; Census of Canada 1956.

[111] Sourced from Canadian Association of Single Industry Towns

Source Town	RbtIotLG, 1953	TFoM, 1982[109]	Marsh, 1970	Robinson, 1962[110]	Randall & Ironside, 1996[111]	Notes
Pamour		✓				
Pickle Crow	✓		✓	✓		Pickle Lake
Pickle Lake		✓				
Red Lake		✓			✓	
Renabie	✓	✓	✓	✓		Abandoned
Schumacher		✓				Timmins
South Porcupine		✓				Timmins
Starratt Olsen	✓		✓	✓		
Steep Rock Lake				✓		Atikokan
Sturgeon Falls		✓				W. Nipissing
Sudbury		✓			✓	
Temagami		✓				
Timmins		✓			✓	
Virginiatown	✓	✓	✓	✓		McGarry
Wawa		✓				Michipicoten

Notes: RbtIotLG - Report by the Institute of the Local Government
TFoM – Task Force on Mining
Only communities listed as mining communities are checked. Only the source which identifies the community as mining dependent is marked. Some communities are identified in the literature as reliant on other sectors.
Communities with operations ending before the inclusion period for the study are not included (see section 3.4.2 for information about community requirements).
Fly-in/Fly-out operations and mines without communities were not included in the list.
Dubreuilville, Gauthier, Larder Lake and Marathon were added to the inventory on the basis of current mining operations and the high level of employment in the mining sector in both communities.

Appendix C

Supplementary Data

C.1 Pre-Amalgamation Community Data

Table 53: Greenstone Population and Labour Force Calculation

Community	1991 Population	Labour Force			1996 Population	Labour Force		
		Total	*Sector 21*	*%*		*Total*	*Sector 21*	*%*
Beardmore	454	255	0	0	418	335	0	0
Geraldton	2633	1405	0	0	2627	2005	0	0
Longlac	2073	1160	0	0	2074	1605	0	0
Nakina	635	325	0	0	566	395	0	0
Total	*5795*	*3145*	*0*	*0*	*5685*	*4340*	*0*	*0*

Source: Statistics Canada census data

Table 54: Sudbury Population and Labour Force Calculation

Community	1991 Population	Labour Force			1996 Population	Labour Force		
		Total	*Sector 21*	*%*		*Total*	*Sector 21*	*%*
Capreol	3809	1680	75	4.5	3817	1665	80	4.8
Nickel Centre	12332	6425	760	11.8	13017	6625	620	9.4
Onaping Falls	5402	2505	815	32.5	5277	2460	660	26.8
Rayside-Balfour	15039	7680	1080	14.1	16050	7825	1295	16.5
Sudbury	92884	48055	3365	7.0	92059	45405	2670	5.9
Valley East	21939	11290	1280	11.3	23537	12025	1245	10.4
Walden	9805	5170	825	16.0	10292	5305	650	12.3
Total	*161210*	*82805*	*8200*	*9.9*	*164049*	*81310*	*7220*	*8.9*

Source: Greater Sudbury, n.d.

Table 55: West Nipissing Population and Labour Force Calculation

Community	1991 Population	Labour Force			1996 Population	Labour Force		
		Total	*Sector 21*	*%*		*Total*	*Sector 21*	*%*
Cache Bay	712	265	0	0	648	220	15	6.8
Caldwell	1359	640	40	6.3	1625	735	10	1.4
Field	679	290	0	0	636	220	0	0
Springer	2336	1175	45	3.8	2433	1165	10	0.9
Sturgeon Falls	5837	2520	20	0.8	6162	2365	40	1.7
Total	*10923*	*4890*	*105*	*0*	*11504*	*4705*	*75*	*1.6*

Source: Statistics Canada census data

C.2 Northern Ontario District and Community Comparison

Table 56: Communities Classified by District

District	Inventory Communities			
Algoma	Dubreuilville	Elliot Lake	Wawa	
Cochrane	Back River-Matheson	Timmins		
Greater Sudbury*	Sudbury*			
Kenora	Ear Fall	Ignace	Pickle Lake	Red Lake
Manitoulin	NA			
Nipissing	Temagami	West Nipissing		
Parry Sound	NA			
Rainy River	Atikokan			
Sudbury	Espanola			
Thunder Bay	Greenstone	Marathon	Manitouwadge	
Timiskaming	Cobalt	Kirkland Lake	Matachewan	
	Gauthier	Larder Lake	McGarry	

Population

The population data for communities within the same district were averaged to compare to the district trends in Table 57. Average community population changes tend to be much greater (either increasing or decreasing) than the district for 2001 to 2011 and for 1991 to 2011. This is expected because of the smaller population size of the combined communities and, therefore, the proportional effects of in- or out-migration. From 2001 to 2011, only Nipissing District had a different trend from the communities (Temagami and West Nipissing). During this period the districts of Algoma, Rainy River, Thunder Bay, and Timiskaming had much lower district changes then the communities (all had population losses). The communities in these districts are well known minetowns, many of which continue to have active mines. From 1991 to 2011, the community average and the district population changes followed the same trends, generally declining. Only three districts (Manitoulin, Parry Sound and Nipissing) had population growth during the 1991 to 2011 period. Timiskaming had the largest average rate of population decline from 1991 to 2011 (42.9%) and 2001 to 2011 (30.1%). Many of the communities from the inventory in the Temiskaming district may be in a prolonged lag time, which is characterized by a steady decline in population leading to community abandonment (this is discussed in depth in the following section). Only Sudbury had a larger decline in the district than the community average during the 1991 to 2011 period. Sudbury's

large decline in the district compared to the community average is likely due to out-migration from the unorganized areas. All other districts with communities in the inventory had proportionally larger changes in the communities than in the districts.

Table 57: District Categorization of Minetown Communities: Population Change

	2001-2011		1991-2011	
District	**Community Average**	**District**	**Community Average**	**District**
Algoma	-26.9	-2.3	-32.2	-9.0
Cochrane	-8.6	-4.8	-19.4	-13.6
Greater Sudbury*	1.6	3.3	-2.1	-0.5
Kenora	-8.3	-6.8	-23.1	-1.9
Manitoulin	NA	2.9	NA	16.6
Nipissing	-2.0	2.2	6.4	0.02
Parry Sound	NA	6.3	NA	9.7
Rainy River	-24.2	-7.9	-31.9	-11.4
Sudbury	-3.2	-7.4	-4.6	-19.0
Thunder Bay	-23.4	-3.2	-33.4	-8.0
Timiskaming	-30.1	-5.3	-42.9	-16.3

Source: calculated from Statistics Canada census data
Communities in each district are listed in Table 56
**district and municipal area the same, but district census data includes unorganized sections*

Labour

The regional trends and context for mining labour force are compared to the community trends in Table 58. There has been an overall increase of 34.5 percent of mining employment as a portion of the labour force[112] in northern Ontario from 2001 to 2011. The community averages are higher than the regional levels; this is expected given the historic ties to the mining industry and the active mining in many of the communities in the inventory. The only exceptions are Nipissing and Sudbury. Of the two communities in Nipissing District, the mining labour force has been reduced to zero in Temagami, and has remained below two percent in West Nipissing since 1996. The Sudbury district has only one community in the inventory, Espanola, which has had an increase in mining sector employment since 2001, but is still below three percent of the total labour force.

[112] In contrast, employment in all resource sectors combined has declined by 41.1 percent.

Table 58: District Categorization of Minetown Communities: Labour Force

District	S21 labour force (% of total)		S21 Labour Force Change '01-'11	
	Community Average	District	Community Average	District
Algoma	23.52	1.48	257.3	67.0
Cochrane	16.68	10.19	50.3	45.8
Greater Sudbury	8.41	5.79	34.8	-7.2
Kenora	16.24	4.41	216.8	72.2
Manitoulin	NA	1.16	NA	-48.7
Nipissing	0.96	2.01	-34.4	137.8
Parry Sound	NA	0.61	NA	22.3
Rainy River	7.75	1.71	830.2	133.2
Sudbury	2.81	4.2	642.2	43.4
Thunder Bay	5.15	2.73	953.3	18.9
Timiskaming	12.97	2.24	64.0	-34.9

Source: calculated from Statistics Canada census data
Communities in each district are listed in Table 56

C.3 Tourism Source Material

Table 59: Mining Communities, Tourism and NRBTR

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
Atikokan (Atikokan Economic Development Corporation)	• Atikokan Centennial Museum and Historic Park • Atikokan Hotel • Atikokan MotoCross Club • Atikokan Ski Club • Atikokan Sno-Ho Club • Atikokan Tourism Bureau • Finlayson Resort • Crystal Beach Resort • Indiaonta Resort • Little Falls Golf Club • Marr's Perch Lake Lodge • Niobe Lake Lodge • Parkview Motel • Powell Lake Resort • Quetico Inn	• Charleson Recreation Area • Mount Fairweather • Nordic Trails • Sno-Ho Trails • Quetico Park • Bass Classic Festival	• Beaten Path Nrodic Cross Country Ski Club • Branch's Seine River Lodge Outfitters • Browns Clearwater West Lodge • Bunnell Municipal Park & Campground • Camp Quetico • Canadian Quetico Outiftters • Charleson Recreation Area Association • Eva Lake Resort & Wilderness Outposts • Factor Lake Rentals • Fletcher Canoes • Quetico Discovery Tours • Quetico North Tourist Services

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
	• Tip Top Lodge • White Otter Inn		• QuetiQuest Outfitters • Voyageur Bait and Tackle • Voyageur Wilderness Programme Ltd. • White Otter Wilderness Adventures
Cobalt (Town of Cobalt)	• Mining Museum • "The Bunker" (Military museum) • Northern Ontario Firefighters Museum • Colonial Adit Underground Tour • Silver Moccasin	• Cobalt Lake • Heritage Silver Trail* • Keevil Walking Trail	none**
Dubreuilville (Dubreuilville .ca)	• Chez Gaston • Relais-Magpie-Relay Resort • Obordelo B&B • Museum	• Chapleau Game Reserve • Fishing lakes • ATV Trails	• Tracks to Trails • Wabatong Lodge • Camp 88 lodge • Tatnall Camp • Esnagi Lodge
Ear Fall (Ear-falls.com)	• Hotel 105 • Kahooter's Kabins and RV Park • Pine Ridge Campground • Trillium Motel • Ear Falls Golf & Country Club • Trout Forest Music Festival • White Wing Resort & Floating Lodges • Cat Island Lodge • Cherob Resort • Lac Seul Golden Eagle • Little Canada Camp • Pakwash Lake Lodge • Timberland Camp • Wenasaga Lodge	• Fishing, hunting, parks, trails • Pakwash Provincial Park	• Four Season's Sport Shop • Rob's Ear Falls Marine Services • Butch's Point Outpost • Excellent Adventures Outpost • Gawley's Little Beaver Lodge & Outpost • Gold Pines Camp – Lac Seul • Goose Bay Camp • Showalter'sFly-In Outposts
Elliot Lake (City of Elliot Lake, tourismelliotlake	• Golf Stone Ridge • Mount Dufour Ski Area • Hampton Inn	• Beaches • Parks • Trails • Sherriff Creek	• All Seasons Sports Center (retail) • Mississagi Provincial Park Camping

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
.com)	• Dunlop Lake Lodge • Pam's B&B • Red Rose B&B • Westview Campground • Frontier Lodge • Wilderness Lodge • Laurentian Lodge • Salient Physics Day Spa	Sanctuary • Mississagi Provincial Park • ATV/snowmobiling trails	• South Bay Park (camping) • Ten Mile Lake Lodge •
Espanola (espanola.ca)	• Espanola Golf & Country Club • Alta Vista Hotel • Goodman's Motel • Pinewood Motor Inn • Clear Lake in • Marshall's Hotel • Queensway Motel • Quiet Waters B&B • Mill House B&B • Agnew Lake Lodge • Bay Villa Lodge • Charleton Lake Camp • Forbes Holiday Resort • La Cloche Lake Camp • Lang Lake Resort • Lake Apsey Resort • Widgawa Lodge • Heritage Park	• Al Secord Trail • Boogie Mountain Ski Hill (Volunteer run) • Chutes Provincial Park • Clear Lake Beach • Espanola Game and Fish Shooting Range • Snowmobile trails • Boating and fishing launches and sites	• Bear Lake Wilderness Camp • Bearskin Lodge & Outiftters • Black Bear Camp • Chutes Provincial Park Campground • Hilly Acres Camp & Trailer Park • Trailside Sports Ltd.
Gauthier	None	None – Crystal Beach kirklandlakebusiness directory.com/#29	none
Greenstone (Greenstone.ca, investin greenstone.ca)	• Discover Geraldton Interpretive Center • Pennock's Tourist Service & Shores Motel • Wild Country Sports • Flemings Outfitters Inc. • Kenogamisis Gold	• MacLeod Provincial Park • Sedgman Lake Provincial Park • Little Current River Provincial Park • Nakina Morraine Provincial Park	• Cordingley Lake Campground • Riverview Campground • Poplar Lodge Park • Arctic Watershed Outpost • Bauer's Onaman Lake Cabin & Outposts

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
	Club		• Esnagami Lodge • Leuenberger Fly-In Lodge • Meta Lake Lodge • Northland Outfitters • Ogoki Lake Outfitters • O'Sullivan Lake Outfitters • Twin Lake Outfitters and Wilderness Camps • Lower Twin Lake Lodge • O'Sullivan Rainbow • ….. (many fly-in and outfitters)
Ignace (town.ignace .on.ca)	• White Otter Castle • Ignace Golf Course & Club • Ignace White Otter Inn • Lone Pine Motel • Northwoods Motor Inn • Sunset Resort • Westwood Motel • Trading Post Motel	• Agimak Beach • West Beach • Lily Pad Lake Trails • Sandbar Provincial Park • Turtle River White Otter Lake Provincial Park	• Agimak Lake Resort • Harris Bay Resort • Cozy Camp Resort • Cobb Bay Lodge • Young Lake Lodge • Raleigh Lake Resort • Ignace Outpost • Breezy Point Camp • Dreamcatcher Tours • Davy Lake Campground • Press Lake Camp • Agimac River Outfitters • Rouseau's Landing
Kirkland Lake (discoverkl.ca, Discover Kirkland Lake Visitor Guide)	• Museum of Northern History • Hockey Heritage North • Toburn Mine • Miners Memorial Monument • Larder Lake Ski Club • Kirkland Lake Golf Club • Comfort Inn • Kirkland Lake Inn • Wilderness Calling Cottages	• Culver Park • Fireman's Park • Wright-Hargreaves Park • Esker Lake Provincial Park • Mount Cheminis • Arctic/Atlantic Watershed • Fishing, hunting, trails (water and land) • Nordic Skiing under Skiing	• Raven Beach Camping • Joe Rent All (snowmobiles) • Speedy Snowmobile Rentals

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
	• Cheminis Lodge • Reed's Cottages • Hilltop Inn • Kerr Manor B&B • Main Street B&B • Black Bear Inn • Spoon Bay Spa • Team Rosko Power and Sport		
Larder Lake (Discover Kirkland Lake Visitor Guide, Larderlake.ca)	• Black Bear Inn • Dublin Bay Lodge • Fork Lake Resort • Larder Lake Ski Hill • Larder Sport & Marine	• Fishing Derbies (winter and summer) • Public Beach	• Larder Lake Marina and Boat Launch • River Beach Campground • Wild North Experience
Manitouwadge (manitouwadge.ca)	• Select Inn Motel • Northern Comfort B&B • Manitouwadge Municipal Golf Course • Manitouwadge Aquatic Driving Range	• Hiking, canoeing, hunting, etc • Canoe routes with waterfalls and rapids	• Kiwissa Ski Centre • The Mad Fisherman • Urners Northwood Adventures • Foch River Adventure Tours • Northern Trails Ski Club Inc.
Marathon (marathon.ca)	• Lake View Manor • Marathon Inn • Airport Motor Inn • Zero-100 Motor Inn • Peninsula Golf Corse	• Neys Provincial Park • Pukaskwa National Park • White Lake Provincial Park • Usual NRBTR • Mink Creek Falls • Penn Lake • Xcountry and snowmobile trails • Public beaches	• Penn Lake Park Camping • Superior Slopes Ski Hill • Cast to You Inc. • Pic River Repair and Marine • Thomson Custom Rods and Tackle •
Matachewan (matachewan.com)	• Argyle Lake Lodge • Christie's Camp	• Timiskaming Abitibi Trails • NRBTR • HighFalls • Matachewan Beach	• AG Guiding Services • Horseshoe Island Camp • Elk Lake Trail Blazers • Pioneer Park
Matheson (blackriver-matheson.com)	• HWY 11 Country Inn • Vi-Mar Motel • Little Fox Lodge • Rolly's Restaurant &	• NRBTR trails fishing • Public beaches	• Ontario Wilderness Vacations • Watabeag Lake Camping

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
	Motel • Black River Golf and Country Club		• Munro Lake Camping
McGarry (Discover Kirkland Lake Visitor Guide, mcgarry.ca)	• McGarry Tourist Information & Heritage Home • Hilltop Inn • Cheminis Lodge	• nature trails	none
Pickle Lake	• Joan's B&B • Lakeview Manor B&B • Pickett's Lodging • Winston Motor Hotel	• Lakes • NRBTR	• Badesdawa Lake (Mud Lake), Menako Lake, Mawley Lake and the Pipestone River municipal campgrounds • Fly-in Outposts (7) • K&K Tackle and Sports • Wasaya Wilderness Adventures
Red Lake (redlake.ca, tourismredlake.ca)	• Balmer Motor Hotel • Lakeview Suite • Nature's Inn • Norseman Inn • Red Lake B&B • Super 8 • Howey Bay Motel • Red Lake Travel	• Woodland Caribou Provincial Park • NRBTR	• Goldseekers Canoe Outfitting & Wilderness Expeditions • Atikaki Canoe Outfitters • Loon Haunt Outfitters • Red Lake Outfitters • Woodland Caribou Park Outfitters • Camps and Outposts (41)
Sudbury (greater sudbury.ca, www.sudbury tourism.ca)	• Science North • Dynamic Earth • Heritage Museums	• Public Parks • Rainbow Routes trails	• Municipal Campgrounds • Ski Hills (3) • North to Adventure
Temagami (temagami.ca)	• Temagami Tower • Hugh McKenzie Gallery • Histroric Train Station • Tourist Information Center • Forest Fire Fighters Museum • Dream Keepers Experience	• Hiking trails • Finlayson Point Provincial Park • Marten River Provincial Park • Public beach • Kayaking and watersports	• Caribou Mountain Adventures • Dog Sledding • Happy Holiday Campground • Argyle Lake Lodge • Garden Island Canoe • Blue Haven Lodge

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
	• Leisure Island Houseboat Rentals		
Timmins (timmins.ca, tourism timmins.com, Visitors Guide to Timmins)	• B&Bs (4) • Hotels (11) • Cedar Meadows Resort and Spa • Connaught & District Pioneer Museum • Hollinger Park Mini-Putt • Industrial Tours • Procupine Miners Memorial • Riverside Fun Park and Rapid Fire Paintball • The Ojibway and Cree Cultural Center • Timmins Museum • Golf Courses (3)	• Trails • Gillies Lake Conservation Area • Lakes • Grassy River/HighFalls • Kettles Lake Provincial Park • Ivanhoe Lake Provincial Park • Dana-Jowsey Lake Provincial Park • Public beaches • Canoeing	• Bogwater Campground • The Cache Campground • Wawaitin Holiday Park • Cedar Meadows Wilderness Park • Kamiskotia Mountain Ski Area • Dog Sledding • Wild Exodus Outfitter and Glamping • Kamiskotia Wilderness Outfitter • Ultimate Guiding Service • Project Wilderness • Black Bear Camp
Wawa (wawa.cc, edcwawa.ca)	• The Goose • Hotels/Motels (12) • B&B (2) • Buck's Marina • Jones Power Sport • Tourism Information Center	• Waterfront Parks • Waterfalls • Recreational trails • Michipicoten Post Provincial Park • Driftwood Beach • Lake Superior Provincial Park	• Wawa RV Resort & Campground • Naturally Superior Adventures • Soul of Superior Tours • Beachfront Trading Post & Outfitters • Bristol Off-Roading Outfitters • Air-Dale Flying Service & Ontario Wilderness Vacations • Botham's Bear Guiding • Dickson's Bear Hunt Ltd. • Don Charbonneau Art, Music & Fishing • Go with Shirley • Fly-in lodges (25) • Road access lodges (13)
West Nipissing (westnippising.ca)	• Golf Club (2) • B&B (2) • Hotel/Motel (8) • Minnehaha Bay	• Mashkinonje Provincial Park • West Sandy Island Provincial Park	• Lodges and campground (37)

Community	Tourism Businesses	NRBTR Activities	NRBTR Businesses
	Municipal Marina • Sturgeon River House Museum • Expressions! Art Gallery	• Public Beaches (3) • trails	

Note: The listing is representative and not exhaustive for communities with listings in each category in the interest of space. Exhaustive searches were done for communities without identified attractions or businesses in any category.

** - attraction is centered around heritage or mining, but is in a NRBTR setting*

*** - the Silver Heritage Trails could be considered NRBTR, but the main focus is heritage and so guided tours were not included as an NRBTR business. Cobalt also is nearly indistinguishable from the surrounding communities of Coleman and Haileybury which do have NRBTR businesses*

Appendix D

Interview Questions, Correspondence Letters and Consent Forms

All material was approved by a Waterloo Ethics Committee before use. This includes interview questions and protocols, recruitment and follow-up form letters that were mailed or emailed to potential participants, and consent forms. All interviewees remain anonymous, and all transcripts and written notes from the interviews are stored securely to ensure the interviewees confidentiality.

Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics (TCPS 2: CORE) completed June 8, 2013.

Office of Research Ethics # 19046
Ethic clearance received June 27, 2013.
Ethic clearance extended May 2014.

Interview Questions (18 total)

1. What was your role in the project and what were your affiliations?

2. Why was tourism selected as a new industry for the community? Was tourism (including recreation and leisure activities) the first choice for the redevelopment of this site?

3. When did the transition planning begin? When did the design and implementation begin?

4. What steps were involved in the transition? What challenges were faced? How did these unfold?

5. Who was involved in the community transition? At which steps were various people involved? Of those involved, who were the most important actors in the transition?

6. What have been the positive and negative impacts of the transition? Were these the same as the expected outcomes?

7. Why was the decision made? What were the key steps of the process?

8. When was the decision to transition the site made and when was the site designed and development implemented?

9. What was the process for the transition of [mine site] into [site]? How did it unfold?

10. What sort of issues or stumbling blocks has the project encountered, during development as well as after? How were these handled?

11. Who was involved in the [site] planning and development project? Of those who were involved, who were the most important actors and are they still involved?

12. What are the project's fixed and variable costs? How has the project(s) been funded over time?

13. What have been the positive and negative impacts of the transition? Were these the same as the expected outcome?

14. How has risk perceptions of the site (ex: contaminates) by users of the site been dealt with?

15. Do you have any suggestions for communities interested in pursuing a similar project?

16. Beyond the focus of the use of mine land to support tourism, has mining infrastructure, such as roads and power lines, been used to support tourism?

17. What direction does long-term environmental rehabilitation and post-closure use of sites seem to going? Is there a specific focus or priority? Is future land use of sites being included in planning?

18. Is there anything else you would like to add?

Note: data from questions 3 to 7 were not assessed in-depth for inclusion in the case study sites due to the study focus shifting to being on the site reuse.

Table 60: Interview Participants

Reference ID	Date	Communication
AI1	October 25, 2013	Phone
AI2	August 15, 2013	In-person
AI3	August 15, 2013	In-person
AI4	November 4, 2013	Phone
AI5	August 16, 2013	In-person
EL1	October 31, 2013	Phone
EL2	October 31, 2013	Phone
EL3	August 2013	In-person
EL4	October 2013	Phone/Email
EL5	August 2013	Email

Note: not all interviews were relevant to the final study; those which were not are not sourced in text

University of Waterloo

Department of Geography and
Environmental Management
Faculty of Environment

University of Waterloo
200 University Avenue West
Waterloo, Ontario, Canada
N2L 3G1
Kendra O'Neill
226-600-2560
ke2oneil@uwaterloo.ca

Dear *[participant's name]*,

This letter is an invitation to participate in a research study about post-mining land use for tourism purposes. I am currently conducting research for my Masters of Environmental Studies under the supervision of Professor Clare Mitchell in the Department of Geography and Environmental Management at the University of Waterloo.

Study Overview

This is a study of land previously associated with mining activities that now supports tourism activities in northern Ontario. The goal of this study is to help communities, companies and governments see post-mining land as an opportunity to create a new asset within a larger vision of community diversification. Essential to this endeavour is understanding the process of how these sites were developed and who was instrumental.

The research began with an inventory of mine sites that are a tourism asset to the community. From this *[all sites selected]* where selected. Interviews are being conducted with key people in mining companies, municipalities, and other agencies involved in mine site reclamation to explore in more detail, what the process and the key stakeholders were for these sites. Your involvement in the reclamation and development of *[specific site]* would provide valuable information to this study. I would like to invite you to participate in an in-person or telephone interview.

Your Involvement

The interview includes questions about the process and stakeholders involved in the post-mining use of the site. The interview would last about one hour and would be arranged at a time and place convenient to your schedule. The interview can be in-person or by telephone. A consent form for the interview and the questions that will be asked follow this letter. To ensure the accuracy of your input, I would ask your permission to audio record the interview. If you are willing to participate in the study, please let me know by email, phone or mail and I will follow up with you to schedule the interview. I will address any questions or concerns you have at this time.

Participation in the interview is entirely voluntary and there are no known or anticipated risks to participation in this study. You may decline to answer any of the questions you do not wish to answer. Further, you may decide to withdraw from this study at any time, without any negative consequences, simply by letting me know your decision. All information you provide will be considered confidential unless otherwise agreed to, and the data collected will be kept in a secure location and confidentially disposed of in five years time.

Your name and the name of your organization will not appear in any thesis or publication resulting from this study unless you consent to be identified and have reviewed the thesis text and approved the use of the quotation. After the data have been analyzed, you will receive a copy of the executive summary of the study. If you are interested, an electronic copy (e.g., PDF) of the entire thesis can be made available to you.

Contact Information

If you have any questions regarding this study, or would like additional information about participation, please contact me at 226-600-2560 or by email ke2oneil@uwaterloo.ca**.** You can also contact my supervisor Dr. Clare Mitchell by telephone at 1-519-888-4567 ext. 33285 or by email at cjamitch@uwaterloo.ca**.**

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. If you have any comments or concerns resulting from you participation in this study, please contact Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca. The decision to participate is yours and you may withdraw from the study at any time without consequence.

Thank you in advance for your interest and assistance with this research.

Sincerely,

Kendra O'Neill
MES Candidate

University of Waterloo

Department of Geography and
Environmental Management
Faculty of Environment

University of Waterloo
200 University Avenue West
Waterloo, Ontario, Canada
N2L 3G1
Kendra O'Neill
226-600-2560
ke2oneil@uwaterloo.ca

Dear *[participant's name]*,

Thank you for taking the time to participate in my Master's research on mining landscapes in northern Ontario. The purpose of this study is to gain insight into the process by which land associated with mining can be used to support nature-based tourism. Your interview on *[interview date]* has provided valuable information which remains confidential, and will be stored securely for five years, at which time it will be destroyed. If you wish to have a copy of the transcript of the interview, please let me know and I will provide you with this. Once the study is completed you will receive a summary of the study and findings and an electronic copy of the complete thesis can be made available to you. These are expected to be available in the spring of 2014.

This study is being conducted under the supervision of Dr. Clare Mitchell in the Department of Geography and Environmental Management at the University of Waterloo. I can be contacted by phone at 226-600-2560 or by email at ke2oneil@uwaterloo.ca and Dr. Mitchell can be contacted by telephone at 519-888-4567 ext. 33285 or by email at cjamitch@uwaterloo.ca**.** Please feel free to ask any questions you may have.

This project has been reviewed by and received ethics clearance through a University of Waterloo Research Ethics Committee. In the event you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin at 519-888-4567, Ext. 36005.

Sincerely,

Kendra O'Neill

University of Waterloo

Department of Geography and
Environmental Management
Faculty of Environment

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This study was conducted under the supervision of Dr. Clare Mitchell in the Department of Geography and Environmental Management at the University of Waterloo. I can be contacted by phone at 226-600-2560 or by email at ke2oneil@uwaterloo.ca and Dr. Mitchell can be contacted by telephone at 519-888-4567 ext. 33285 or by email at cjamitch@uwaterloo.ca**.** Please feel free to ask any questions you may have.

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Sincerely,

Kendra O'Neill

CONSENT FORM

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

I have read the information presented in the information letter about a study being conducted by Kendra O'Neill of the Department of Geography at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at 519-888-4567 ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

☐ Yes ☐ No

I agree to have my interview audio recorded.

☐ Yes ☐ No

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

☐ Yes ☐ No

I agree to the use of direct quotations attributed to me only with my review and approval.

☐ Yes ☐ No

Participant Name: _____ (Please print)
Participant Signature: _____
Witness Name: _____ (Please print)
Witness Signature: _____
Date: _____

CONSENT FORM *(Verbal, read verbatim by the interviewer)*

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

You have read the information presented in the information letter about a study being conducted by Kendra O'Neill of the Department of Geography at the University of Waterloo. You have had the opportunity to ask any questions related to this study, to receive satisfactory answers to your questions, and any additional details you wanted.

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☐ Yes ☐ No

Do you agree to the use of anonymous quotations in any thesis or publication that comes of this research?

☐ Yes ☐ No

Do you agree to the use of direct quotations attributed to you only with your review and approval?

☐ Yes ☐ No

Participant Name: _____ (Please print)
Participant Signature: _____
Witness Name: _____ (Please print)
Witness Signature: _____
Date: _____