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Accountability, Conservation and Community: Measuring the Local Economic Impacts of Protected Areas

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By

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Abstract

As a signatory to the Convention on Biological Diversity, Canada has committed to help protect biodiversity through an increase in effectively and equitably managed systems of protected areas (PAs) by 2020. If Canada fulfills this commitment, the country will see the largest expansion of PA networks in its history. Although employing 'equitable and effective management' suggests PAs have a responsibility to consider their effects on local stakeholders, on the whole, Canada's PA agencies do not publicly and systematically report on their jurisdictions' local economic impacts. To address this gap, this thesis aims investigate mechanisms for PA agencies to identify and consider ecological-economic intersections within their regions, in order to inform approaches for PA managers to conduct community consultations related to their impacts.

Twenty-seven participants from municipalities in the Riding Mountain Biosphere Reserve used mapping activities, surveys and interviews to identify features they perceived to economically impact their area and wellbeing. Participants reported that tourism and agriculture were important to the economic fabric of the region; that activities involving wildlife (i.e. fishing and wildlife viewing) and the region's cultural diversity helped generate local tourism; and that Riding Mountain National Park's management decisions had varying effects, but tended to hold greater benefits for jurisdictions closer to the park's central administration. The results underscored the importance of approaching stakeholder relationships geographically, since the impacts of decisions made by PA managers are felt differently among locals depending on their location around the PA boundary. To maintain constructive relationships between PAs and their local stakeholders, it is recommended that PA administrations undertake systematic community

consultations accompanied by subsequent self-reporting. It is further recommended that efforts be made to incorporate maps into community consultation processes.

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List of Acronyms

BRWG	Biosphere Reserve Working Group
FLIPPR	Fish and Lake Improvement for the Parkland Region
ICDP	Integrated Conservation and Development Program
IUCN	International Union for the Conservation of Nature
MAB	Man and the Biosphere
PA	Protected Area
RMBR	Riding Mountain Biosphere Reserve
RMNP	Riding Mountain National Park
RMRLC	Riding Mountain Regional Liaison Committee
UNESCO	United Nations Educational, Scientific and Cultural Organisation

1.0 Introduction

Canada considers its protected area (PA) networks and their associated ecosystem services to be key facets of conservation (Needham et al. 2016). As such, both government and non-governmental organizations have made commitments to enlarge Canada's network of PAs (Barnes 2015; CBD 2010; MacKinnon et al. 2015; Parks Canada 2014). As a signatory to the Convention on Biological diversity, Canada has committed to help protect 17% of earth and inland waters, and 10% of coastal and marine areas "through effectively and equitably managed" systems of PAs by the year 2020 (CBD 2010 p.2). If Canada fulfills this commitment, the country will soon see the largest expansion of PAs in its history (Eagles, 2016). Although employing 'equitable and effective management' suggests PAs have a responsibility to consider their effects on local stakeholders, Canada's national PA agency does not publicly and systematically report on its jurisdictions' local economic impacts. This is problematic, not only in consideration of Canada's commitment to greatly increase its PA networks, but also in view of the literature's emphasis on regional integration and inclusive management approaches (e.g. Andam et al. 2010; Hirschnitz-Garbers and Stoll-Kleemann 2011).

The local economic impacts of PAs abroad are frequently examined by academics and non-profit organizations (e.g. Andam et al. 2010; Blom 2000; Dearden 2016). Domestically, however, there is substantially less interest. Although one can speculate on several reasons for this disparity, the most apparent is the differing colonialist histories and levels of poverty found within various world regions. Since Canada is considered to be among the world's wealthiest nations, there is little attention paid to the economic implications of its PAs at the local level (World Bank, 2016). Interest in the local economic impacts of PAs, however, is essential to

meaningful conservation regardless of national affluence. The actions of local actors directly impact regional ecology and therefore determine the success of PAs in fulfilling their conservation objectives (Hirschnitz-Garbers and Stoll-Kleemann 2011). Local actors are also the most impacted by PA mandates and actions. It is important for park managers to extend substantial consideration to their neighbours and to invest in maintaining constructive relationships at the local level. In short, conservation requires community and collaboration to be effective (Edge and McAlister 2009; Getzner et al. 2014).

While there are economic assessment guidelines directed toward negotiating for conservation in financial terms, these guidelines (i.e. IUCN 1998; IUCN 2000; Pagiola, von Ritter and Bishop 2004) are high-level and tend to focus on PA revenue generation as opposed to community level impacts. Although Parks Canada has engaged third party agents to report on PA contributions to the Canadian economy (e.g. Outspan 2011), they have not detailed how they measure their impacts at the local level. To maintain constructive relationships between PAs and their respective local stakeholders, this research looks to investigate potential tools for PA economic impact assessments and methods of conceptualizing locally meaningful conservation. This is accomplished through a case study of the Riding Mountain Biosphere Reserve (RMBR) which surrounds Riding Mountain National Park (RMNP), in Manitoba.

1.1 Research Goals and Objectives

The central goal of this thesis is to investigate mechanisms for protected area agencies to identify and consider ecological-economic intersections within their regions. A number of objectives are associated with the research goal. These objectives can be organized into three categories: region, governance and theory. The regional objective relates to the improvement of stakeholder relationships within the RMBR. The governance objective relates to the amelioration

of PA administration in Canada. The theoretical objective seeks to contribute to the geographical sub-discipline of nature and society. The details of the objectives and their associated sub-objectives as they relate to each level will be further described below.

The regional objective pertains to understanding and improving management strategies in the RMBR region. Sub-objectives at the regional level are:

- To investigate the way in which RMNP economically impacts jurisdictions within the RMBR.
- To inform the way in which the RMBR and RMNP operate so as to improve their community relationships while remaining committed to their conservation goals.

At the governance level, the objective of the research pertains to improving the effectiveness of PA administrations in fulfilling their mandate requirements. Sub-objectives at the governance level are:

- To investigate potential tools for PA managers to measure their economic impacts at the local level.
- To inform strategies for PAs to improve their capacity for meaningful conservation.

Finally, the objective at the theoretical level seeks to contribute to the discipline of nature-geography by critically examining concepts of conservation, region and bounded space. Sub-objectives at the theoretical level are:

- To interrogate assumptions on conservation and nature in PA administrations by allowing participants to represent their viewpoints spatially.
- To understand how stakeholders near RMNP conceptualize their landscapes in order to better comprehend the role of the park in their lifeworld.

1.2 Introduction to the Literature Review

The literature review can be subdivided into three broad sections: the first contains an overview of the sub-discipline of nature-society so as to provide insights into the theoretical framework which encompasses the research; the second recounts a brief history of Canadian PAs and examines their present day governance and functions; finally, the third looks at environmental valuation and mapping techniques used in data collection processes.

The first section on nature-society is intended to provide the reader with context on the schools of thought around the treatment of nature and conservation in geography. It examines some elements of post-naturalism in order to query standard assumption around the ways in which PAs are administered and the relationship between people and their environments.

The second section seeks to give the reader some background on the historical roles of PAs in Canada, as well as current ideas on strategies and priorities in conservation. The section also examines guidelines available to Canadian PA managers related to fostering sustainable regional integration.

The third section examines the link between environmental valuation, mapping and community consultation. It outlines concepts related to the ways in which scholars have valued ecosystem services, eventually focusing on the role of mapping in these processes. Research which has implicated mapping techniques to identify landscape values is also discussed.

1.3 Introduction to the Methods and Methodology

A multi-methods case-study approach was employed to research the economic impacts of RMNP on its surrounding communities. Methods included recording participant observations in notes and photographs, reviewing academic literature and non-academic documents, and

conducting research sessions with 27 participants from the regions surrounding RMNP, together comprising the RMBR. A case-study approach was chosen because it accounts for the complexities which arise in real world settings, which is beneficial to informing conclusions and recommendations to administrations operating in such settings.

RMNP is located in Western Manitoba, approximately one hundred kilometers north of Brandon on Highway 10 (Parks Canada, 2016). The park protects the meeting place of three distinct eco-regions: the boreal forest, the eastern deciduous forest and the fescue grasslands (Parks Canada, 2016). Furthermore it protects the headwaters of 13 watersheds which flow to surrounding communities (BRN 1985). RMNP and its surrounding regions were selected as the case study for three main reasons: 1) the researcher was already familiar with the area before entering the field; 2) the park shares borders with several private landowners 3) the park comprises the 'core zone' of the Riding Mountain Biosphere Reserve (BRN 1985). The RMBR is made up of RMNP, 12 nearby rural municipalities and 4 nearby First Nations. It comprises the geographical parameter for the area of study, adding a focus on regional stakeholder involvement.

The methods, case-study rationale and data analysis techniques are described in detail in Chapter 3, while the case-study is discussed in Chapter 4.

1.4 Thesis Outline

The following chapters make up the rest of this document.

Chapter 2 contains a literature review intended to situate the research presented in this thesis, and to provide the reader with a context on relevant topics. The literature review is divided into three sections: the first on the sub-discipline of nature and society; the second on PA

management in Canada; and the third on environmental valuation and participatory mapping techniques for the purposes of community consultations.

Chapter 3 describes selected methods and methodology, and provides a rationale for why they were chosen. A mixed-methods case-study approach was used for this research, since it enabled the researcher to collect data which spoke to the practical and theoretical components of her objectives. In the field, data was collected using a variety of methods, including document reviews and observations captured in notes and photographs. Additionally, a significant part of the collected data derived from research sessions in which participants completed surveys, mapping activities and interviews.

Chapter 4 is an overview of the case-study. The RMBR is located with southwestern Manitoba, and consists of two zones: the core zone of protection (i.e. RMNP), and the zone of cooperation (i.e. twelve rural municipalities and four First Nations). It was selected because, as a biosphere reserve, it is an area with a history of negotiations between the central PA and the surrounding communities (BRN 1985). Furthermore, RMNP shares a large portion of its boundary with private landowners, which makes it an especially relevant case for investigating local economic impacts. Chapter four also includes a description of socio-economic conditions within the case-study area.

Chapter 5 provides the results of the research, beginning with a synopsis of themes that emerged within coded notes taken during research sessions. Research sessions involved a survey, a mapping activity and an interview, in that order. Information gathered during sessions generated 112 codes, which are listed in Appendix B. The data collected through maps and surveys is also examined quantitatively, with completed mapping activities included in Appendix D.

Chapter 6 analyzes research results. Discussions are guided by the same themes that framed the research objectives: region, governance and theory. Section 6.1 looks at results most closely related to the RMBR region; section 6.2 analyzes results as they relate to governance in the RMBR and RMNP, and examines how lessons learned in these contexts might apply to other PA administrations; finally, section 6.3 analyzes the results in terms of their theoretical contributions to PA management within the framework of nature-society.

Chapter 7 contains a summary of the thesis, an overview of key contributions, and recommendations related to research objectives. These include recommendations for RMNP management and RMBR direction, as well as more general considerations for PA organizations and decision-makers at higher levels. Furthermore, the chapter details the principal investigator's final reflections on opportunities for further research.

Finally, the references used throughout this dissertation are listed, and appendices provide supplementary materials.

2.0 Literature Review

The literature reviewed in this chapter is divided into three sections relevant to the research. The first section provides an introduction to the sub-discipline of nature-society and offers a critical examination of conservation through a post-natural lens. It examines how theories and concepts of prominent authors within the sub-discipline have challenged present day conservation strategies in Canada. The second section examines elements of the history, structure and governance of Canadian PAs. The third section explores environmental valuation and the potential for mapping activities to help identify landscape values and collect data in human geography and the social sciences. The information provided in this review is intended to frame the research described in the subsequent chapters of this thesis. Furthermore, it is intended to highlight the knowledge gap around PA management decision-making and community consultation methods.

2.1 Nature-Society and Conservation

The following section describes how nature-society studies, particularly post-natural geographies, relate to conservation. There is currently a strong global push for increased numbers of PAs. Canada has committed to increasing its network of PAs between 500 to 600 percent by 2020 (Eagles 2016). Key works of nature-society authors like Cronon (1996), Whatmore (2002) and Braun (2002) encourage decision-makers to pause and think critically about the consequences of current conservation approaches. This section examines the ways in which the sub-discipline encourages the critical re-evaluation of PA structures and questions the motivations behind conservation as practiced today. Post-naturalism is a useful framework in which to examine the interrelations between policy, landscape and actions because it questions standard assumptions about human-nature relations.

2.1.1 Nature and Society

Initial ambitions within the discipline of Geography are similar to fundamental objectives and ideas within the sub-discipline of nature-society. Noel Castree's (2011) chapter "Nature and Society" in *The SAGE Handbook of Geographical Knowledge* is perhaps the most comprehensive review of important aspects of the sub-discipline, and as such it will serve to guide the material presented in this section. In his chapter, Castree (2011) explains the motivations behind nature-society are a return to the foundations of the geographic discipline as a whole. In its beginnings as an academic discipline, geography held remarkably holistic views of the environment and the living beings within it, drawing influence from renowned geographer Alexander Von Humbolt's *Kosmos* (1854). The works of Darwin (*On the Origin of Species,* 1859*)*, Huxley (*Evidence as to Man's Place in Nature,* 1863) and Mackinder (*On the Scope and Methods of Geography*, 1887) also encouraged an integrated and holistic treatment of the universe. The world was understood and described as the product of many inextricable, interdependent processes.

This geographic worldview held problems of scope, however. As Castree (2011 p. 3) explains:

> *Geography's perspective on the world was so comprehensive [...] that it proved very difficult to demonstrate causal connections between the component parts of the non-human world, let alone all these parts and various societies worldwide. [...] It was time consuming enough to provide mere descriptions of different societies and their physical environs, never mind plausible explanations. As a result, most early research publications by geographers were beset by what – with hindsight – were serious intellectual weaknesses.*

The 'early research publications' Castree refers to stem primarily from environmental determinism. Ellen Churchill Semple is often related to this movement due to her *Influences of Geographic Environment* published in 1911, in which she argues that "man is a product of

earth's surface". Over a decade later, Carl Sauer (1925) expresses dissatisfaction with the intellectual robustness of environmental determinism in his article "On the Morphology of Landscape". While Semple suggests people are the result of their surroundings, Sauer maintains people affect their physical environments as much as they are affected by them. In his compilation and analysis of nature-society articles published in the *Annals of the Association of American Geographers* between 1911-2010, Zimmerer (2010) estimated that fewer than 50 nature-society articles were written in the *Annals* between 1911 and 1939. He also indicated than many of these stemmed from the formation of the Sauerian Berkeley School and the Chicago School of hazards research which both formed in the decade after the establishment if the *Annals* in 1911.

The years during and after the Second World War marked a shift in how geography was conducted. Elements within the discipline became increasingly splintered. The Second World War and advancements in other fields of study encouraged the development of precise and measured approaches in geography (Castree 2011). The war was quickly followed by the quantitative revolution, which further encouraged fragmentation within disciplines (Harrison 2005). In an attempt to justify itself, geography distanced itself from the holistic ideals and approaches of Humbolt, Mackinder, Semple and Sauer. The quantitative revolution, however, did seem to generate more interest in issues related to some aspects of nature-society, particularly those related to natural hazards and landscape analysis. Zimmerer (2010) estimates that the number of nature-society articles published in the *Annals* more than doubled in the 1950s when compared to previous decades. He attributes this to the influence of the Sauerian Berkeley School and the Chicago School of natural hazards. The study of natural hazards continued to employ holistic approaches due to the way in which social processes and the

physical environment become inextricable from one another in the face of significant natural events and challenges. Natural hazards geography incorporated preliminary understandings of the material consequences of people's perceived distinction from nature (Castree 2011). It emphasized that vulnerability to natural hazards was not simply related to one's physical environment, it was also deeply related to one's social environment (Neumayer and Plümper, 2007). People's vulnerability was contingent on cultural practices, wealth, identity, status and geographic location. These understandings began to deconstruct the presumption of a distinction between nature and society.

Meanwhile, political ecology emerged from cultural ecology in the 1970s (Robbins 2012). In like manner to their cultural counterparts, political ecologists understood cultural practices as related to the environment (Robbins 2012). They went a step further, however, by accounting for the interconnected nature of the world. They integrated an understanding that global politics and the transnational consequences of state decisions have material consequences at the local level (Zimmerman 2010). Cultural practices and resource management are immersed in global and local politics. We begin to see these ideas manifest in discourse related to PA management towards the end of the twentieth century. Principle 7 of the 1992 *Rio Declaration on Environment and Development*, for instance, indicates "states shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem." This demonstrates an acknowledgement of the effects one state's decisions can have on others, and of the necessity of cooperation in successful conservation and resource management.

In the years following the development of political ecology, approaches to nature-society became increasingly radical. Castree (2011) subdivides more recent advancements into three

categories: ‘new natural resource geographies’, ‘cultural studies of nature’ and ‘post-natural geographies’. New natural resource geographies can broadly be described as approaches to natural resources which account for social influences. For instance, in his article “Diamond Wars: Conflict Diamonds and Geographies of Resource Wars”, Philipe Le Billon (2004) explains the necessity of interrogating resource conflicts geographically. He maintains that it is not sufficient to account for resource locations and revenue generated by agitators. The politics of place and space must be integrated into examinations in order to make meaningful recommendations.

Meanwhile, cultural studies of geography understand ‘nature’ as being a socially constructed representation. ‘Nature’ is contingent on the perceiver’s situation. William Cronon (1996) elaborates on this in an essay on perceptions of nature as something divine, or as a sort of avenging angel, in order to better understand common conservation strategies. Bruce Braun (2002) also contributes to cultural studies of geography by examining perceptions of nature related to a case in Clayoquot Sound, British Columbia. In his study, he compared and contrasted the perspectives of actors from a logging company with the perspectives of actors from environmental groups regarding plans for a section of forested land. Although oppositional, Braun points out that both camps overlooked the opinions (and existence) of indigenous populations who reside in the area. He relates this back to the cultural implications of colonialism and the commodification of nature.

Lastly, ‘post-natural’ geographies build on cultural studies of geography and treat nature as something created to make sense of the world. According to Castree (2011, p.10), post-natural geographers maintain that “dividing the world into ‘social’ and ‘natural’ entities simplifies reality to the point of misrepresenting it.” Furthermore, it is argued that people are not confined

to representational knowledge; they can also know through corporal experiences involving smell, sight, touch, taste and hearing (Faber 2008). Some of the ideas included in post-natural geographies are further elaborated on in the following section.

2.1.2 Nature and Wilderness Revised

Increasingly, nature-society geographers are taking on more radical approaches which move beyond simply bridging two distinct entities. In the last two decades, there has been an emphasis on the ethical need for reforming the way scholars qualify the environment (Whatmore 1997). Several authors have pointed to the consequences of fetishizing nature in the spheres of science and policy-making (e.g. Castree 2001, Cronon 1996, Sullivan 2014). Some have argued that answers lie not only in reforming perceptions, but also reforming our knowledge-mappings and ways of knowing (Whatmore 1997). The following section will explore some of the more notable arguments and authors within this radical vein of nature-society in order to further contextualize the research.

Sarah Whatmore is one of the leading authors within nature-society, and much of her work examines the problems associated with the assumptions around the binary. In *Hybrid Geographies* (2002), she explains that human geographers and social scientists appear to have addressed the 'nature problem' in one of two ways. On the one hand, some post-modernist thinkers attempt to identify the ways in which humans construct nature, resulting in increased awareness around these constructions but few actionable results. On the other hand, some practitioners simply account for the fact that our understanding of processes differs from 'real' material processes, with the belief that accounting for this allows the possibility of being closer to meaningful appreciations of 'real' material processes. Whatmore laments that these are

unproductive approaches which, despite their acknowledgement of a fabricated binary, continue to uphold it.

Whatmore asserts that two theoretical commitments frame hybrid geographies' approach to social agency. One is to decenter social agency while the other is to reject Cartesian dualism and the subject-object binary which currently defines academic thinking regarding nature-human interactions. Whatmore emphasizes that there is an ethical obligation to understand the world as one in which humans are not the centre of reality. Instead, all world actors are non-human, and subject-object dualism is deconstructed through the rejection of terms like 'us' or 'our'. Knowledge should be understood as something which is immersed in corporal experiences of the environment. Whatmore defends her position by explaining the ways in which science and governance might improve in adopting her proposed world view through a series of essays in *Hybrid Geographies.*

In one of these essays, for instance, Whatmore describes the idea of an elephant in a zoo and one in the wild. The two animals have entirely different dispositions contingent on their environments, yet they are both considered elephants. Conservationists want to conserve the 'wild elephant' and therefore need to somehow conserve all the factors which create a wild elephant. What we begin to realize, however, is that the things that come into play to make an elephant 'wild' are deeply complex and interconnected within a larger world. Furthermore, no two elephants are the same, so what is it that we are trying to conserve?

In recent years, it has been argued -and in some circles accepted- that we exist in the 'Anthropocene', a term used to highlight our epoch as being one in which the earth and nature are determined and controlled by people (Steffen et al. 2011). Some, however, have cautioned against this notion, indicating that it overlooks the significant impact of non-human actors and

factors. For instance, George Wuerthner, Eileen Crist, and Tom Butler's (2014) *Keeping the Wild: Against the Domestication of Earth* presents a series of essays intended to highlight the pitfalls of adopting the 'Anthropocene' lens, and the dangers associated with treating earth as resource pool for humans to manage. They indicate that such an approach will not result in the protection of 'wild places', and the biodiversity that stems from them. By definition, however, protected areas are designated and managed by people; therefore common understandings of the facets of nature they intend to protect are necessary (IUCN 2008).

Questions dissecting concepts like 'wilderness' are useful in the context of PA management because they challenge the idea of conservation for the sake of conservation, and encourage planned actions intended for meaningful results. Although the functions of PAs are well established (they conserve resources, sometimes benefit wildlife and biodiversity, have aesthetic qualities which bring happiness to people), a closer inspection of these qualities in various contexts should be considered, particularly in light of Canada's commitment to drastically expand its PA networks. The following section will describe the history of PA management in Canada through a nature-society lens.

2.2 Canadian Protected Areas

This subsection of the literature review provides a concise historical overview of PAs, focussing on those which exist in Canada. Afterward, the different types of governmental and non-governmental PAs are discussed, as well as alternative, emergent strategies for conservation. Finally, current national PA management strategies in Canada will be assessed.

PAs are defined by the International Union for the Conservation of Nature (IUCN) as demarcated geographical spaces intended to conserve nature "with associated ecosystem services and cultural values" (IUCN 2008, pars. 1). A system of PAs is an established approach to protecting biodiversity and natural resources (Dearden 2016; Needham et al. 2016). The benefits of PAs are well researched and documented. They are succinctly described in the Millennium Ecosystem Assessment, which outlines four categories of ecosystem services produced by parks and PAs: provisioning, regulating, cultural and supporting services (Millennium Ecosystem Assessment 2005). Examples of provisioning services include food, clean water, timbre, energy, minerals and other consumable, usable benefits that come out of environmental processes (Raymond 2009). Examples of regulating services include pollination, water purification, waste treatment, air quality, climate and erosion regulation as well as other beneficial regulating mechanisms and safeguards which nature provides (Raymond 2009). Cultural services involve the spiritual, educational, recreational and aesthetic benefits people derive from nature (Raymond 2009). Supporting services are processes that aid the effective function of the biosphere and which are necessary to life; they include photosynthesis, soil formation, water cycling and nutrient cycling (Raymond 2009).

2.2.1 History of Protected Areas with a Focus on Canada

Following in the footsteps of the United-States and Australia, Canada established Banff, which became its first national park, in 1885 (Wright 2016). At the time, the Canadian Government was preoccupied with growing the population and economy of Western Canada (Wright 2016). Under Sir John A. Macdonald's leadership, government activities centered on the completion of the Canadian Pacific Railway, which required significant resource extraction and manual labour (Lavalle 2015). In like manner to early parks in the United States, the first national parks in Canada were largely selected for qualities considered conducive to tourism, rather than for ecological reasons (Sellers 1997). For instance, Banff was considered a promising tourist attraction because of its alluring hot springs (Wright 2016). Additionally, it has been suggested that early park establishment was profoundly influenced by biblical narratives. Cronon (1996) contends that within the Bible God appears in 'sublime' places, "on the mountaintop, in the chasm, in the waterfall, in the thundercloud, in the rainbow, in the sunset." Cronon (1996) indicates early parks were located in the Rocky Mountains, where these features are common. Ideas of a pristine nature - one might go as far as to say 'divine' nature - determined which landscapes were given consideration and priority during conservation initiatives. Although Banff was largely established for economic and aesthetic reasons, the designation also likely stemmed from concerns that 'natural' lands (i.e. lands with minimal resource extraction) were disappearing due to intensified development and settlement in the west. George Perkins Marsh's widely read *Man and Nature* (1864) had grown awareness around the repercussions of people's actions on the land, and warned North-Americans that over-extraction would result in their demise. Protected areas likely appeared a reasonable safeguard for the times.

While examining the early years of park establishment, it is important to acknowledge global and national contexts. For instance, in the same year Banff National Park was established, the Berlin conference was underway. Intended to regulate and maintain commercial access to Africa, the conference "is widely seen as triggering the rapid colonisation of Africa in the last decades of the 19th century" (Nilsson 2013, p. 6). It was also the year in which the Canadian Pacific Railway was completed and the North-West Rebellion took place under the leadership of Louis Riel (Beal and Macleod 2015). Although these events appear far removed from conservation and PAs, they provide some insights into the ways in which late nineteenth century leaders regarded land-use and resources. It was a time when, not unlike today, land and resource management adhered to the 'law of the strongest' as described by John Stuart Mill in 1869. Governing bodies with military advantages controlled resources, land-use, and even cartographic representations of nature (Harley 1988). Military powers considered 'natural' regions (i.e. areas with a lower prevalence of human resource exploitation) to be unoccupied despite the presence of people on the landscape (Braun, 2002). Cosgrove's work on the importance of perspective and landscapes offers a partial explanation of the attitudes exhibited by military powers during the late nineteenth century. Cosgrove (1985) maintains the development of certain geometric techniques in art reformed people's worldview to one in which landscapes became 'ways of seeing'. These 'ways of seeing' structured "the world so that it may be appropriated by a detached, individual spectator to whom an illusion of order and control is offered through the composition of spaces according to the certainties of geometry" (Cosgrove 1985, page 55). Although this hypothesis does not entirely explain the appropriation of so called 'natural places', it does reveal inherent qualities of the social relationships colonialist agents have with 'nature'. When landscapes are devoid of visual cues familiar to the

colonialist observer as indications of occupation, the landscape became ‘natural’ and available for appropriation.

In the years following the establishment of Banff, Western Canada became increasingly populated and the total area of perceived natural lands diminished (Wright 2016). At the same time, an increasing number of national parks were established and conservation began to be of greater importance (Needham et al. 2016). In 1911, Parliament passed the Dominion Forest Reserves and Parks Act which resulted in the formation of the world’s first national parks agency, responsible for giving policy direction to already existing parks (Needham et al. 2016). In 1930, the National Parks Act centralized park governance so that national park boundaries had to be approved by Parliament (Needham et al. 2016). The act also defined the mission of national parks as being spaces for the enjoyment of Canadians that should be managed in a way so as to leave them ‘unimpaired’ (Needham et al. 2016). This mandate exemplifies how representations of nature determine policy outcomes and protected area agency actions. When applied to the conservation of places intended for human enjoyment, a term as ambiguous as ‘unimpaired’ provides little guidance and allows for subjective opinions to rule results.

In the 1960s and 70s, the public’s interest in addressing complex environmental problems increased. There was growing awareness among Canadians that multiple types of ‘natural’ landscapes were important to the biosphere, not only those which had certain aesthetic qualities (Hvenegaard and Shultis 2016). This shift in attitude is often partly attributed to the 1969 photograph of earth taken from outer space (Hvenegaard and Shultis 2016). A new representation of our environment modified people’s relationship with nature, underscoring the interconnectedness of landscapes. Despite this renewed understandings of factors affecting biodiversity, the structure of parks as demarcated portions of land has remained relatively

unchanged since the 1930s. Parks continue to be bounded spaces, and park managers are responsible for regulating activities and spending funds within that space (Eidsvik 1984). The way in which most parks are administered in Canada maintains a distinction between people and nature.

While protected areas administered by government agencies still embody bounded space, initiatives from other organizations have begun to recognise people exist within nature rather than outside of it. A large number of Integrated Conservation and Development Projects (ICDPs) appeared in the 1980s in several impoverished countries in Africa and South America (Dearden 2016). They were established primarily through funding from organizations like the IUCN and the World Bank, and had the purpose of increasing overall wellbeing in a given region (Dearden 2016). The consensus in the literature is that most of these projects failed because of oversimplified approaches. Furthermore, the phenomenon of protected areas in impoverished countries funded by foreign aid programs has been compared to a form of colonialism (e.g. Goldman 2004). Although these projects may have had limited success, they inspired a movement which prioritized integration and the incorporation of people in conservation, bringing community-run conservation to the fore (Dearden 2016). This will be further discussed in the following sections.

2.2.2 ICDPs and Community Based Conservation

Throughout the nineteenth and twentieth century, newly designated PAs sometimes displaced people and compromised their livelihoods through land-use restrictions which generally resulted in increased regional poverty and adversarial relationships between parks and locals (Sandlos 2008; West, Igoe and Brockingham, 2006). Therefore, communities surrounding PA boundaries sometimes disregarded PA mandates, impeded regional integration and inhibited conservation

(Dearden 2016). This problem was recognized by the international community in the second half of the twentieth century, and attitudes around conservation began to change. As Borsdorf et al. (2014) explain, PA management began to "shift from the conventional paradigm of conservation *from* people to the paradigm of conservation *for* people". In 1982, the World Parks Congress asserted that local needs be integrated into PA planning and management (Dearden 2016; IUCN World Parks Congress 2016). Subsequently, many regional integration initiatives around PAs were implemented, including integrated development and conservation programs and community-based management programs.

As stated, ICDPs are location-specific conservation initiatives which have a strong focus on social and economic development (Wells and McShane 2004). ICDPs were especially prominent in the 1980s and 1990s, when the new paradigm of 'conservation *for* people' fueled funding for conservation initiatives intended to reduce poverty (Borsdorf et al 2014; Dearden 2016). Although ICDPs could theoretically occur anywhere, they primarily occurred within the poorest regions of the world since they often contained large underdeveloped spaces available to be converted into protected areas (Dearden 2016). Furthermore funding agencies considered poor regions as being most likely to benefit from their contributions due to their challenging socio-economic conditions (Wells and McShane 2004). Despite this reasoning, most ICDPs fell short of their intended purposes. Although there are numerous reasons for their shortcomings, there is general consensus that ICDPs were poorly planned and simplistic in their application (Dearden 2016, Wells and McShane 2004). ICDP planners were often foreign to the regions in which they were implementing their projects and lacked sufficient knowledge of the regional contexts they were entering (Wells and McShane 2004). As such, their 'blueprints' for poverty reduction through conservation had limited success (Wells and McShane 2004). Regardless, some

important lessons emerged from the rise and fall of ICDPs: Wells and McShane (2004) indicate that they were essential in underscoring the importance of active adaptive management for protected areas and regional integration. Furthermore, they emphasized the importance of local knowledge to conservation success.

Unlike ICDPs, which were generally arranged and implemented by external funding groups, community-based conservation initiatives prioritized local participation and knowledge (Williams, Stewart and Kruger 2013)**.** This review uses the term 'community-based conservation' to refer to a number of initiatives that fall under different labels, such as place-based governance or collaborative natural resource management (Reed, Henderson and Mendis-Millard 2013). Ultimately, community-based conservation seeks to empower local communities to be key decision-makers regarding their land and natural resources through interjurisdictional cooperation and collaborative governance (Edge and McAlister 2009; Hirschnitz-Garbers and Stoll-Kleemann 2011). The approach is thought to be useful because of the in-depth understanding of landscape and context inherent in local knowledge (Reed, Henderson and Mendis-Millard 2013). It has been argued, however, that local knowledge and practices are not necessarily aligned with conservation and sustainability (Hirschnitz-Garbers and Stoll-Kleemann 2011). Critics have also maintained that community-based conservation increases the potential of cooption and systemic biases (Reed and McIlveen 2006; Walker and Hurley 2004).

A framework which relates well to community-based conservation is the United Nations Educational, Scientific and Cultural Organisation's (UNESCO) worldwide biosphere reserve program. Described by UNESCO as "science for sustainability support sites", biosphere reserves are intended to reconcile human needs with conservation (UNESCO 2016). Furthermore, they have contributed to the body of knowledge on participatory planning and collaborative

management approaches (Borsdorf et al. 2014; IUCN World Park Congress 2016; Wright 2016). Although there is consensus that biosphere reserves can be useful in protecting ecosystems, they have been criticized for having insufficient management tools in place to ensure the prioritization of sustainability (Borsdorf et al. 2014; Coetzer, Witkowski, and Erasmus 2014). Biosphere reserves everywhere share the common objectives of human wellbeing and conservation, but they all have different means of achieving those objectives because of their various jurisdictional and ecological contexts (Coetzer, Witkowski, and Erasmus 2014). In Canada, most biosphere reserves are run by community volunteer organizations (Edge and McAllister 2009). Nationally, they have been critiqued for overlooking the social, cultural and economic elements of sustainability (Reed and Massie 2014).

Biosphere reserves generally occur around a PA and try to integrate surrounding communities into conservation initiatives through zoning strategies (Pollock 2009). There are currently 18 biosphere reserves in Canada (CCUnesco 2016). Although biosphere reserves have an understanding of conservation which is more attuned with the complexities of an interrelated environment, they still utilize zonation systems which separate a core 'protected area' from a developable 'zone of transition', inherently implying that there is a marked difference between the human and the physical.

The shortcomings of many sustainable integration initiatives around protected areas have underscored the importance of additional research into effective and ethical land management. A recurring issue lies in the disparity between the objectives of conservationists and the economic needs of locals (Adams 2004; Ferraro 2011). Economic security is inextricable from overall human wellbeing, and therefore part and parcel of sustainable regional integration and ecosystem connectivity. As Krugman puts it, "economies are not dimensionless points in space" (2011 p.2).

Economic endeavours have direct implications for the landscape and the ecological integrity of protected areas. Simultaneously, protected areas directly affect a region's economic potential (Dearden 2016). Despite this, few studies prioritize economic questions in protected area regions, particularly in Canada. The effects of economic activities on ecology are significant enough that they merit close study, especially in areas where conservation is an active priority.

2.2.3 Sustainable Integration and National Park Governance

This review defines sustainable regional integration as any organized effort to protect biodiversity and ecosystem interconnectedness with a strong focus on human wellbeing, and which aims to unify the ecological and socio-economic activities within a region. Sustainable regional integration steadily increased in importance throughout the second half of the twentieth century, and especially since the 1992 Rio Declaration on Environment and Development stated one of their primary goals as "recognizing the integral and interdependent nature of the earth" (Rio Declaration p. 1). In order to fully comprehend the implications of sustainable regional integration, it is helpful to examine the individual terms which make up the label (i.e. 'sustainable' and 'regional integration'). According to Kozlowski and Hill (1999 p.120), 'sustainability' aims to improve "human health and welfare for the present generation, while being contained within the carrying capacity of life supporting ecosystems to ensure that future generations have the ability to achieve the same goal''. Meanwhile 'regional integration' implies a unity of purpose shared by agents within a region. Although Parks Canada does not explicitly define regional integration within their publications, they often employ the term in discourse on co-management and collaborative projects with stakeholders (e.g. Parks Canada 'Guiding Principles' 2009; Parks Canada 'Aulavik Management Plan' 2009).

Defining governance is no easy feat, and the implications of the term vary from author to author. Mark Bevir's (2013) frequently cited definition explains governance as being "all of the processes of governing, whether undertaken by a government, market or network, whether over a family, tribe, formal or informal organization or territory and whether through laws, norms, power or language." Meanwhile, Graham, Amos and Plumptre (2003) discuss that it is easier to talk in terms of what governance is 'about' and 'not about', rather than attempting to pinpoint what it is. They make the distinction that governance is not a synonym for government, but rather refers to a "process whereby societies or organizations make their important decisions, determine whom they involve in the process and how they render account" (2003 p.1). Graham, Amos and Plumptre point out that processes are challenging to observe, and as such, when we speak of governance, we tend to refer to the established rules, systems and frameworks within which decisions are carried out. It is important to remember that these established 'governance systems' have varying levels of applicability and relevance, depending on the level to which the given population adheres to them.

The 2013 IUCN guidelines on the governance of PAs distinguished between different types of governance frameworks for PAs (Borrini-Feyerabend et al. 2013). They list types of governance as being governance by government, shared governance, governance by private individuals and organizations, and governance by aboriginal peoples and/or communities. In their guidelines, the IUCN also listed five principles for good governance: legitimacy and voice, direction, performance, accountability and fairness, and rights. These are further discussed in the following paragraphs.

The principle of 'legitimacy and voice' calls on PA practitioners to engage with rightsholders and stakeholder so that they are consistently informed, to ensure the maintenance of an open

dialogue, and to "enjoy broad acceptance and appreciation in society"(Borrini-Feyerabend et al. 2013, p.59). The principle of 'direction' calls on protected area managers to evaluate and guide the results of their actions through regular monitoring, and that strategic visions demonstrate an "appreciation of the ecological, historical, social and cultural complexities unique to each context" (Borrini-Feyerabend et al. 2013, p.59). The principle of 'performance' encourages PA practitioners to maintain consistent reviews and evaluations of their management decisions and style, as well as to be responsive to rightsholders and stakeholders in a timely fashion. The principle of 'accountability' requires PA practitioners to seek feedback from appropriate bodies, and to prioritize answerability and reporting; as well as to make their reports and activities publically available to foster transparency. Finally, the principle of 'rights and fairness' highlights the importance of not compromising the livelihoods of local actors, and ensuring there is active engagement with implicated actors. Although each of the principles is different, they all underscore the importance of remaining answerable to stakeholders in achieving good governance.

As the 2013 IUCN guidelines point out, we can assess the ways in which national parks in Canada adhere to the principles of good governance outlined above. National parks are generally managed by a superintendent, whose role is to carry out an approved management plan and to report to the CEO of Parks Canada, either through an intermediary (e.g. regional directors) or directly (Parks Canada 2014). The CEO of Parks Canada reports to the Minister of Environment, who is accountable to parliament and the Canadian public (Parks Canada 2014). Furthermore, certain reports are required to promote accountability and assess actions. For instance, Parks Canada is required to publish annual reports and system plans (Borrini-Feyerabend et al. 2013). In addition, the National Parks Act requires parks within the national system to produce *State of*

the Park reports intended to measure the progress the agency has made towards promoting conservation and completing Canada's entire PA network (Wright 2016). Parks Canada is also supposed to prepare a sustainable development strategy every three years, "outlining Parks Canada's efforts to integrate environmental, economic and social factors in its work" (Borrini-Feyerabend et al. 2013, p.91).

These reports are important measures for accountability as they help to assess the actions of the government and determine where improvements should occur. At present, there are no frameworks within the agency which require regular and systematic community consultations despite the agency's 'raison d'être', which asserts that "in carrying out its responsibilities, Parks Canada works in collaboration with a number of partners including Aboriginal peoples, stakeholders and neighbouring communities" (Parks Canada(a) 2012, p.5). It appears through Parks Canada's published reports that they desire to be committed to local stakeholders. Additionally, Canada's Federal Sustainable Development Strategy stresses the importance of accountability and measuring the progress of implemented strategies (ECCC 2016).

A shortage of resources and guidance for PA managers towards conducting community consultations, particularly consultations with a focus on economic wellbeing, presents an obstacle for field units and the Agency. Although economic assessments have been conducted within Parks Canada, they tend to be internally oriented and skim over local impacts (see Outspan 2011). That said, there are some economic assessment guidelines for PA managers which describe ways of maximizing profits and negotiating for conservation in financial terms (e.g. IUCN 1998; IUCN 2000; Pagiola, von Ritter and Bishop 2004). These occasionally zone in on strategies for improving local stakeholder relationships, but tend not to focus on applicable

means of measuring relationship qualities. The guidelines will be discussed in the following paragraphs.

The IUCN published *Economic Values of Protected Areas: Guidelines for Protected Area Managers* in 1998. The report outlines many practical considerations and suggests a three step framework for conducting economic valuations. Step one defines the audience of the valuation, step two determines the scope of the valuation, and step three selects the most appropriate analytical technique. Understanding the nature of the audience (e.g. local, national, or global) guides the valuation process and determines which factors to consider. Determining the scope of the project involves identifying the geographical parameters of the valuation, the variables which will be examined, and the timeframe in which the valuation should be complete. Selecting an analytical technique largely depends on whether the factors being examined have market value. If they do, things like price of alternatives, expenditures, and incomes can be examined. If factors do not have market value, contingent pricing, hedonic pricing, travel costs, change in productivity, loss or gain of earnings, and opportunity costs can be examined. The report includes many case-study examples of valuations.

In addition to the document described above, the IUCN's World Commission on Protected Areas also published *Financing Protected Areas: Guidelines for Protected Area Managers* in 2000. This report suggests managers of PAs run their operations as though they were running businesses in order to maximize profits. It also contains many recommendations for acquiring funding. The report has a pragmatic focus on revenue generation.

In 2004, the World Bank collaborated with The Nature Conservancy and the IUCN to publish *Assessing the Economic Value of Ecosystem Conservation* (Pagiola, von Ritter and Bishop 2004). The report outlined four important elements of ecosystem conservation, namely:

assessing the value of benefits derived from an ecosystem; assessing the value of proposed ecosystem interventions; identifying who is affected by ecosystem alterations; and identifying potential funding sources. Although the report is not specific to PAs, it often uses them to exemplify concepts since they are fundamental conservation initiatives.

All the aforementioned economic guidelines devote sections of their report to explaining total economic valuation (a concept described in section 2.3.1). The concept takes centre stage in both the IUCN's 1998 report and the World Bank's 2004 report. Neither document, however, details applicable means of employing total economic valuation. Furthermore, none of the documents provide case study examples involving total economic valuations.

A contention of this paper is that the process of economic valuation involving community consultation must inherently take into consideration the geographic and spatial dimensions of a PA. This is essentially a mapping process. The following section examines literature on tools for community consultation on economic impacts and the values of PAs. Specifically, it looks at the ways in which scholars have employed mapping to identify landscape values. Examining these topics will situate the research methods discussed in Chapter three.

2.3 Environmental Valuation, Mapping and Community Consultation

This section examines the links between environmental valuation, mapping and community consultation. It begins with a discussion of prominent challenges associated with environmental valuation as well as current approaches of determining the value of various ecological functions. It goes on to discuss the level of attention paid to mapping in environmental valuation, considering its spatial implications. A short summary of mapping and its relation to power and

policy is provided, before the section is concluded with a summary of relevant research which involves mapping activities as methods of community consultation.

2.3.1 Why Value Ecosystem Services?

Ecosystem services refer to the benefits people derive from ecosystem processes (Costanza et al. 1997). Examples might include the fruits and vegetables people consume; the improved air and water quality people enjoy due to proximate forests; and the recreational activities associated with certain natural landscapes (e.g. skiing, surfing). These benefits are recognized as being essential to human wellbeing and survival (Millennium Ecosystem Assessment 2005).

The feasibility and relevance of economically valuing ecosystem services is widely debated. On one hand, some maintain that ecosystem services are infinitely valuable since human beings are incapable of existing without them. Therefore, placing a value on them is a redundant exercise. Furthermore, some have indicated that a sense of moral obligation - rather than financial incentive - should be the driving force behind the protection of nature (McCauley 2006). To address these lines of reasoning, Costanza et al. (1997) argue that values are placed on ecosystem services all the time regardless of their necessity to human existence (e.g. food costs, cost of living in a clean environment). Current values, however, do not necessarily account for environmental impacts or resource scarcity. To rectify this, ecological economics attempts to assess value in a manner that is conducive to sustainability. Furthermore, Costanza et al. remark that senses of moral obligation are too subjective to employ in political discourse related to environmental matters. Financial analysis is more pertinent and useful in decision-making. As Pagiola et al. (2004, p.1) point out, perhaps a "major reason for our failure to conserve natural ecosystems is that we do not realize how valuable they are".

Although many arguments can be made as to why it is important to place value on ecosystem services, the question of *how* to place value on such services remains difficult. Immense challenges accompany identifying, measuring and valuing ecosystem services, especially in monetary terms (Turner 2003). Nonetheless, economists and ecologists alike have given much thought to the economic value of the environment, and significant progress has been made to address these challenges in recent decades (Chan 2006). In 1997, Costanza et al. published a landmark paper which estimated the ecosystem services of the entire biosphere to be between 16 and 54 trillion annually. Their estimations were guided by the total economic value framework, a controversial concept often employed in ecological economics to holistically calculate values associated with ecosystem functions (the concept is explained in section 2.3.2) (Costanza et al 1997; Goulder and Kennedy 1997; Pagiola, von Ritter and Bishop 2004; Tisdell and Wen 1997).

Although Costanza et al.'s (1997) highly cited paper was widely considered to be innovative at the time of its publication, it was criticized for its approach to valuing ecosystem services (Pagiola, von Ritter and Bishop 2004; Starrett 2001). The authors generalized and transferred ecosystem service values from one region to other similar regions around the world (Costanza et al. 1997). Generalizations on this scale were considered likely to have high margins of error (Pagiola, von Ritter and Bishop 2004). Furthermore, Costanza et al. employed 'willingness to pay' (discussed in section 2.3.2) as a technique for placing dollar values on services. Their valuation, however, added up to a figure which surpassed the entire global income at the time of the study. Since 'willingness to pay' queries people on the amount they would hypothetically pay for a service, their stated payments should fall within their earnings. For this reasons, valuations employing this technique should not surpass the net global income. To address this, however, Costanza et al. explained that their estimated cost of services also included replacement costs,

and therefore their results were still reasonable. Regardless, some economists found this combination of techniques problematic (Pagiola, von Ritter and Bishop 2004).

The form and taxonomy of the values which make up 'total economic value' differ slightly from study to study, but can generally be summarized in Table 1. Many other tools exist for environmental valuation, which can be used in conjunction or separately from total economic valuation. They are described below in the 'Ecological Economics Toolbox' section.

Table 1 - Total Economic Value (after IUCN 1998)

Total Economic Value				
Use Values			Non Use Values	
Direct use Commercial or non-commercial activities involving direct use.	**Indirect use** Natural services and ecological functions.	**Option/Future Use** Future potential use of the PA.	**Bequest Value** Benefit derived from knowledge that PA will exist in the future.	**Existence Value** Benefit of knowing PA exists, regardless of use.
• Recreation • Sustainable harvesting • Research	• Flood Control • Habitat • Watershed Protection	• Future research potential • Future land use potential	• Interest from government or NGOs in the protection and preservation for future generations.	External interest in the existence of cultural and/or natural features

2.3.2 Ecological Economics Toolbox

It is often challenging to attribute a value to an ecosystem service because its benefits are not necessarily apparent on the market. Nonetheless, a number of techniques have been used to value services. Some of these include market prices, replacement costs, revealed preference techniques like hedonic pricing and travel costs, and stated preference techniques like contingent valuation (Balmford et al. 2002; Pearce 2002; Starrett 2001). They are briefly explained below.

- Evaluating **market prices** bases assessments on commodities that are traded on the market (Starrett 2001). As such, it is perhaps the most straightforward technique for measuring dollar value.
- **Replacement costs** entail calculating the cost of recreating the benefits of any given environmental service (Starrett 2001). For example, one might calculate the cost of replacing flood-prevention services provided by a wetland.
- **Hedonic pricing** is a method of revealed preference which relies on significant data and already existing markets to assess the value an area's environmental qualities and amenities (Balmford et al. 2002). For instance, housing market prices might be consulted to determine which environmental factors increase the value of a given place (e.g. the value of urban parks might be calculated as the average amount by which they increase adjacent housing prices).
- Calculating **travel costs** is a method of revealed preference which examines what people have spent to travel to a certain feature as an indicator of its value (Pearce 2002).
- **Contingent valuation** asks people their willingness to pay for a given ecosystem service (Pearce 2002). Often, questions are asked within hypothetical scenarios.

There are strengths and weaknesses associated with each of these techniques. Costanza et al.'s (1997) total economic valuation of the world's ecosystem services (discussed in the previous sub-section) illustrates common criticisms of ecological-economic valuation strategies. Economists take issue with the guess work involved in techniques like contingent valuations and replacement cost estimations (Pagiola, von Ritter and Bishop 2004). Furthermore, when combining methods, as Costanza et al. did, it is essential to include detailed explanations of method processes, and the ways in which techniques have been used in conjunction with one another.

In the context of PA economic impact assessments, we observe Outspan (2011) employing ecological-economic valuation techniques in its assessment of *Parks Canada's Economic Impact.* As part of their methods, Outspan examines expenditures associated with domestic and international travel to Canadian PAs in order to measure the degree to which visitor spending impacts the Canadian economy. This demonstrates how ecological-ecologic valuation techniques can supplement economic assessments. An aspect which remains unaccounted for in employing these techniques, however, is the geographic distribution of economic impacts. How do the impacts of PAs manifest themselves in spaces and places? The following sections on using maps in community consultations examine how researchers have addressed this gap.

2.3.3 Maps and Locating Landscape Values

Although there had been significant discussion (some of which is outlined above) around ways in which we value the environment, the spatial and contextual implications of this endeavour are often overlooked. While it is important to determine *what* values are, it is equally important to determine *where* they lie. Despite this, determining the geographic location of values has received less attention, perhaps because of the relative newness of mapping technologies which lend themselves to participatory research, like Geographic Information Systems. Mapping techniques and activities are tools which decision makers can use to determine the location of landscape values and assist in land management. The following paragraphs will discuss cartography generally, as well as the ways scholars have developed mapping activities designed to identify landscape values.

Broadly defined, maps are spatial representations of things as they relate to one another. Although maps have always been central to the discipline of geography, they have amassed increased attention in the past few decades, and have been analyzed under progressively critical

lenses. Currently, more often than not, maps are not considered as objective or scientific, but rather as social constructs imbued with information about mainstream perspectives (Cosgrove 2012; Harley 1988). Scholars are beginning to treat maps as documents revealing more about the social conditions under which they are created than about the spaces they intend to represent. Critical analysis of maps has resulted in the emergence of new approaches to mapping, which in turn have enabled researchers to use innovative mapping techniques to supplement their research endeavours.

Many authors have elaborated on the capabilities maps have in determining the landscape. Woods and Fels (2008), for instance, indicate that the simple inclusion or exclusion of 'mapped things' is a powerful way of insisting on the existence and importance of given features. They indicate that the map is a "potent vehicle [...] for the creation and conveyance of authority about, and ultimately over, territory" (Woods and Fels 2008, p.192). If maps are potent vehicles, they are ones generally driven by powerful groups. There is substantial discussion among scholars on the ways in which maps are ideological images, reflecting military powers and hegemonic systems. Harley observes that a surveyor drawing a map "replicates not just the 'environment' in some abstract sense but equally the territorial imperatives of a particular political system" (Harley 1988, p.279). Cosgrove (2012, p.55) further examines the interplay between cartography, perspective, and power, commenting that "cartographers' maps [...] used the graticule to apportion global space, for example the line defined by Pope Alexander VI dividing the new world between Portugal and Spain".

Although scholars like Harley and Cosgrove illustrate the ways in which maps serve the elite, few have discussed the ways in which maps are used to empower 'the other'. This is perhaps because until recently it was relatively uncommon for maps to be used as tools of empowerment.

In 1988, Harley observed that maps were "pre-eminently a language of power, not of protest" (p.302). At the time, his comment was likely mostly accurate. In recent years, however, Geographic Information Systems (GIS) and other emergent mobile technologies have helped to make mapping a more widely accessible means of 'protest' and policy change.

GIS is used in a number of fields because of its potential to contribute to policy making through visual modeling, and because of its ability to better communicate spatial information to stakeholders (Sieber 2006). GIS software allows for significant amounts of data to be tidily displayed and manipulated. Although hailed as an empowering technology and a tool for social action, GIS has seen some criticism as well. Sieber (2006, p.491) points out that some have viewed GIS as a return to "positivism in which its users quantify passionately held positions and reduce complex societal processes to points, lines, areas, and attributes". Despite these objections, Sieber (2006) maintains that public participatory geographic information systems have generated a steady stream of interest, particularly from grassroots organizations and groups looking to sway policy. Participatory mapping tools like the Leo Network (www.leonetwork.org) and GeoLive (https://geolive.ca) allow users to sign on and tag locations of relevant features. These types of innovative, inclusive programs are increasing in number and, if made more accessible, have the potential to ameliorate land management decisions, especially in the realm of park establishment and management. They are limited in their design, however, since they require users to access the internet and learn the required functions. With foresight, Harley (1988 p.302) remarked that "though we have entered the age of mass communication by maps, the means of cartographic production, whether commercial or official, is still largely controlled by dominant groups. Indeed, computer technology has increased this concentration of media power." While online participatory mapping tools will surely bolster some voices, individuals

who are less technologically inclined or unable to access the required technology may not be given as much consideration.

Scholars have also aligned with facets of nature-society in using creative mapping techniques to capture information generated by corporeal experiences. Psychogeography, for instance, has long been used to describe processes of capturing experiences of place through various methods, be it painting, videotaping, recording noises, or writing prose (Vannini 2016). Participatory photomapping is also an emergent method which requires participants to photograph aspects of their lifeworld which relate to a given research objective (Bennett and Lantz 2014). In the realm of protected areas, Doherty et al. (2014) used global positioning systems and portable sensors to capture and map participants' emotional responses to walking through a provincial park in Ontario. These are just some examples of how geographers have attempted to diversify ways of capturing data.

Some researchers have developed participatory mapping activities to aid in community consultations, especially within the forestry sector in North America (e.g. Beverly 2008; Brown 2005; Raymond 2009 ; Reed 2005). Brown has worked on mapping landscape values in order to inform decision making in forest management. In 2005, Brown published the results of a study in which random samples of households were sent packages of maps, instructions and stickers which were coded to represent 15 categories associated with landscape values (e.g. spiritual value, economic value, historic value, etc.). Participants were instructed to annotate their maps by placing stickers over locations of features they perceived as valuable. Brown's method generated significant data which was relatively easy to digitize in GIS. Using Brown's (2005) work as a guide, Beverly et al. (2008, p.1) "designed and developed an internet mapping application to collect data on the locations of forest landscape values across a 2.4 million hectare

study area in the province of Alberta, Canada". Meanwhile, Raymond et al. (2009) built on Brown's work and had participants place plastic red and green dots on a map to indicate threats (red) and values (green). The dots where sketched as polygons by researchers and later digitized in GIS.

While the works of Brown (2005), Beverly (2008) and Raymond (2009) advanced participatory landscape valuation methods, their approaches curtailed cartographic expression since they sought to facilitate the analysis and digitization of large quantities of data. As described, their methods required participants to use predetermined value points. Understandably, data which is clean and easily organized is advantageous in instances where large numbers of participants are included in a study in the hopes of amassing a maximum number of perspectives. For more in-depth understandings of people's relationships with the landscape, however, there are advantages to allowing for 'messier' data, and giving participants more freedom to annotate maps as they so choose. Despite this, few studies align with the latter design. One of them is a study by Jakes et al. (1998) which permitted participants to draw annotations on maps in order to identify places of interest. In their discussion, however, Jakes et al. (1998) do not focus on their innovative use of a mapping activity as a means of collecting data.

Maps have always had a pragmatic quality with regards to creating understanding. Most of this pragmatism is derived from their capacity to situate and convey navigational information. In this thesis, however, I maintain that maps are also practical in creating understanding in the realm of academic geographic research, particularly when it comes to collecting data on agent-environment interactions. Moreover, maps have the capacity to create understanding for decision makers looking to remain accountable to rights-holders and stakeholders, particularly in issues of

land management. Maps generated by parties affected by a given decision can illustrate points of importance on the landscape, and demonstrate how parties felt the decision's impacts. These qualities give maps a unique power in the realm of community consultation, particularly consultations pertaining to land management decisions. There is more room for exploration in the realm of mapping activities for community consultations, particularly activities which give participants more flexibility of expression.

2.4 Chapter Summary

Although the history of PAs and attitudes towards conservation have evolved and changed over the years, there is still a clear treatment of nature as something that people influence and use rather than something that people are integrated in. This is clear in the present day administration of PAs. The sub-discipline of nature and society encourages in depth analysis of assumptions about human-nature relationships as they relate to conservation. Meanwhile, an overview of the history of PAs in Canada, as well as of current conservation strategies, showcases the degree to which the human-nature binaries affect Canadian conservation. The work that has been done to identify landscape values using cartography has shown itself to be a potential avenue to better dissect nature-society binaries and their impacts in the context of PA management.

3.0 Methodology and Methods

The following chapter explains the selected methodology and methods. It is important to investigate the relationship between protected areas and socio-economic processes as part of a larger examination of conservation practices. The methods described below are intended to probe the ways in which PAs, as physical and legislative manifestations of conservation practices, affect local communities.

The bulk of the data was collected through surveys, mapping activities and interviews with 27 individuals residing in the RMBR. A literature review was conducted on concepts relevant to the purpose of this research, as well as on the case study. A review of documents related to the social, institutional and historical nature of the study site was conducted; this included academic articles, census reports, and non-academic literature collected in the field (e.g. archived articles and correspondence). The researcher also recorded observations through photographs and note-taking.

3.1 Methodology

The research employs a case-study methodology, primarily focussing on the RMBR, in order to assess the complexities of ecological-economic intersections in real world settings. Multiple qualitative methods are used to gather data related to the research objectives. The methodology is further explained in this section.

3.1.1 Qualitative Mixed-Methods

A mixed methods approach was employed to collect and analyze the data presented in this document. This approach was selected because of the advantages associated with using multiple avenues to collect information. Mixed-method approaches generally allow for a greater quantity

of data to be collected, and for data to be cross-referenced (Baxter 2010). Furthermore, exploring an issue through a variety of lenses also allows for a more critical analysis of a problem, as this type of approach often reveals the influence of perspective through the comparison of information from different sources (Baxter 2010).

Surveys, interviews, document reviews and participant observation are all common methods of data collection within social research. On the other hand, mapping activities are relatively uncommon. This thesis endeavours to explore the quality and value of information collected through mapping activities, in order to assess such methods in future PA management and planning. Brown and Reed (2012, p.4318) observe that although mapping methods, specifically participatory geographic information systems, "are best characterized as applied research for land use and forest planning, the [methods have] also contributed to theory development and validation." In part, the purpose of the research presented here seeks to examine the ways in which mapping activities make theoretical contributions to the concepts of region and conservation.

3.1.2 Case-Study Approach

A case-study approach was selected because of its capacity for examining compound interactions and processes within a real-world context. The economic and ecological processes associated with land management are place-specific; as such they should be studied within their particular contexts. Case studies allow researchers to test theories related to land management while accounting for the complexities associated with real-world settings.

A case study approach is particularly useful in researching human relationships with their environment, because they encourage the collection of data from a variety of sources. In support of case-studies, Baxter and Jack (2008) wrote that the approach ensures an "issue is not explored

through one lens, but rather a variety of lenses which allows for multiple facets of the phenomenon to be revealed and understood." In the case of PA management, understanding multiple perspectives is essential to effective and equitable administration, as well as to achieving regional integration.

In using multiple data collection methods, the case study approach also aligns with the principles of constructivism, which understand that knowledge is a product of perspective dependant on inter-subjectivity (Yin 2003). Furthermore, as mentioned above, the multiple-methods approach encouraged by a case study orientation can occasionally improve the detail and richness of findings by cross-checking facts from various sources.

3.2 Case Study Rationale

The RMBR was selected as the study site for several reasons. First, as a biosphere reserve, the RMBR is a demarcated region which extends from a protected area (RMNP) to nearby communities. Furthermore, biosphere reserves are administered in part to reconcile social and economic needs with sustainability and conservation, which is relevant to the purpose of this research (RMBR, 2016**)**. They are one of the mechanisms which have been established to try and improve collaboration and communication between park managers and nearby communities. As such, there is a record of attempted collaborative, sustainable economic initiatives stemming from biosphere reserve management within the area. Of the eighteen biosphere reserves that exist in Canada, the RMBR was selected because it encompasses several agents with diverse priorities and ways of interacting with the landscape (i.e. twelve municipalities and four First Nations) (RMBR 2016). Jurisdictional divides exist as well since the protected area within the reserve is under federal jurisdiction. The complexity of the social landscape in the Riding Mountain Biosphere Reserve is valuable in gaining worthwhile insights into economic-

ecological relationships. Additionally, there is a gap in the literature around economic assessments of Canadian biosphere reserves.

RMNP, the protected area at the core of the RMBR, is also a significant reason for which the study site was selected. It is an area of ecological significance which borders large expanses of privately owned lands (BRN 1985). Many people are directly affected by park management decisions. The RMBR is a meaningful place to study park-stakeholder relationships because of the boundary closeness present there.

Finally, the researcher is familiar with the RMBR since she has worked in the area seasonally. Her first-person knowledge of the area is advantageous in the process of accessing participants and collecting data. Having previously resided within the RMBR, the researcher had been exposed to prominent cultural and economic features within the region, and had already established contact with managers in RMNP and individuals connected with the RMBR before commencing research.

3.3 Methods

The researcher used a case-study approach, which required multiple methods to collect data. These included surveys, mapping activities, interviews, a literature review, a document review and participatory observation. The specifics of each method are described below.

Overall, the methods complemented one another. Using a combination of mapping activities, surveys and interviews allowed for larger quantities of data to be collected and made for rich, precise and location-specific participant feedback. Employing multiple methods of data collection prevented information from being lost because of vagueness or uncertainty during the data analysis phase of the research. For example, if data on a participant's completed mapping activity was ambiguous, it was usually clarified on their survey or during their interview.

Similarly, when a participant lacked precision in their surveys, their mapping activities often encouraged them to communicate in exact, location-specific terms.

The principal investigator held research sessions with 27 participants from the RMBR region. Profiles of the participants are laid out in Tables 2, 3 and 4. Participants were required to be adults who worked or resided in the Riding Mountain Biosphere Reserve. A combination of purposive and self-selected sampling was employed. The determining factor in the purposive sampling strategy was largely geographic location. The researcher sought representation from jurisdictions throughout the RMBR. To achieve this, municipal offices and economic development organizations were contacted in each of the RMBR jurisdictions to help identify potential participants who were subsequently contacted by the researcher directly. The researcher also solicited help to promote the study from friendship centers and seniors' centers in the area. The researcher sought representation from individuals associated with the RMBR's initiatives or employed within RMNP in order to incorporate their perspectives and insights. Participants were recruited from 13 jurisdictions within the RMBR. The researcher was not able to recruit participants in 3 of 16 jurisdictions (i.e. Tootinaowaziibeeng, Keeseekoowenin, Rolling River). Although at least one participant was recruited from 13 jurisdictions, some jurisdictions were more represented than others (see Table 4). This, in part, was due to an attempt to ensure diverse occupations were represented in the sample, and to allow participation from individuals who self-selected for the research, so long as they met the necessary requirements. Individuals who self-selected had generally contacted the researcher after hearing of the study from someone they knew who had already participated.

Research sessions consisted of a survey, a mapping activity and an interview, in that order. All research sessions were conducted in person; fifteen occurred at a participant's home while

the remaining twelve occurred in public venues or at the participant's workplace. The individual components of the research sessions are described below. On average, research sessions lasted approximately one hour.

Table 2 - Number of Participants, Male and Female

Participant counts			
	Participants	Male	Female
Count	27	14	13
Participant codes	P1-27	P2, P3, P5, P6, P10, P11, P14, P16, P20, P21, P24, P25, P26, P27	P1, P4, P7, P8, P9, P12, P13, P15, P17, P18, P19, P22, P23

Table 3 - Participant Occupations

Participant Occupations		
Participant general occupations	**Count**	**Participant codes**
Agriculture	6	P10, P11, P12, P13, P19, P21
Conservation/Protected Areas	7	P1, P2, P3, P4, P6, P8, P24
Economic Development	3	P13, P15, P23
Entrepreneur	4	P15, P22, P23, P27
Finance	2	P7, P17
Health Care	1	P18
Political Representative	2	P16,
Student	2	P2, P25
Tourism	8	P9, P10, P11, P12, P13, P15, P18, P26
Skilled Trades	3	P5, P14

** 12 participants report having multiple occupations, which is why the total count exceeds 27.*

Table 4 - General Location of Participant within the RMBR

General Location of Participant within Biosphere Reserve		
Biosphere Reserve Quadrant	Participant counts	Count
NE	P7, P17, P18, P24	4
NW	P2, P19, P25, P22	4
SE	P1, P3, P4, P5, P6, P8, P20, P26, P27	9
SW	P9, P10, P11, P12, P13, P14, P15, P16, P21, P23	10

The sample of participants was not entirely representative of the overall population. A disproportionate number of participants resided in the southern quadrants of the RMBR, which may have created a stronger focus on issues in southern areas. The sample also underrepresents individuals residing in First Nation jurisdictions, since only one participant was recruited from the First Nations located in the RMBR. Additionally, participants generally resided in jurisdictions with higher than average incomes. Finally, only one participant identified as holding an occupation in health care, although this was the second most common area of occupation in the region.

3.3.1 Literature Review

A review of academic literature related to key themes of the research was conducted both before and after fieldwork in order to better inform the research process and data analysis. Prior to entering the field, literature was reviewed on the case-study region; on PAs in Canada generally; on sustainability and regional integration initiatives; on ecological economics; on government accountability in the management of PAs; on mapping as a tool for assessing landscape values; and on tools for managers to conduct assessments on the economic impacts of PAs. The literature reviewed prior to entering the field informed the development of the methods employed.

Themes revealed through fieldwork and data collection informed secondary literature reviews on the sub-discipline of nature and society, on PAs in Canada, and on sustainability and environmental valuation. Combined, the preliminary and secondary literature reviews highlight the varying contexts through which the research objectives and findings can be analyzed, as well as the gaps which the research seeks to address.

3.3.2 Document Review

A review of documents related to the case-study was undertaken. Several kinds of non-academic documents were consulted, such as archived correspondence and administrative briefing notes collected in the field about RMNP and the RMBR. Furthermore, government documents such as RMNP's management plan, Parks Canada reports, and census data were consulted for data analysis and discussion. (e.g. Parks Canada(b) 2012, Parks Canada(a) 2012, Parks Canada 2014, Statistics Canada 2011).

3.3.3 Surveys

Written surveys were conducted with 27 participants. The principal investigator was present, and assisted if participants required clarification. Surveys were brief and comprehensive, and intended to assess participant perspectives on economic benefits and threats within the RMBR. Surveys also included questions on basic participant attributes (e.g. age bracket, gender, employment). Without taking into account questions soliciting basic participant attributes, surveys collected 150 points of data, 55% of which comprised points of data which could be classified as 'economic benefits'. What comprised a 'point of data' is further clarified in section 5.1 and 5.3. A copy of the survey is included in **Appendix A**.

3.3.4 Mapping Activities

The 27 participants who completed surveys also completed mapping activities. Each participant was given a black and white map of the biosphere reserve region which they were told they could annotate, as well as a colored map of the biosphere reserve region as a reference. They received red and green pencils and were instructed to indicate features on the map which improved the economic potential of the area in green, and indicate features which diminished or

threatened the economic potential of the area in red. These instructions were also printed in the bottom left corner of the map handouts. Mapping activities collected 227 points of data in total, 75% of which comprised points of data which were marked in green. A more detailed explanation of these findings is included in section 5.3.2. The map activity handout is enclosed in **Appendix C** for reference.

The mapping activity design built upon previous work by Brown (2005) and Raymond (2009). These researchers employed participatory maps to assess landscape values (as described in section 2.3.3). Raymond (2009) also incorporated the use of green and red to identify positive and negative features which influenced the researcher's choice to ask participants to annotate in red and green.

Mapping activities are an uncommon form of qualitative social research. Employing them in the context of economic impact assessments within PA regions remains relatively unexplored. As such, there will be a focus on assessing the value and function of this method in subsequent chapters.

3.3.5 Interviews

The surveys and mapping activities described in sections 3.4.3 and 3.4.4 were used to guide semi-structured interviews. The semi-structured interview protocol is included in Appendix F. Participants were prompted for additional information according to the features and issues they had already called attention to. Often, participants were encouraged to elaborate on how the issues they highlighted were relevant to them personally. Interviews were also a time when the researcher established whether the participant had previous knowledge of the RMBR. Interviews were not audio recorded due to the researcher's belief that using a recording device would inhibit respondents' self-expression and create large volumes of irrelevant data. Instead, interviews were

transcribed directly, omitting personal identifiers. In order to maintain anonymity, certain personal anecdotes which included names and workplaces, were paraphrased by the researcher as well. Raw transcripts were later cleaned up and organized into bullet points in order to facilitate coding. The results of coding are presented in section 5.2, and the code list is included in Appendix B.

3.3.6 Participatory Observation

The researcher spent five months in the field, during which time she was able to travel to each of the twelve rural municipalities within the RMBR, to two First Nations as well as to many areas within the core zone of protection, RMNP. The researcher recorded observations through field notes and photographs. Photographs were taken in late August 2016, and captured certain issues discussed by research participants, as well as other qualities of the area. Some examples are included below. Figure 1 demonstrates the view from Highway 5 looking west towards the park. It depicts an agricultural field, with RMNP's escarpment in the background. Meanwhile, Figure 2 shows a photograph of Alpine Archie, a roadside art piece located in McCreary, originating before the Mount Agassiz ski hill closure (this event is further discussed in section 5.2).

Figure 1 - Field adjacent to RMNP boundary (photo by Laura Buchan)

Figure 2 - Alpine Archie (photo by Laura Buchan)

3.5 Data Analysis

Data Analysis was guided by grounded theory and utilized a generally inductive approach. Grounded theory allows the data to reveal major themes through repetition (Corbin and Strauss

1990). The multiple data sources utilized for this study generally align with those which Strauss and Corbin (1990, p.5) describe as being appropriate to grounded theory work: "data collection procedures involve interviews and observations as well as such other sources as government documents, video tapes, newspapers, letters, and books-anything that may shed light on questions under study." Meanwhile, the procedures set out in Thomas' (2003) instructions on inductive approaches guided the analysis process. Thomas encourages researchers to allow close readings of raw data to shape thematic categories under which coded terms can be assorted. The thematic categories which emerged from the data collected from interviews are presented in section 5.2. Interviews, in turn, were guided by participant surveys and mapping activities.

The raw data from surveys, mapping activities and interviews was cleaned up and revised multiple times for themes which repeated themselves. From these revisions, thematic categories were created. The principle investigator did not enter the coding process with a rigid set of codes, but rather allowed repetition and emergent themes to guide the formation of codes in an iterative process, so as to enable the data to speak for itself. Although codes primarily emerged through inductive analysis, they were also somewhat guided by information gathered during field work and during the preliminary literature review. In total, a list of 112 concepts or codes emerged. They are listed in Appendix B. These codes were organized according to major overarching themes which are described in section 5.2 of this report.

3.6 Ethics

A proposal for this research was submitted to Professors Scott Slocombe and Christopher Lemieux at Wilfrid Laurier University. Because the research involved human subjects, an application to Wilfrid Laurier University's Research Ethics Board was also required. The study

received approval from the WLU Research Ethics Board in the Spring of 2016, with the permit number 4919.

A permit from Parks Canada was also granted to the researcher, since the Riding Mountain National Park field unit was occasionally consulted for archival information and GIS digital imaging. The permit number from Parks Canada is RMNP-2016-22937.

3.7 Limitations

The purpose of this research is twofold; first, it seeks to test a theoretically informed approach to PA community consultations and impact assessments; second it seeks to catalogue and analyze the ecological-economic relationships within the RMBR. Since this research utilises a single case-study approach, its findings on the use of a new theoretically informed tool for PAs to conduct community consultations and impact assessments are not yet generalizable. Instead, they should be seen as findings which can be built upon in the future. Only when greater numbers of participants undergo the research process; and when the application of the research tool is tested in multiple PAs, will it be possible to generalize findings. Furthermore, it would be useful to have multiple researchers carrying out the surveys and mapping activities to verify if results vary according to the researcher hosting the session.

3.8 Chapter Summary

The research design is informed by the literature review on PA management approaches (section 2.2) and tools for identifying landscape features and values (section 2.3). The design is also guided by concepts drawn from critical theory relating to bridging between nature and society through innovations in data collection methods (section 2.1). Data was collected through research sessions consisting of surveys, mapping activities and interviews; as well as through a

literature review, a document review, and participant observation. A generally inductive approach was employed throughout data analysis.

4.0 Case Study: Riding Mountain Biosphere Reserve

This chapter provides a detailed overview of the case-study. First, we discuss how the international biosphere reserve program manifests itself in Canada. Second, we examine the establishment of the RMBR as well as information on its distinguishing cultural and natural features. Finally, we conduct a socio-economic assessment of the present day area. The research presented in this chapter draws on reviews of census data, documents retrieved from the field (e.g. BRN 1985, Eidsvik 1984), and occasionally on information from research session transcripts.

4.1 UNESCO's Biosphere Reserve Program in Canada

The Man and the Biosphere (MAB) program is an initiative which is associated to UNESCO's Ecological and Earth Sciences division (Pollock 2009). MAB stemmed from "The International Biological Program", an earlier UNESCO program which was criticized and subsequently modified because it was seen as "having too much emphasis on science and not enough on man" (Eidsvik 1984, 1). To address this, MAB was launched in the early 1970s (Eidsvik 1984). Its first governing body was formed in 1971, following the 1968 Biosphere Conference held in Paris (Pollock 2009). In 1971, MAB indicated its purpose as being to improve the relationship between people and their environments and to increase people's capacity to predict the outcome of their actions on the biosphere in order to better preserve resources (Pollock 2009). Among other things, MAB sought to encourage the establishment of a global network of sites in UNESCO's member states to fulfill their purpose (Pollock 2009). These sites are generally called biosphere reserves, and they have different means of achieving the MAB objectives according to their varied national and ecological contexts (Coetzer,

Witkowski, and Erasmus 2014). Although Canada was supportive of the formation of MAB in 1971, it took several years for the country to form its own committee and plan for the establishment of its first biosphere reserve due to challenges related to jurisdictional, administrative and disciplinary boundaries (Francis 2004).

Mont Saint Hillaire became Canada's first Biosphere Reserve in 1978 (this is further discussed below) (MAB 1990). It was founded with the aims of "research, demonstration and education in sustainable development" (MAB 1990, p.1). When the Biosphere Reserve program was first introduced to Canada, Parks Canada expressed that it wanted to ensure the public did not perceive an affiliation between the agency and the MAB program. Speaking on behalf of the agency, Eidsvik (1984, p.3), a senior policy advisor within Parks Canada, explains:

> *As a federal government we have deliberately moved slowly as we did not wish the Biosphere Reserve program to be identified as a federal program. Natural resources are an area of provincial jurisdiction in Canada and we wish to establish a direct link between the MAB program and the provinces.*

Maintaining this distinction, however, remains a difficult task since biosphere reserves are often established around already existing national parks, both in Canada and internationally (CCUnesco 2016). Furthermore, public misperceptions of the program are ongoing since there is widespread confusion about the governance of the program, and a lack of awareness around the fact that most Canadian biosphere reserves are run by community volunteer organizations (Edge and McAllister 2009). Research participants in this study, for instance, sometimes misinterpreted the RMBR as an organization holding legislative power rather than as a volunteer run organization that depends on collaboration to carry out its activities (P2, P8). Biosphere reserves hold no legislative authority in Canada (Edge and McAllister 2009).

Some of the confusion stems from the notion that Biosphere Reserves are alternate versions of national parks and PAs (Eidsvik 1984). To address this issue, Eidsvik (1984) created a comparative table in which the general qualities of biosphere reserves were contrasted with the qualities of national parks. The more important distinctions he made are listed in the table below.

Table 5 - From Eidsvisk's 1984 "Biosphere Reserves in Concept and in Practice"

Important distinctions between Biosphere Reserves and National Parks, taken from Eidsvik's 1984 "Biosphere Reserves in Concept and in Practice"	
Biosphere Reserves	**National Parks**
- protection is a moral obligation	- protection is a legal commitment
- no existing management structure	- have an existing management structure
- cooperative approach	- regulatory approach
- more complicated to establish	- less complicated to establish
- surrounding lands are integrated	- tendency to isolation within fixed boundaries

Pollock (2009) concisely describes the primary responsibilities of biosphere reserve managers as being to encourage sustainable development and economic growth, and to facilitate information exchanges and support networks. Pollock (2009) indicates these functions operate over three distinct zones: a conservation core, a buffer zone and a transitional zone. Although this zonation model is common among biosphere reserves, it is not the rule. The RMBR, for instance, is divided into a ‘zone of collaboration’ and a ‘core area’, which corresponds to an older approach to biosphere reserve models (RMBR 2016). Since biosphere reserves depend on collaboration, zones require some level of mutual agreement.

There are 18 biosphere reserves in Canada, two of which (Beaver Hills in Alberta and Tsá Tué in the Northwest Territories) were established in 2016 (CCUnesco 2016). Notably, Tsá Tué is the first biosphere reserve to be established in the northern territories, as well as the largest Canadian biosphere reserve to date (CCUnesco 2016). The recent expansion of the network of

biosphere reserves in Canada points to increasing interest in the program and the potential this framework holds for the future of conservation.

4.2 The Riding Mountain Biosphere Reserve

Designated by UNESCO in April 1986, the RMBR was the third biosphere reserve established in Canada, and spans almost 15 000 square kilometers (Edge and McAllister 2009). The RMBR is divided into two zones, a 'zone of collaboration' and a 'core zone' for protection. For a map of the RMBR, refer to Appendix G. These two areas will be examined individually in the subsequent paragraphs.

In preliminary designation documents as well as current literature, the core zone of the RMBR is clearly demarcated as RMNP, comprising 2974 square kilometers of protected land under federal jurisdiction (Brook and McLachlan 2006). Before becoming a national park, the area was initially set aside as a forest reserve in 1895, since it was seen to be a source of timber for railway ties and an excellent hunting area (BRN 1985). A desire to have a national park within Manitoba eventually led to the forest reserve being designated as a federal protected area around 1930 (Sandlos 2008). Despite the designation, logging and some agricultural activities continued within the park boundary until the early 1970s (BRN 1985). Today, the area is recognized as ecologically significant because it protects the meeting point between three distinct ecosystems: the eastern deciduous forest, the boreal forest, and the fescue grasslands (Parks Canada 2016). The Manitoba escarpment, which rises 716 meters above sea level, is a defining feature within the park. It separates the Manitoba Lowlands from the Saskatchewan Plain (BRN 1985). RMNP contains the headwaters for 13 watersheds which flow to the surrounding communities (BRN 1985).

Since its establishment, RMNP's management has overseen the ongoing mitigation of several complex stakeholder issues: They have worked to amend and re-establish functional relationships with Ojibway First Nations, whose ancestors resided on park land but were forcibly removed shortly after the park's establishment (Sandlos 2008). They have also made investments in monitoring and controlling wildlife in an attempt to resolve relationships with farmers in surrounding areas (Brook and McLachlan 2006).

RMNP's administration and visitor center are centrally located in the town of Wasagaming, which is also the commercial center of the park (Zhao 2006). The town is located on Highway 10, approximately 100 kilometers north of Brandon (Stadel 2015). It is referred to as a resort town due to the accommodations and restaurants located there (Stadel 2015). A campground, multiple trailheads, a beach and several public launch docks are found within the town as well.

While the 'core zone' is clearly defined in relevant documents, there is less clarity around what is considered to make up the 'zone of collaboration'. Through map representations, many documents imply the zone of collaboration comprises the 12 rural municipalities and 4 First Nations surrounding RMNP. In an internal progress report written shortly after the RMBR was created, however, it is indicated that the zone of cooperation was not rigidly defined since it only comprises lands from voluntary private landowners and government agencies (RMBR 1986). Considering the cooperative nature of biosphere reserves, the latter definition is sounder. That said, for the purpose of representing data, the former more static definition of the zone of collaboration will be applied. This area spans approximately 12 000 square kilometers (RMBR 2016; Statistics Canada 2011). It is important to note that the RMBR has increased in size since 1986 due to several rural municipality amalgamations which occurred in 2015 (RMBR 2016; Edge and McAllister 2009; Statistics Canada 2011; Statistics Canada 2016). In the nomination

draft, the zone of cooperation is described as largely privately owned and managed for agricultural purposes, with natural resource policies defined by the provincial government and the Rural Municipalities' policies (BRN 1985).

4.3 The Establishment of the RMBR

Biosphere Reserves evolved out of an understanding that conservation is largely for the benefit of people, and as such it requires their involvement and integration. Protected areas, however, are often constrained by organizational structures which inhibit the involvement of people. As such, a mechanism for bridging the gap between PAs and the actions of external actors is required. Biosphere Reserves are generally designed to function in this capacity while also advancing conservation of the world's genetic diversity, fostering information-sharing and cooperation, and encouraging sustainable development (Batisse 1986).

In his speech at the Conference on the Management of Biosphere Reserves, Eidsvik (1984, p.6) explains the limitations of Canadian National Parks with regards to extending conservation initiatives beyond their geographical boundaries:

> *Most of our National Parks are prevented from spending their funds on other than National Park lands. Most of our park managers have a "frontier" or internally oriented management approach. I believe those that do not are the exception rather than the rule.*

Four years before Eidsvik's speech, the Riding Mountain Regional Liaison Committee (RMRLC) was formed, in part, to address the problem of internally oriented management approaches (BRN 1985). The committee was created with the purpose of improving communication and cooperation between RMNP, the Manitoba Department of Natural Resources, and 18 rural municipalities around the park (BRN 1985; P10). As part of their activities, the RMRLC held an annual conference on a current topic of interest (RMBR 1986). In 1984, the conference focused on the MAB program, which began an effort to have the region

designated as an international biosphere reserve (RMBR 1986). The nomination phase of the RMBR was organized by a steering committee of the RMRLC (RMBR 1986). Correspondence between the Canadian Biosphere Reserve Committee, Parks Canada and Manitoba's Department of Natural Resources demonstrates that the two latter were consulted in the drafting of the nomination document. A 1987 text authored by George Francis, Chairman of the CCUNESCO Biosphere Reserve Working Group (BRWG), indicates that the BRWG initiated contact with the RMRLC to facilitate the 1984 MAB conference and to suggest the designation of the RMBR to decision-makers in the area (Francis 1987).

Once the RMBR received designation in 1986, it formed a Technical Committee and a Management Working Group to carry out its various functions (RMBR 1986). The Technical Committee was meant to focus on research needs, while the Management Working Group performed as an administrative capacity (RMBR 1986). At its establishment, the three principal objectives of the RMBR were listed as being "1) to protect and study the genetic diversity of the region […]; 2) to promote conservation and sustained development with respect to resources […]; [and] to develop the economy of the area" (RMBR 1986, p.2). The research priorities identified during the RMBR's establishment were "soil erosion, sedimentation, flooding, agricultural practices and wildlife" (RMBR 1986, p.2).

Today, the RMBR continues to be managed by a committee of local volunteer representatives designated by the rural municipalities within the biosphere reserve (RMBR 2016). They engage the community through local markets and community garden initiatives (RMBR 2016). A participant familiar with the history of the RMBR indicated that almost none of the original committee remains (P10). He also indicated that since a change in leadership, the RMBR has

modified its activities to be more focused on sustainable initiatives and less focused on creating networks of communication between municipalities, RMNP and other government actors (P10).

Notably, in the proposal submitted to UNESCO for the establishment of the RMBR, no written references were made relating to the First Nations situated in the RMBR, and it is unclear whether First Nations participated in the RMRLC. The present day RMBR (2016) website, however, acknowledges First Nations on their homepage, as demonstrated in the following excerpt:

> *The RMBR also includes a Zone of Cooperation which consists of the 12 municipalities and 4 First Nations that surround the Park, comprising an additional 12,000 square kilometers. The RMBR is encompassed primarily by Treaty 2 and to the west adjoined to Treaty 4. The landscape has been settled and managed by First Nations people since time immemorial.*

4.3 Socio-economic conditions within the RMBR

Census data pertaining to rural municipalities and First Nations within the RMBR boundary was retrieved from the Government of Manitoba and Statistics Canada. In February 2017, partial 2016 census data became publicly available. Where possible, 2016 data was consulted. In many cases, however, the researcher relied on older census data since pertinent 2016 census information had not yet been published. The most recent publically available census data primarily came from the 2011 census, although there were exceptions. Specifically, 2006 census data was retrieved for several variables related to conditions within First Nation jurisdictions since more recent data was unavailable. All statistical data retrieved from the Government of Manitoba relating to prominent industries in municipal jurisdictions dated from 2005, since more recent census data was also unavailable.

Most municipalities have undergone significant changes in structure since 2011 because of amalgamations which occurred in 2015. The researcher accounts for amalgamations by

combining the data from previously distinct municipalities into their current structures. For example, before 2015, the Rural Municipality of Ochre River and the Rural Municipality of Lawrence made up what is today the Rural Municipality of Lakeshore. To account for this, the 2011 data from Ochre River and Lawrence was combined to represent the current Rural Municipality of Lakeshore.

Table 6 showcases the top two industries according to Manitoba's provincial census data (MBS 2008). As shown, the primary industries within the area were Agriculture, Forestry, Fishing and Hunting, as well as Healthcare and Social Assistance, as per the 2007 North American Industry Classification System (NAICS) (NAICS 2014). 'Agriculture, Forestry, Fishing and Hunting' is classified as NAICS 11 and defined as comprising "establishments primarily engaged in growing crops, raising animals, harvesting timber, harvesting fish and other animals from their natural habitats and providing related support activities"; and excluding establishments engaged in "agricultural research or that supply veterinary services" (NAICSa 2016, 1). Meanwhile, Health Care and Social Assistance are classified as NAICS 62 and defined as including establishments "engaged in providing health care by diagnosis and treatment; providing residential care for medical and social reasons; and providing social assistance, such as counselling, welfare, child protection, community housing and food services, vocational rehabilitation and child care" (NAICSb 2016, 1).

Table 6 - Top Industries in the RMBR Jurisdictions

Top Industries in the RMBR Jurisdictions according to Manitoba's Provincial Census Data		
Jurisdiction	**Population 2011**	**Top 2 Industries in 2005**
Dauphin C	8251	1) Health Care/Social Assistance; 2) Unavailable
Dauphin RM	2200	1) AFFH*; 2) Health Care/Social Assistance
Yellowhead	1973	1) AFFH; 2) Health Care/Social Assistance
Harrison-Park	1799	1) AFFH; 2) Retail Trade
Ste. Rose	1794	1) AFFH; 2) Health Care/Social Assistance

Rosedale	1627	1) AFFH; 2) Retail Trade
Gilbert Plains	1623	1) AFFH; 2) Retail Trade
Grandview	1508	1) AFFH; 2) Health Care/Social Assistance
Lakeshore	1401	1) AFFH; 2) Health Care/Social Assistance
Riding Mountain West	1390	1) AFFH; 2) Education Services
Waywayseecapo	1219	1) Public Admin; 2) Education Services
Rossburn	1046	1) AFFH; 2) Health Care/Social Assistance
McCreary	948	1) AFFH; 2) Transport/Warehousing
Clanwilliam-Erickson	901	1) AFFH; 2) Retail Trade
Tootinaowaziibeeng	621	1) Health Care/Social Assistance; 2) Public Admin
Keeseekoowenin	450	Unavailable
Rolling River 67	343	1) Health Care/Social Assistance; 2) Public Admin

** AFFH = Agriculture, Forestry, Fishing and Hunting*

4.3.1 Agriculture, Forestry, Fishing and Hunting

'Agriculture, Forestry, Fishing and Hunting' is the leading industry in the RMBR. In 2005, it was the chief employer in 12 of 17 jurisdictions within the region. This speaks to the variability in approaches to resources found within the area; RMNP prohibits most resource extraction whereas adjacent communities largely depend on harvesting resources to maintain their livelihoods. The RMBR's website indicates that growing grain crops, forage crops and producing livestock are among the most prevalent agricultural activities in the area (RMBR 2016). Six of twenty-seven participants in the study indicated their primary occupation as being ones which would fall under 'Agriculture, Forestry, Fishing, and Hunting' (P10, P11, P12, P13, P19, P21). Nineteen of twenty-seven participants referred to agriculture and livestock during interviews (P2, P3, P5, P6, P9, P10, P11, P13, P15, P16, P18, P19, P20, P21, P23, P24, P25, P26, P27). Participants who viewed agriculture and farmlands as benefitting the area spoke of how they help create industry and opportunity (n=11: P2, P3, P5, P11, P14, P18, P20, P24, P25, P26, P27). Additionally, individuals employed in the trades found farming operations to be a source of significant income and work (P5, P14). Those who held reservations about the benefits of

agriculture within the region spoke of the problems associated with pollution and antiquated agricultural practices (P6, P9, P10). Furthermore, it was suggested that an over occurrence of agriculture in the area has prevented other businesses from establishing themselves and diversifying the local economy (P6, P9, P10). These issues are further discussed in section 5.2.

Although many participants refer to recreational fishing (n= 10: P8, P9, P13, P14, P16, P19, P20, P22, P23, P24) and hunting (P19, P20, P22, P24) as being positive economic factors within the area, these activities will be addressed at a different point in the text since they relate more closely with tourism and outdoor recreation in this research context.

Currently, forestry is not a significant industry within the RMBR. The area's history of logging, however, was referenced by participants, who bring attention to the way in which logging encouraged people to inhabit the area (P5, P19, P22). Participants also spoke of how the logging industry shaped the trail systems within RMNP, since most of the trails within the park are old logging roads (P18, P19).

4.3.2 Health Care and Social Services

Health Care and Social Services is the second leading industry in the RMBR, and a major employer in nine jurisdictions in the region. Despite the significance of the industry in the RMBR, only one participant (P18) indicated they worked in health care. Regardless, participants acknowledged the economic impact of health care and social assistance (P15, P19, P20, P21, P23, P24). Communities with access to nearby health care were seen to be better off economically than communities without. The loss of health care services in small communities was attributed to changes in provincial legislation which encouraged centralization and which is increasingly resulting in decreased rural populations. It was also indicated that the lack of health care services was a barrier to small communities' trying to capitalize on the trend of 'retirement

communities' since seniors prioritize accessible healthcare. The centralization of health care services was seen to be problematic and unfair by members of small communities who had lost their clinics and hospitals. These concerns are further detailed in section 5.2 of this report.

Notably, P20 spoke about the economic impacts of the health care and social assistance industries in Ste. Rose. P20 attributed the growth of the Ste. Rose community to its hospital, its mental health care facility, and its drug and alcohol rehabilitation centre. P20 indicated that Ste. Rose's care services were significant economic drivers because they increased population density by bringing people seeking treatment and their families to the community. Furthermore, they employed people within the area. P20 indicated that the drug and rehabilitation centre in Ste. Rose was the only one within the parkland area, and had a higher success rate than the closest centre in Brandon. He speculated the success rate might have to do with the community's proximity to nature. P20 also noted that the establishment of these programs required community collaboration and education because of concerns and stigmas around addiction and mental health care centres.

4.3.3 Tourism

Tourism revealed itself to be an important economic driver within the region, both in the literature and in participant responses (Edge and McAllister 2009; P1-27). Eight of twenty-seven participants indicated they were employed within the tourism industry. Remarkably, several participants intersected their agricultural endeavours with tourism by employing their skills to offer visitors trail rides and opportunities to be exposed to agricultural practices (P10, P11, P12, P13, P22). Twenty-four of twenty-seven participants specifically identified tourism as being important within the region, while the remaining three spoke of outdoor recreation industries which relate to tourism.

Drivers of tourism mentioned most often by participants included activities involving wildlife, the town of Wasagaming, RMNP, Asessipi Provincial Park, fly fishing and other outdoor recreation opportunities. Wasagaming and RMNP were often mentioned in affiliation with one another due to the fact that the town is the administrative and commercial center of the park (Zhao 2006). Asessippi Provincial Park was widely considered to be an innovative local force, and a significant economic driver within the region (P02, P05, P08, P14, P15, P18, P22, P24, P25). Participants considered Asessippi's efforts to offer activities during all seasons to be beneficial to surrounding communities. Ten participants spoke of the fishing potential within the area, particularly fly fishing (P8, P9, P13, P14, P16, P19, P20, P22, P23, P24). Certain lakes within the RMBR are maintained for trout fishing by a grassroots organization named FLIPPR, an acronym which stands for Fish and Lake Improvement for the Parkland Region (FLIPPR 2017b). Tokaryk and Patterson lakes, in the south of the RMBR, were reported to be of international repute among fly fishing enthusiasts (P09, P14, P18). Additional outdoor recreation opportunities considered popular in the area include hiking, wildlife viewing, hunting and riding skidoos (see section 5.2.3 for more details on these activities).

4.3.4 Economic Conditions

Census data reveals that the population within the RMBR faces more economic challenges than most of Canada. The average annual income within the RMBR is approximately $22 404, or $24 534 for men and $20 274 for women. For men, this is $12 783 below the provincial average ($37 317). Women, on the other hand, are $5353 short of the provincial average ($25 627). Additionally, 12 of 27 participants reported having more than one occupation, indicating that it is common for people to hold multiple occupations in order to maintain a certain quality of life.

Participants often remarked on decreasing populations and limited employment opportunity within the region as inhibiting their quality of life.

The jurisdiction with the highest average annual income was the Rural Municipality of Dauphin ($28 516), whereas the jurisdiction with the lowest average annual income was Tootinaowaziibeeng First Nation ($10 776). Notably, men made higher incomes than women in all jurisdictions except Tootinaowaziibeeng, Waywayseecapo and Rolling River. Although overall, men had higher incomes than women within the RMBR, the income disparity between the genders is smaller than the provincial average.

4.4 Chapter Summary

Chapter 4 describes the case-study area central to the research presented in this thesis. The chapter begins by explaining the UNESCO biosphere reserve program and its role in Canada. It goes on to examine the establishment of the RMBR, as well as some of the details pertaining to its prominent natural and cultural features. Additionally, administrative, ecological and socio-economic details of the area are examined.

5.0 Results

This chapter describes the results of the research. It begins with a short description of survey results, before transitioning into an overview the principal themes that emerged from coding notes taken during interviews which were largely guided by surveys and mapping activities. Subsequently, the data collected through maps is examined and then juxtaposed with data collected through surveys since this research was conducted in part to determine the usefulness of mapping activities for PA community consultations. It is important to recognize the information presented in subsequent paragraphs represents feedback from a small but diverse sample of the overall population residing within the RMBR. As such, it may not offer a completely comprehensive overview of information and ideas relating to wellbeing in the RMBR.

5.1 Examining Data Collected through Surveys

Surveys began with a series of short questions intended to assess basic participant attributes including gender, age, occupation, duration of residence within the RMBR, and general location of employment (all survey questions are included in Appendix A). These questions provided general information about participants. Most (n=16) were 18 to 40 years of age. 4 participants were between 41 and 60 years of age. 7 participants were between 61 and 80 years of age. All participants lived and worked in the RMBR at the time the survey was conducted. On average, participants had lived in the RMBR approximately 21 years. Thirteen participants identified as female and 14 identified as male. In addition to basic attribute assessment questions, surveys asked partakers to rate economic opportunity in the RMBR out of 5, 1 representing low economic opportunity and 5 representing high economic opportunity. The mean rating for all

participants was 3.1. The mean rating was higher among participants ages 18 to 40 (mean=3.7) and lower among participants 41 and older (mean = 2.7). The rating of economic opportunity was essentially the same between genders.

The main purpose of the survey was to collect points of data on factors which were considered to have positive or negative effects on economic wellbeing in the RMBR. As shown in Appendix A, two open-ended questions follow the preliminary short answer questions: the first asks "What do you consider to be factors helping economic growth in the RMBR?" and the second asks "What do you consider to be barriers to economic opportunity in the RMBR?" In total, 150 points of data were collected in participant answers to these two questions. To clarify, a point of data is considered to be a factor that can stand alone. For example, if "excellent farmland" was written down in response to the survey question asking participants to identify factors helping economic growth, this would be considered one point of data. If "excellent farmland and community interest in developing tourism opportunities" was written down, however, this would be considered 2 points of data, because it comprises two 'stand-alone' ideas.

All points of data recorded under the first open ended survey question (i.e. "What do you consider to be factors helping economic growth in the RMBR?") are considered positive points of data, since they relate to factors helping economic wellbeing. All points of data recorded under the second open ended question (i.e. "What do you consider to be barriers to economic opportunity in the Riding Mountain Biosphere Reserve?") are considered negative points of data, since they relate to factors inhibiting economic growth. Fifty-five percent of the 150 data points recorded in response to the open-ended survey questions were considered positive, since they represent factors which participants thought improved the economic potential of the area. Forty-

five percent of data points collected in response to the open-ended survey questions were considered negative, since they represented barriers to economic potential.

5.2 Participant Interviews

Semi-structured interviews were conducted with 27 participants from 12 Rural Municipalities within the RMBR. The details of participant attributes are described in sub-section 3.4 of this document. Interviews were guided by each participant's survey responses and mapping activities. The interview protocol is found in Appendix F. Information gathered during sessions generated 112 codes (for a list of codes see Appendix B, and for additional information on how raw data was coded, refer to section 3.5 on data analysis).These codes were classified into the following seven broad categories:

- Riding Mountain National Park,
- Infrastructure and Services,
- Tourism,
- Environmental Concerns,
- Population Characteristics,
- Economies, and
- Direction of the RMBR.

These categories are further discussed in the following sections. One should note that the listed categories are not perfect groupings since there is often overlap between subjects. For example, a participant speaking of an old Ukrainian church is likely touching on various ideas: the church may be infrastructure in need of repair; it may be considered a driver of tourism; it may be emblematic of Ukrainian communities in the area, and so forth. Discussed subjects have

been coded and classified into the category which appears most suitable given the discussion context, so as to organize ideas and facilitate subsequent analysis and discussion.

5.2.1 Participant Perspectives on Riding Mountain National Park

Riding Mountain National Park is the central protected area within the RMBR, constituting its 'core zone', as described in Chapter 4. Almost all participants discussed the park's impacts on the region. The subjects which arose in relation to the national park are grouped into thematic categories outlined in Table 7. Participant IDs have been listed to give the reader a sense of the number of participants that spoke to topics. Subjects are discussed in more detail in the subsequent paragraphs.

Table 7 - Participant Perspectives on Riding Mountain National Park

Riding Mountain National Park	
Main Themes	**IDs of participants who raised the topic**
Wasagaming/Clear Lake and Onanole • Area with a high concentration of park activities and visitation	P01, P02, P05, P08, P09, P11, P12, P13, P14, P15, P18, P19, P22, P25, P27
Riding Mountain National Park as a driver of tourism and economic growth	P01, P02, P03, P05, P08, P11, P12, P13, P15, P17, P18, P19, P21, P26, P27
Management concerns • Little attention paid to the west side of the park • Barriers to working with Parks Canada, resulting in unproductive working relationships between the park and nearby communities and organisations • Reported lack of communication and/or collaboration from the park with stakeholders in decision-making • Park managers miss opportunities to collect gate fees	P01, P02 , P04, P08, P09, P11, P14, P16, P18, P19, P20, P21, P22, P26

Infrastructure • Front country camping, backcountry camping and trails within the park • Condition and utility of Highway 19 and Highway 10 • Unused warden cabins	P01, P03, P04, P08, P18, P27

RMNP was considered by most participants to be an attractive destination within Manitoba and a primary driver of the regional tourism industry. Despite this, many (n=14) felt the park was not fulfilling its entire potential because of ineffective management (P01, P02, P04, P08, P09, P11, P14, P16, P18, P19, P20, P21, P22, P26). Those who raised the issue of management generally conceded decision-makers should take steps to better utilize different parts of the park as opposed to focusing efforts around Wasagaming. Participant recommendations to managers included improving trail and backcountry site conditions on the west and east sides of the park, as well as investing in improved road and trail signage both inside and outside the park. Participants who purchased park passes to access trails and campsites on the west and east sides of the park felt it was unfair they pay the same fees as those enjoying park amenities located in or near Wasagaming, since they perceived trail and campsite conditions near Wasagaming as markedly better than those located elsewhere (P10, P11, P12, P13, P18, P22). Participants who identified as business owners and tourism operators felt that conditions of trails and facilities in the park affected their business success (P9, P10, P11, P12, P13, P15, P18, P22).

Additional concerns related to park management choices included the closing of Mount Agassiz ski hill, the closing of the Grandview-Rossburn road, and problems around bovine tuberculosis. In the case of the Mount Agassiz ski hill closure, some participants felt managers had disregarded the importance of the site to the wellbeing of communities located near the eastern boundary of the park. Some felt discussions with park workers were futile, while others

felt the park had created false hope by implying the ski hill would be replaced with another revenue generating business (P9, P18, P20). In the case of the closure of the road from Rossburn to Grandview, P16 and P19 felt the decision put a rift between the two communities, as well as between Tootinaowaziibeeng and Waywayseecappo. Furthermore, it was thought that the park's reason for the road closure (i.e. the ecological integrity of the area) was inadequate and indicated preferentialism for the east side of the park, in which there are two main thoroughfares (i.e. Highway 10 and Highway 19). P19 and P21 suggested reopening a gravel road with a reduced speed limit would not affect the overall ecological integrity of the area. In the case of bovine tuberculosis, some felt the park's conservation strategies aggravated the situation and caused additional cattle herds near the park to be infected with the illness (P16, P21). Despite the focus given to the aforementioned concerns, not all participants sought continued discussions around them. P9, P15, P19 and P22 advised that further discussions around Mount Agassiz ski hill, the Grandview-Rossburn road, and bovine tuberculosis stalled constructive conversations since they felt RMNP could or would not take additional actions on the matters. Dwelling on them was seen to prevent the park and communities from working together and creating meaningful change.

A common complaint related to the challenges around communicating with managers on problematic issues (P09, P13, P16, P18, P20, P21, P22). P18 and P20, for instance, reported that in past years they had received no response from the park after repeatedly attempting to contact managers in writing and over the phone. P18 indicated, however, that communication from managers had improved recently.

RMNP's system for administering and collecting gate fees was considered inefficient (P2, P11, P18, P22). Participants found the north gate's hours of operation inconsistent, and some puzzled over the fact that there were no gates located in the east or west of the park to collect

fees from visitors interested in doing trails in those areas. P18 and P22 thought it was unlikely people hiking a trail in the east or west would allow time to purchase a park pass at the South Gate or North Gate, both of which are located more than an hour's drive from the westernmost park boundary. P18 and P22 suspected many visitors using trails in the west or east would be happy to pay an entrance fee if it were made easier. Although the park allowed certain businesses to the east and west of the park to sell passes, it was reported that current processes for businesses to sell passes were too complex. P22, for instance, reported that it took over a year for her business to receive passes to sell and she had yet to be told her commission rate despite multiple inquiries. The business owner did not want to invest significantly in promoting and selling passes because she was unsure of whether her commission rate was one which would allow for profitable sales.

In addition to the geographic inconsistencies around gate fee collection, P18 and P22 expressed confusion about the different types of fees associated with park use. Among other things, they wondered if the camping fees were the same as the day-use fees, and if the fees were charged by individual or by vehicle. It was suggested that the park and visitors would benefit from a more consistent and simplified fee system accessible online (P11, P18, P22).

RMNP's infrastructure was considered a key component of visitors' experiences in the park, and therefore important to tourism and repeat visitation. Participants primarily commented on trails, campgrounds and road conditions (trails and campgrounds = P11, P13, P18, P22, P25, P27; road conditions = P7, P13, P14, P15, P16, P18, P20, P21, P23). RMNP was considered by many to contain some of the most beautiful and unique trails and campgrounds in Manitoba. Specifically, Deep Lake, Baldy Lake and Long Lake were named as examples of exceptional

sites and trails by multiple participants (P11, P12, P22, P25). It was expressed, however, that the maintenance of these was lacking (P1, P18, 021, 022, P25, 026).

Road conditions within the park were another area of concern, which will be further discussed in section 5.1.2. Overall, however, most had positive things to say about the park's two main thoroughfares, Highway 10 (P1, P3, P4, P8, P18, P27) and Highway 19 (P1, P10, P27). They were considered scenic roads which connected visitors to trailheads and day-use areas.

Unoccupied warden cabins were remarked upon by some, particularly older participants who had recollections of when they were still in use. P18 and P22 commented that having park personnel residing in warden cabins around the boundary was a meaningful way of connecting the park to its surrounding regions. According to P18 and P22, wardens living near the boundary would often integrate themselves into nearby communities, which better enabled them to understand local needs and facilitate discussion between locals and park management.

To summarize participant perceptions of RMNP, it was thought that the park focused an inequitable amount of their efforts and resources in Wasagaming while neglecting areas in the west and east of the park. Communication problems between park management and communities related to issues affecting stakeholders were often reported. Finally, many indicated the condition and maintenance of park infrastructure, particularly trails and campgrounds in the west of the park, required improvement.

5.2.2 Participant Perspectives on Infrastructure and Services

Most participants spoke to the importance of services and infrastructure to the economic well-being of the region (n=15: P1, P6, P8, P7, P8, P9, P10, P17, P19, P20, P21, P23, P24, P25, P27). Services were seen to encourage population growth, which in turn encouraged the establishment of additional service providers. The subjects which arose in relation to infrastructure and services

in the RMBR are grouped into thematic categories outlined in Table 8. Subjects are discussed in more detail below.

Table 8 - Participant Perspectives on Infrastructure and Services

Infrastructure	
Main Themes	**IDs of participants who raised the topic**
Access to services • Access to services, or lack thereof • The effect of centralization on rural services • Healthcare • Cellphone and internet services	P01, P06, P07, P08, P09, P10, P17, P19, P20, P21, P23, P24, P25, P27
Roads and transportation • Road conditions • Highways 5, 10, 16 and 19 • Challenges related to transportation • Road signage	P01, P03, P04, P06, P07, P13, P14, P15, P16, P18, P19, P20, P21, P23, P26, P27,
Housing and accommodation • Shortage of housing • Seasonal accommodation	P06, P11, P13, P19, P21, P24

Participants (n=15) underscored that service availability throughout the area was both of benefit to local populations and to the regional tourism industry. Specifically, recreational facilities and food providers were considered important to the economic well-being of an area (P6, P8, P9, P26).

Several participants expressed concern over centralization, having seen their local services move to larger urban centers like Dauphin, Russell and Brandon. Specifically, the loss of healthcare services in smaller communities was considered particularly detrimental because it was seen to decrease the likelihood of people choosing to move to an area (P15, P18, P19, P20,

P24). P19, for instance, saw many small communities in the region as being idyllic for retirement due to their proximity to parks and numerous recreational activities. Without local healthcare services, however, it was challenging to market locations to retirees regardless of the other advantages.

Four participants reported inadequate cellphone service and wireless internet access. Participants located in the Rural Municipality of Lakeshore (n=2) indicated that their area's lack of cellphone coverage was a safety concern as well as a barrier to economic growth. They indicated that tourism activities in their area, such as hunting and boating, would involve less risk if cellphone service was made more available. Participants in regions south and west of the park also indicated that unreliable internet service was an economic barrier since it is considered to be so commonplace that tourists are reluctant to go to areas without it (P7, P10, P17, P25).

When participants discussed roads and transportation, they primarily spoke of road conditions (inside and outside park boundaries), the accessibility of transportation, specific highways, and road signage. Road conditions in parts of the RMBR were considered poor, specifically Highway 10 near the northern boundary of RMNP, Highway 45 west of Rossburn, Highway 264 and Highway 19 (n=10: P1, P7, P13, P14, P15, P16, P18, P20, P21, P23) (see figure 3). In addition to poor road conditions, a shortage of public transportation was also considered a barrier to the overall well-being of the region (P6, P3, P4, P13, P14). People wishing to visit RMNP or its surrounding communities require a vehicle, since there is next to no regularly scheduled public transportation available throughout the area.

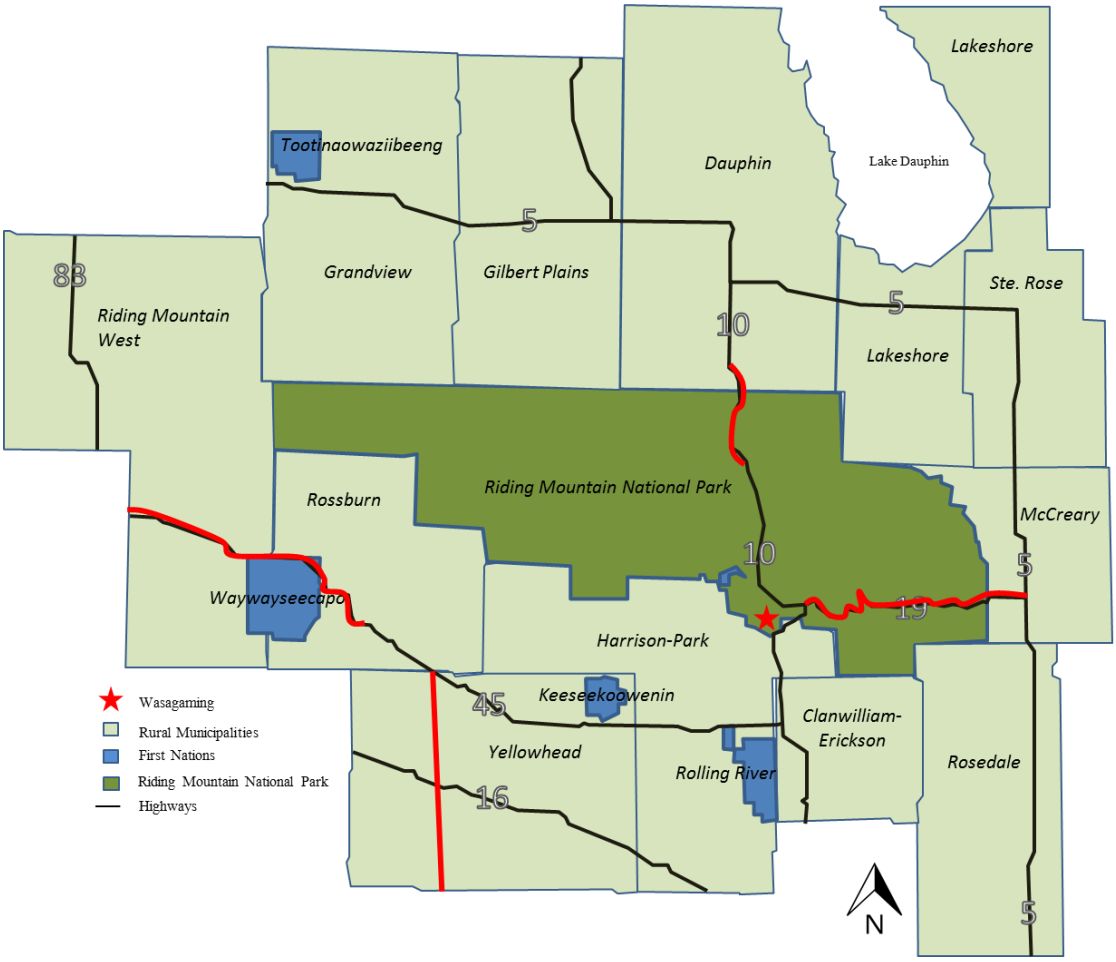

Figure 3 - Road Segments in the RMBR reported to be in poor condition (marked in red)

Highways 5, 10 and 16 are major provincial thoroughfares. Participants acknowledged the traffic they brought into the region (P3, P6, P14, P18, P19, P26, P27). P18, P20 and P26 remarked that the section of Highway 5 from Neepawa to Ste. Rose was rendered unique by the landscape and variety of cultural communities found there. P26 saw potential for an experiential tourism loop going North on Highway 5 from Neepawa and following the highway as it turns west, turning south on Highway 10 at Dauphin and finally east on Highway 19 (see Figure 21 in section 5.3.2).

Some participants expressed concern over the quality of signage along major thoroughfares within the area (P1, P18, P19). It was thought the park and surrounding region would benefit

from signage advising of the presence of trails, viewpoint and recreational areas along Highways 16, 5 and 45. Signage for trails and campgrounds in the west and east of the park was considered to be particularly absent. Figure 4 showcases a current sign indicating the presence of the East Gate National Historic Site, a feature within RMNP. P01 indicated that such signs were too small and unnoticeable to generate much traffic. She indicated additional signs should be put in place, and existing ones should become bigger and brighter so as to be more noticeable.

Figure 4 - Example of signage for features within RMNP (photo by Laura Buchan)

Some areas within the RMBR were thought to be short of accommodation for people seeking both long-term and short-term residence. Participants complained about the seasonality of some residents and services (P4, P24, P26, P27). A strong tourism season causes an influx of tourists during parts of the year. To cater to tourists, some entrepreneurs open seasonal food and convenience services. Participants reported that this type of seasonality increased taxes for permanent residents and negatively affected senses of community (P4, P24, P26, P27).

To summarize, infrastructure and services in the RMBR were highly valued as economic drivers. Those from small communities held concerns about the effects of centralization on their services and economies. Cellphone and internet services were considered important by those

who faced challenges accessing them. Increased public transportation, improved road conditions and better road signage were also considered priorities among most participants.

5.2.3 Participant Perspectives on Tourism

Tourism was widely cited (n=18) as a significant driver of the economy within the RMBR (P1, P2, P3, P5, P7, P8, P9, P10, P11, P13, P14, P16, P17, P18, P19, P20, P21, P26). Eight participants considered themselves to hold occupations in tourism (P9, P10, P11, P12, P13, P15, P18, P26). The subjects which arose in relation to tourism in the RMBR are grouped into thematic categories as outlined in Table 9. Subjects are discussed in more detail below.

Table 9 - Participant Perspectives on Tourism

Tourism	
Main Themes	**IDs of participants who raised the topic**
Outdoor recreation • Activities involving wildlife (e.g. wildlife viewing, birding, hunting, fishing) • Trails • Aesthetic natural features and destinations (e.g. lakes, viewpoints, scenic routes, parks)	P04, P05, P06, P08, P09, P10, P12, P13, P16, P17, P18, P20, P21, P22, P23, P24, P26, P27
Cultural Tourism • Ukrainian heritage • Historic sites • Festivals • Indigenous heritage • Food providers	P01, P02, P07, P08, P09, P14, P15, P17, P18, P19, P24, P26
Groups and organizations intended to increase regional tourism (e.g. Parkland Tourism, Tourism Dauphin, Asessippi Parkland Tourism)	P02, P07, P14, P15, P17, P18, P19, P22, P24, P25

Outdoor recreation comprises an important component of the larger tourism industry in the RMBR. Specifically, activities involving wildlife were considered central to drawing visitors. Activities listed by participants included wildlife viewing, birding, hunting and fishing. Notably, several participants spoke of fly fishing, especially in the southwestern quadrant of the RMBR (P09, P13, P14, P22, P24). FLIPPR, an organization which describes itself as "a grassroots volunteer group […] whose vision is to create a world class still-water trout fishery for economic and recreational opportunities in the Manitoba Parkland Region," was considered important to the industry (P09, P10) (FLIPPR, pars 1). The group's work to create and maintain trout fisheries was thought to be beneficial to local businesses due to its role in giving the area more prominence at an international level. For instance, the Rossburn-Roblyn-Russell area will be hosting the 15th National Fly Fishing Championship and Conservation Symposium in 2017, which draws people from around the world (NFFC 2017).

Apart from activities involving wildlife, the opportunities to hike, ski, snowmobile and camp were valued by several participants and considered to make the area more marketable to outsiders. Specifically, trails on the eastern escarpment of RMNP were said to be remarkable, along with the Sugarloaf trail and the trail to Tilson Lake. Furthermore, P13, P19 and P24 remarked that the TransCanada trail held underdeveloped potential, and that creating trails linking the TransCanada trail to RMNP might prove a worthwhile endeavour.

In addition to outdoor recreation, cultural sites and events were considered important drivers of local tourism (n=12: P1, P2, P7, P8, P9, P14, P15, P17, P18, P19, P24, P26). Ukrainian heritage sites were discussed by six participants (P1, P9, P13, P15, P26). The region has several sites related to the early movement of Ukrainians to the area, particularly south of the park, including many Ukrainian orthodox churches. Parkland Tourism has highlighted Ukrainian sites

in the south of the RMBR in a brochure which guides visitors along the 'Babushka Trail' (Parkland Tourism 2012). The Inglis grain elevators (P8, P19, P24) and RMNP's East Gate (P11, P18) were among the few non-Ukrainian historic sites discussed by participants.

In addition to historic sites, festivals were considered important to cultural tourism. Canada's National Ukrainian Festival in Dauphin is a major celebration of the area's Ukrainian heritage, and was recognized by participants as an event drawing visitors from all over Canada and abroad (CNUF 2017). In addition to the Ukrainian festival, the Harvest Sun Festival, Maple Syrup Festival, and Indigenous cultural events were said to generate regional tourism and build community (P8, P12, P13, P14, P15, P18, P21). Finally, several mentioned Powwows hosted in Waywayseecappo as successful cultural events benefitting the local economy (P12, P13, P14, P21, P22).

Food was discussed principally as a service, but occasionally as a tourism driver as well (P13, P26). P26 indicated that a shortage of cultural food experiences inhibited the tourism potential of the area. He suggested that restaurants or food suppliers offering Ukrainian, French-Canadian and Indigenous cuisine would enrich the area by making it more saleable to tourists.

To summarize, most participants saw outdoor recreation involving wildlife as being the most sought-after quality of the area. It was also thought that events and cultural features such as festivals and historic sites added additional richness to the region. Finally, it was suggested the establishment of additional culinary experiences and the enhancement of the TransCanada trail would improve the marketability of the RMBR.

5.2.4 Participant Perspectives on Environmental Concerns

Approximately a quarter of participants discussed perceived environmental concerns within the region (n=7). Concerns primarily related to the environmental impacts of agriculture, and the

validity of conservation strategies employed in the region. The subjects which arose around environmental concerns in the RMBR are grouped into thematic categories outlined in Table 10. Subjects are discussed in more detail below.

Table 10 - Participant Perspectives on Environmental Concerns

Environmental Concerns	
Main Themes	**IDs of participants who raised the topic**
Agricultural pollution • Pollution in and around Lake Dauphin	P02, P05, P10, P18, P19
Conservation • Conservation efforts affecting stakeholders • Sustainable development and sustainable tourism	P10, P21, P26

Three participants indicated agricultural pollution as a problem within the RMBR, particularly in and around Lake Dauphin (P02, P05, P18). P2 suggested agricultural pollution contributed to the deterioration of the water quality in Lake Dauphin. This assertion was echoed in a report published by the Association of Manitoba Municipalities in 2003 titled *Supply, Quality and Use of Water in the Prairie Provinces* (AMM 2003). The report explains that the straightening of waterways in the areas between RMNP and Lake Dauphin, which would have been done to protect crops and buildings, increased water speed and sediment carrying capacity during times of heavy flow. This reduced rates of water filtration and increased the amount of agricultural pollution found in Lake Dauphin. The document suggests that this significantly affected the commercial and sport walleye fisheries because of the impact of pollution on fish populations (AMM 2003).

While pollution and environmental degradation were matters of concern for some, others saw certain conservation strategies as problematic, either because they were considered ineffective or

poorly carried out (P10, P16, P21, P26). P16 and P21, for instance, saw conservation as being conducted arbitrarily and as having a negative impact on the livelihoods of farmers within the area. They thought the issues of elk transmitting bovine tuberculosis to cattle and flooding caused by beavers were results of poorly executed conservation. A greater number of participants, however, thought that overall, conservation held benefits for the region and partially contributed to tourism. Some highlighted sustainable development and sustainable tourism as avenues holding potential for increasing prosperity in the area (P19, P26, P27). Section 5.1.5 will further discuss some of the gaps around informing community stakeholders of the benefits of sustainable practices.

To summarize participant perspectives on environmental concerns in the RMBR, concerns about pollution stemming from agricultural practices were expressed during research sessions. Most participants appreciated conservation initiatives within the area, but some felt strategies around specific issues were poorly formulated and managed.

5.2.5 Participant Perspectives on Population Characteristics

Population characteristics were considered an important component of what made the RMBR a unique area within Canada, and therefore a more marketable tourism destination. Discussions around characteristics of populations within the RMBR included demographic trends and the diverse cultural landscape of the region. The subjects which arose in relation to population characteristics are grouped into thematic categories outlined in Table 11. These subjects are further discussed in the following paragraphs.

Table 11 - Participant Perspectives on Population Characteristics

Population Characteristics

Main Themes	**IDs of participants who raised the topic**
Diverse cultural landscapes • Ukrainian communities, Indigenous communities, Francophone communities, Hutterite communities • Cultural divides	P04, P05, P06, P09, P12, P13, P14, P18, P19, P20, P21, P22, P24, P26
Demographic qualities of the population • Population growth experienced in larger centers; population decline experienced in most other communities • Relatively rural and remote, low density populations	P02, P03, P05, P07, P10, P11, P12, P13, P15, P17, P18, P19, P20, P25, P27
Governance • Disconnect between levels of government (i.e. federal, provincial, municipal) • Limited leadership and inequality between regions • Lack of education around sustainable practices and industries	P09, P10, P18, P21, P22, P23, P24, P26
Perceived characteristics of population • Strong community spirit • Communities are determined and steadfast • Reported antiquated values and beliefs regarding new industry	P06, P07, P09, P11, P14, P15, P18, P19, P20, P22, P23, P24, P26

Twenty-four of twenty-seven participants highlighted demographic and cultural factors as important to the overall well-being of the RMBR. Various cultural groups can be found across the RMBR, including Ukrainian, Indigenous, Francophone and Hutterite communities. This diversity was thought to contribute to the appeal of the region, particularly with respect to tourism. Some mentioned, however, that there were cultural tensions in parts of the RMBR which resulted in an unproductive use of resources (P18, P26).

Although most communities within the RMBR are located within a one to two hour drive from a city, many participants saw themselves as being remotely located (n=10: P3, P5, P11,

P12, P13, P15, P17, P18, P19, P25). This remoteness was considered one of the principal barriers to economic wellbeing in the region. P19 explained that economies are driven by population density, and since land use in the RMBR tends to be protected from development or used for agriculture, growth and expansion are limited and populations are kept low. Furthermore, the centralization of services was seen to contribute to population decline in rural municipalities while contributing to population increases in larger centers. According to provincial and federal statistics, all jurisdictions within the RMBR decreased in population size with the exception of Waywayseecapo, Rolling River, Keeseekowinin, Dauphin City, Gilbert Plains, and Ste. Rose. Despite this, the increase in population size experienced in the aforementioned jurisdictions, especially the city of Dauphin, augmented the overall population of the RMBR (Statistics Canada 2016; Statistics Canada 2011; MBS 2008; MBS 2006).

Collaboration between different levels of government was seen as challenging within the RMBR for various reasons (P9, P10, P18, P21, P22, P23, P24, P26). Some reported weaknesses in the system of governance, particularly regarding the level of input accorded to municipalities in decision-making. P21 asserted that municipal governments should be given more power in decision-making, particularly regarding services. Meanwhile, P16 highlighted the issue of discord between levels of government by explaining how Highway 264 and Highway 45 west of Rossburn are weight restricted and unusable by trucks in the spring. This causes trucks to use and wear down municipal roads, which burdens municipalities with the costs of repairs. Finally, some participants felt they did not receive the same quality of services as Manitobans in more populated locations despite paying similar taxes.

Leadership within the RMBR was mentioned by some as an area of concern. P19, P18 and P26 expressed that there was a shortage of individuals willing to take on strong leadership roles.

One participant commented that the RMBR region had significant potential, but without strong leaders in key functions, it remained untapped. P18 and P24 explained that young people often moved away from the area to seek employment and higher living wages, which limited the number of people who had the chance to grow into leadership roles. Another barrier to strong leadership mentioned by 10 of 27 participants was a tendency toward antiquated values within the region (n=10: P6, P9, P14, P18, P19, P20, P22, P23, P24, P26). Several thought resistance to change and innovation inhibited economic growth. Despite this perceived shortcoming, many reported an admiration for their local populations and a strong sense of community (P7, P11, P15, P18, P23).

In summary, the diverse cultural groups and actors within the RMBR were considered to add to the overall appeal of the area. Low population densities and the remoteness of communities were characteristics that were seen as being problematic to economic wellbeing. Some indicated problems within systems of governance and a shortage of strong local leadership.

5.2.6 Participant Perspectives on Economies

Since questions of economic wellbeing guided surveys and mapping activities, the topic was central to interviews conducted with participants. Topics most related to economy, like employment, industry, and economic development groups are discussed in this section. Relevant subjects are grouped into thematic categories outlined in Table 12, and discussed below.

Table 12 - Participant Perspectives on Economies

Economies	
Main Themes	**IDs of participants who raised the topic**

Economic drivers • Employers (e.g. local agricultural sector, tourism industry, RMNP, large external employers in primary or secondary sectors) • Resource abundance • Seasonal industries	P06, P10, P11, P15, P19, P20, P24, P25, P26
The agricultural sector • Complex effects on demography and economic wellbeing within the region	P02, P03, P05, P09, P10, P17, P18, P19, P20, P23, P25, P27
Economic barriers • High living costs coupled with employment scarcity, and few jobs with high wages • Undevelopable land • External economic factors • Lack in investment in innovative industries, particularly in tech and renewable energy • Seasonal industries	P03, P04, P05, P06, P10, P11, P23, P24, P25, P26, P27
Mechanisms for encouraging economic development • Economic development organizations	P06, P18, P20, P23, P26

Prominent economic drivers within the region were reported to be the agricultural industry, the tourism industry, large industrial employers, and RMNP. Economic barriers were considered to be high costs of living coupled with low employment rates and a scarcity of high paying jobs; as well as undevelopable land due to flooding or conservation, a shortage of investments in innovative industries, and external economic factors.

Several participants expressed concerns over a shortage of jobs with high wages, suggesting that younger people seeking employment had higher expectations of pay than in previous decades, often leaving the area to find better employment (P11, P18, P24, P25). P4, P5 and P16 felt the region was hindered by a high rate of undevelopable land due to natural restrictions (e.g. marshland and hills) and conservation initiatives restricting land-use (e.g. parkland). In addition

to this, some indicated that antiquated attitudes towards investments in innovative technologies were problematic for the area (P20, P24, P25, P26, P27). Hemp and renewable energy technology, for instance, were considered industries that might encourage economic growth if communities were open to investing in them to assist in their establishment (P20, P24, P25, P26). P20, however, explained that modern people have lost interest in taking measured financial risks and no longer invest in local industries in the way people did before. Bureaucratic barriers were also cited as causing wasteful fiscal expenditures (P14, P20, P21, P22, P26).

More than half of participants spoke of the agricultural sector within the region. Participants held varying views on the economic role of agriculture in the RMBR. Ten of twenty-seven participants considered it an economic contributor and a source of revenue for the region (P2, P3, P5, P9, P14, P18, P20, P23, P25, P27). The remaining participants either did not comment on the economic implications of agriculture, or found the industry to have a neutral effect. Six of twenty-seven participants held occupations in the agricultural sector, and therefore benefit directly from the industry (P10, P11, P12, P13, P19, P21). Additionally, individuals who did not participate in the industry directly also reported benefits. For example, P14 indicated that half of his revenue as a carpenter was generated by farmers who required repairs or the construction of new structures for their workplaces.

Not all were convinced that agriculture necessarily contributed to growth, however, despite the profits it generated for those involved. For example, one farmer (P19) indicated that agriculture in the RMBR had a neutral economic impact. She explained that largescale farming operations deteriorate local economies since they require sizable parcels of land but tend to only employ a few workers to operate machinery, or several short term seasonal farmhands. Although they can be lucrative to those running the operation, large farms decrease an area's population

density, inhibiting economic growth and community expansion. The farmer went on to explain, however, that the fragmented nature of the landscape in the northern region of the RMBR encouraged farming operations to remain a medium size since it deterred single farms from acquiring vast parcels of land. P19 alleged this helped to maintain the area's population density since multiple medium-sized operations require more workers that one largescale operation. P19 also suggested that medium-sized farming operations were more sustainable, since they were unable to afford to waste as much as their larger counterparts.

Several participants indicated there is limited funding available for establishing or maintaining groups and personnel intended to encourage economic development throughout the region. It was reported that several previously existing economic development groups were no longer operating (P10, P18, P19, P20). P10 indicated that in prior years, the RMBR had a stronger focus on economic development and collaboration between jurisdictions. P18 also reported that the Manitoba Agri-Food and Rural Economic Development Division hosted gatherings involving rural municipalities in the parkland to discuss issues of economic development, but this had stopped. Many felt a need for more investment from federal, provincial and municipal governments towards the coordination and facilitation of thoughtful economic ventures.

To summarize, participants identified a number of economic drivers and barriers. Several expressed concerns over communities' reluctance to embrace and contribute to new industries. Overall, the agricultural industry was considered an important component of the economic fabric of the area, but some voiced apprehensions related to the effects of agricultural pursuits on population bases. Participants also saw a need for organized action towards economic

development across rural municipalities, indicating that funding would assist with such an endeavour.

5.2.7 Participant Perspectives on the Direction of the RMBR

The following section overviews participant perspectives on the direction of the RMBR. In addition to being the physical location of the study presented in this document, the RMBR is a non-profit organization registered as a corporation, with the objectives of encouraging "through research, information exchange, education and communication, a sustainable community-based regional economy, with high biodiversity, landscape, and social values, with Riding Mountain National Park as a key component" (RMBR 2007, page 1). Therefore, the following section is to do with the activities of the RMBR as a non-profit organization, rather than a geographical space. The subjects which arose in relation to the direction of the Riding Mountain Biosphere Reserve are grouped into thematic categories outlined in Table 13. Subjects are discussed in more detail in the subsequent paragraphs.

Table 13 - Participant Perspectives on the Direction of the RMBR

Direction of the RMBR	
Main Themes	**IDs of participants who raised the topic**
• A lack of awareness around existence and role of biosphere reserves	P02, P07, P08, P17
• The RMBR as a driver of the economy	P10, P015
RMBR governance • Problems around inclusion and exclusion • Problems around shared vision	P10, P15, P19, P23, P26,

One of the principal issues reported in relation to the RMBR was a lack of knowledge among people who lived within its boundaries about its existence and role. Three participants did not know they resided in the RMBR, or what it was, while others reported that while they knew they resided within the biosphere reserve area, they did not fully understand its purpose (002, 008, 007, 017, 010, 023).

P15 and P10 felt that a lack of awareness around the role of the RMBR, and biosphere reserves generally, made for missed opportunities to utilize the UNESCO designation to draw tourists to the area, and to acquire funding for local initiatives. It was thought that more could be done to market businesses and tourism operations within the RMBR as exclusive for their location in a biosphere reserve.

Five participants expressed a desire to see a higher level of involvement among member jurisdictions of the RMBR. For example, the RMBR currently organizes a farmer's market in Onanole called 'At the Farm Gate'. The initiative gives local venders from the RMBR the opportunity to sell and promote their products and businesses. The RMBR also manages a directory of local vendors on their website as part of the initiative. The markets are successful, positive contributions to local, sustainable economic development. P6 suggested combining the current market in Onanole with a traveling market held in rural municipalities and Indigenous communities interested in participating, indicating this approach would integrate a larger segment of total RMBR population.

In summary, participants hoped for increased awareness around the RMBR among those residing within its geographical parameters, and to see the organization's activities vary geographically and incorporate more communities.

5.3 Mapping Activities

Surveys and mapping activities were conducted with 27 individuals residing in the RMBR as part of the research. These data collection methods are described in greater detail in Chapter 3. The purpose of employing both surveys and mapping activities was twofold. First, using both methods of data collection allowed for more information to be gathered; second, the researcher sought to compare the two mechanisms of data collection in order to inform the ways in which PAs assess their impacts. Survey results were examined in section 5.1The following section will present the results of data collected through mapping activities. Subsequently, the two methods of data collection will be compared.

5.3.1 Examining Data Collected through Mapping Activities

In total, 227 points of data were collected through mapping activities. On maps, a 'point of data' was considered a stand-alone feature marked in either red or green. For example, Figure 6 shows a sample of one point of data (i.e. P09's annotation of an old road through the west end of RMNP). Another sample of P09's mapping activity shown in Figure 7, however, shows two points of data, since it displays two stand-alone features identified as contributing to the area's economic wellbeing (i.e. Asessippi Provincial Park and the Inglis Grain Elevators).

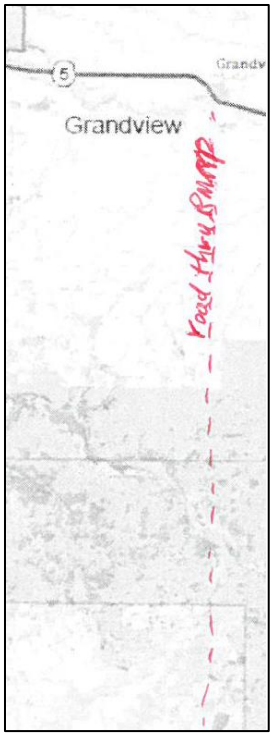

Figure 5 - One point of data

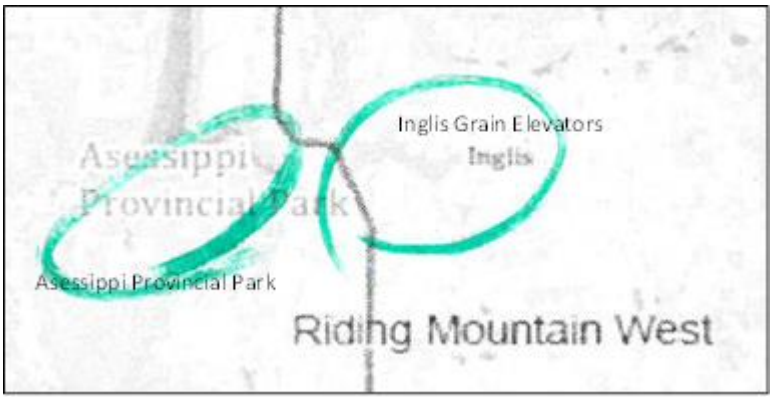

Figure 6 - Two points of data

Annotations in green were considered ‘positive’ points of data since they represented features participants thought contributed to the economic wellbeing of the RMBR. Annotations in red were considered ‘negative’ points of data since they represented features participants considered barriers to economic growth. 75% of data points collected on mapping activities were positive, representing features which participants’ identified as contributing to economic growth. 25% of

points of data collected on mapping activities were negative, representing features which inhibited economic growth.

Samples of participants' mapping activities will be discussed below, in order to illustrate the range of information collected on maps. Additionally, all participants' full mapping results can be found in Appendix D.

Several participants annotated RMNP and its administrative center in both green and red, indicating that the PA has multiple, complex economic effects on the landscape (in Appendix D, see P02, P03, P04, P08, P11, P12, P15). Some samples have also been included below to illustrate the different manifestations of this phenomenon. Some circled the entire park, as shown in Figure 9, while others only circled Wasagaming, the administrative and commercial center of the park, as shown in Figure 10. One participant simply underlined the name of the park in red and green (i.e. Figure 11). Notably, Figure 12 demonstrates how P02 annotated that the west of the park was "underdeveloped" in red but that this was also the "point of a national park" in green. In many ways, this unique annotation perfectly illustrates the challenges national parks face in fulfilling their mandate requirements of managing for both protection and the enjoyment of Canadians.

Figure 7 - Sample of participant`s mapping activity showing RMNP outlined in red and green

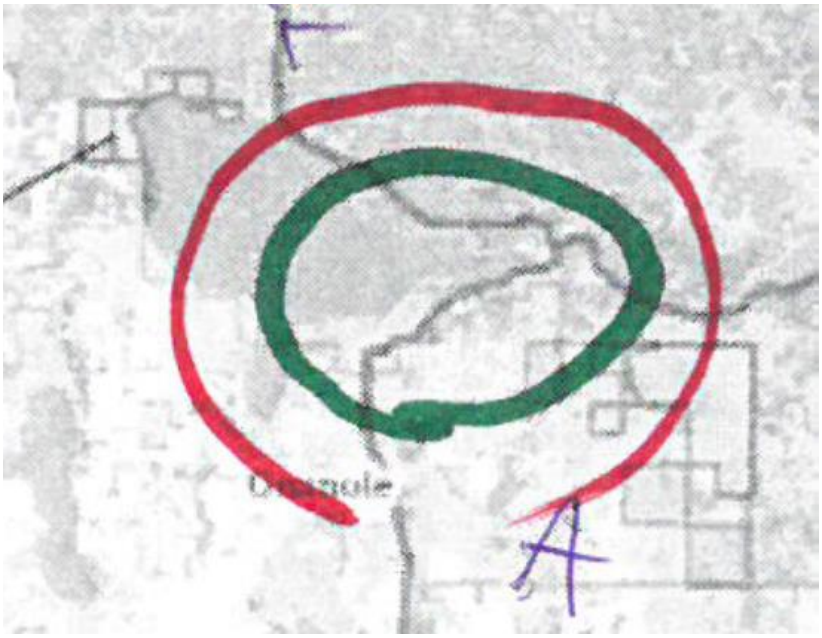

Figure 8 – Sample of participant's mapping activity showing Wasagaming circled in red and green

Figure 9 - Sample of participant's mapping activity showing the park name underlined in green and red

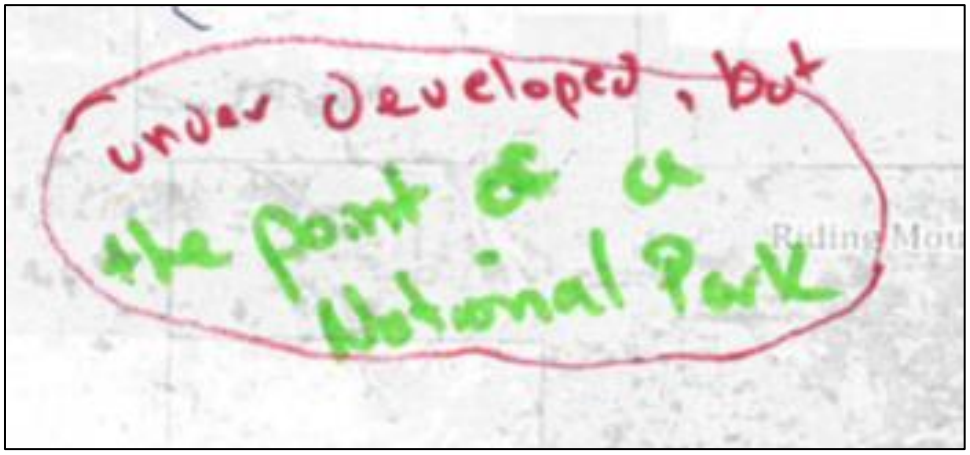

Figure 10 - Sample from P02's mapping activity

Occasionally, participants used spaces outside of the map boundary to make annotations. Often, this was to further clarify the annotations on their map. For instance, P10 clarifies that he has highlighted trails, campgrounds and day use areas on his map (see figure 13). In other instances, participants wanted to include features which were beyond the geographic extent of the RMBR's technical boundaries, because they felt these features were important to their community's economic wellbeing. P07, for example, included Lake Manipogo as an annotation because of the tourism it brings through her area (see figure 14). Meanwhile, P15 included Bunge, a canola processing plant, because of the number of people the plant employs in her

community (see figure 15). Multiple participants utilized the legend to make annotations, as exemplified in figure 16 (see also P14, P15, P16, P17 in Appendix D).

Figure 11 - Sample of P10's mapping activity

Figure 12 - Sample of P07's mapping activity

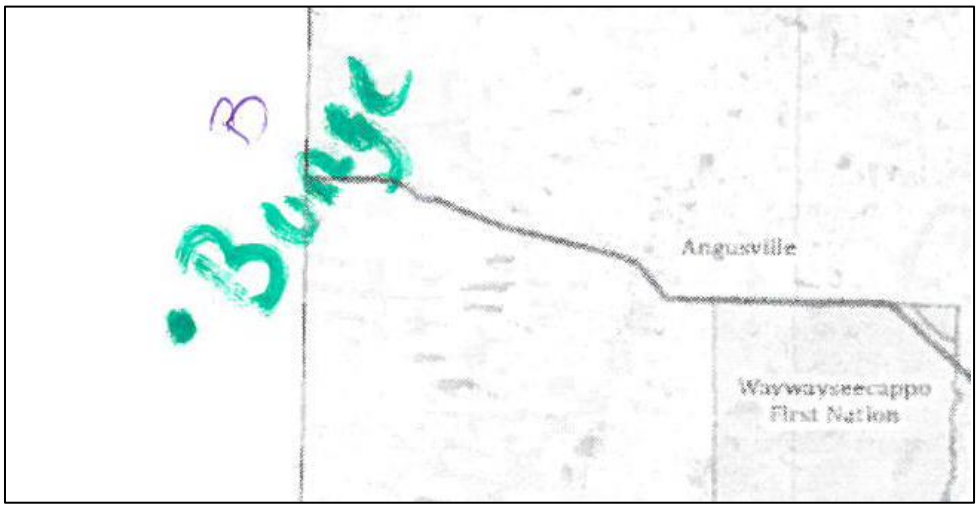

Figure 13 - Sample of P15's mapping activity

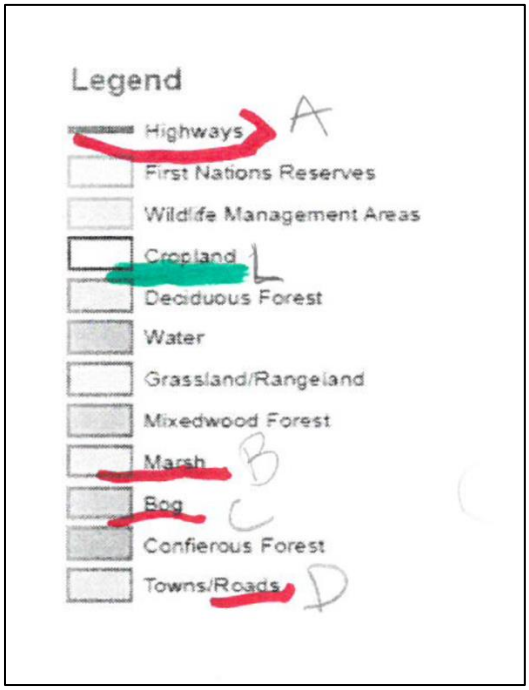

Figure 14 - Sample of mapping activity showing annotations made on the legend

Predictably, some participants limited their annotations to the section of the RMBR they inhabited and felt most familiar with (see Figures 17 and 18, on which the researcher circled the participants' zone of focus after the completion of the activity). Many, however, annotated broadly, and made observations pertaining to all corners of the RMBR (see Figures 19 and 20).

Notably, several participants chose to make no annotations in red, despite identifying negative economic impacts on their surveys (see P10, P17, P19, P23, P24, P27 in Appendix D).

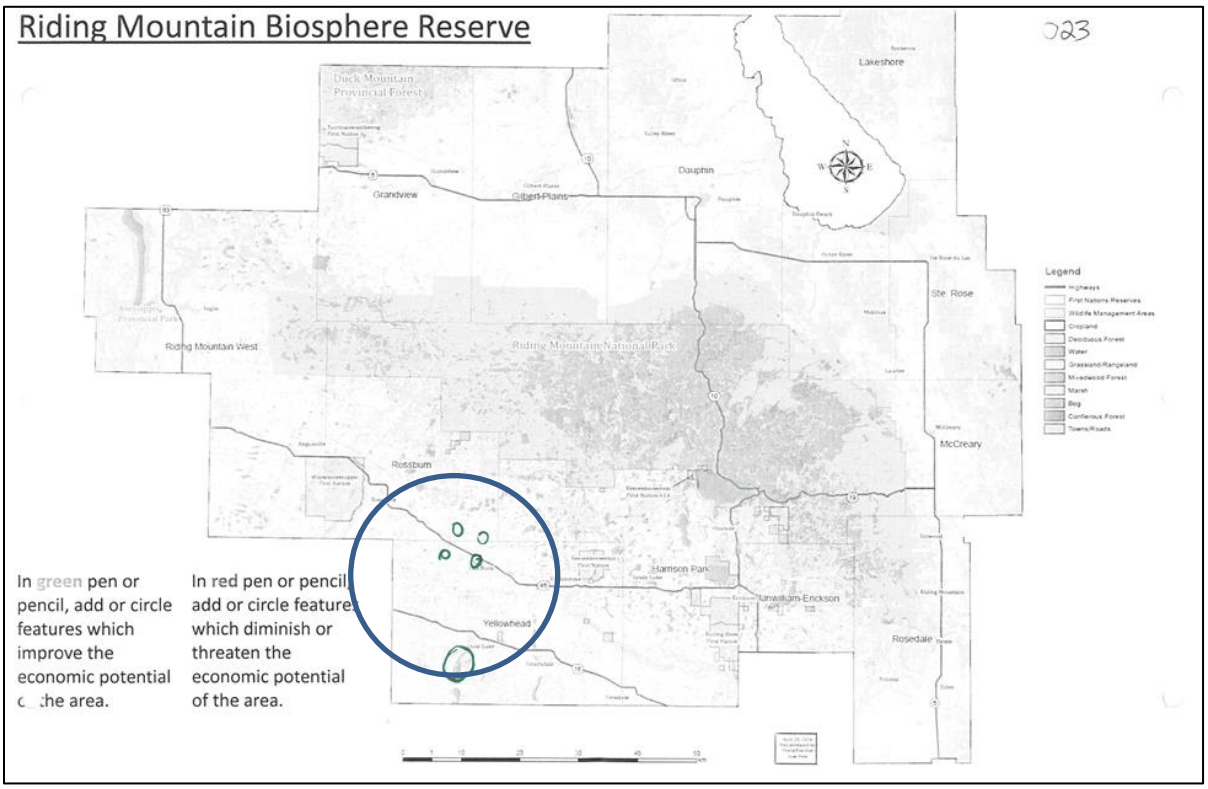

Figure 15 - Sample of P23's mapping activity

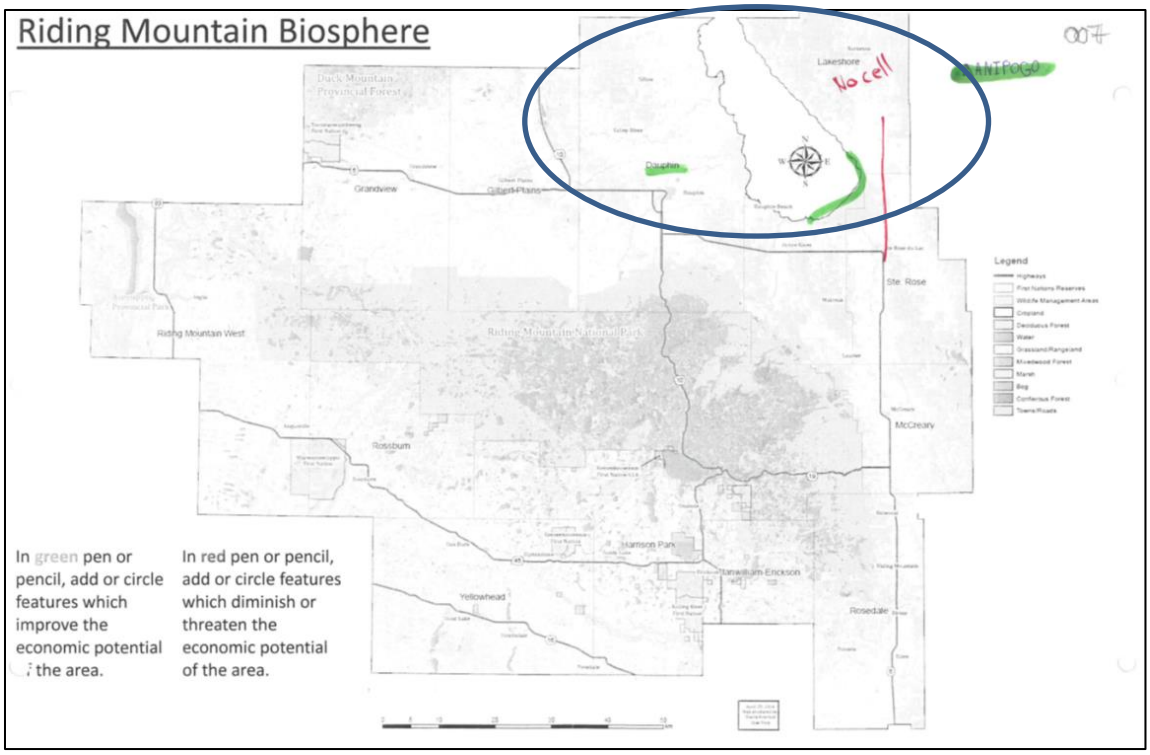

Figure 16 - Sample of P07's mapping activity

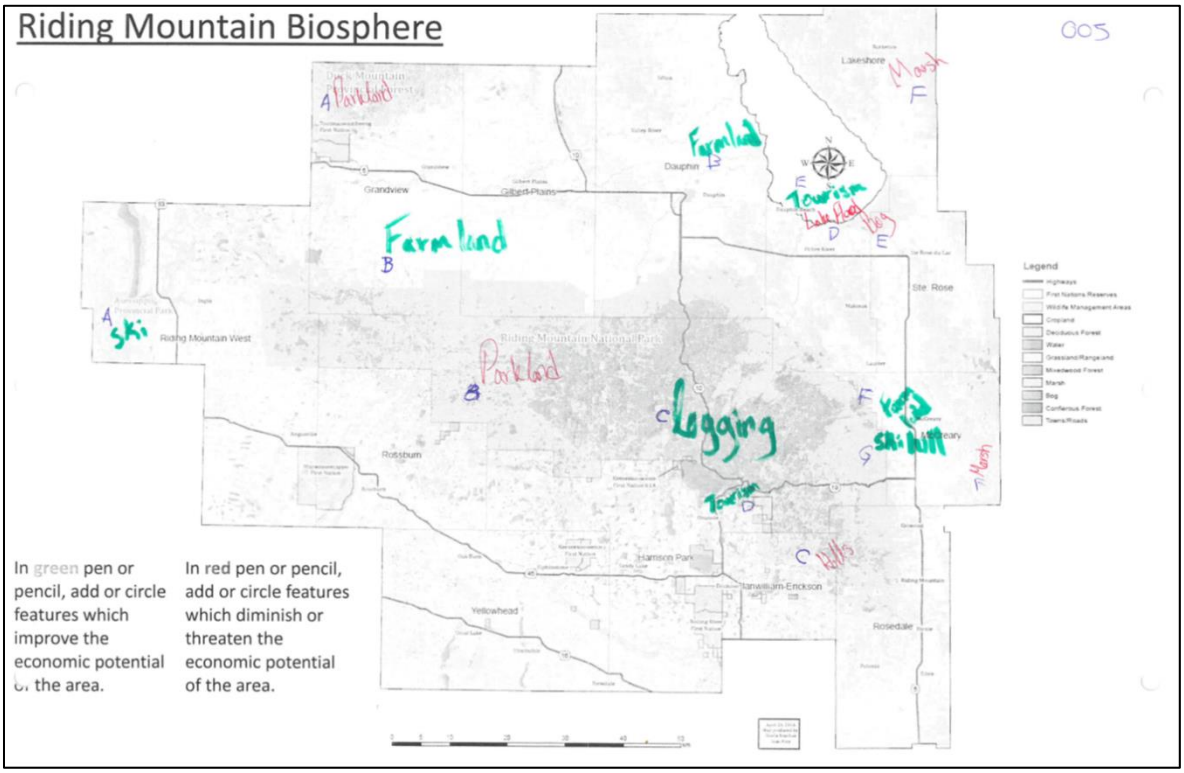

Figure 17 - Sample of P05's mapping activity

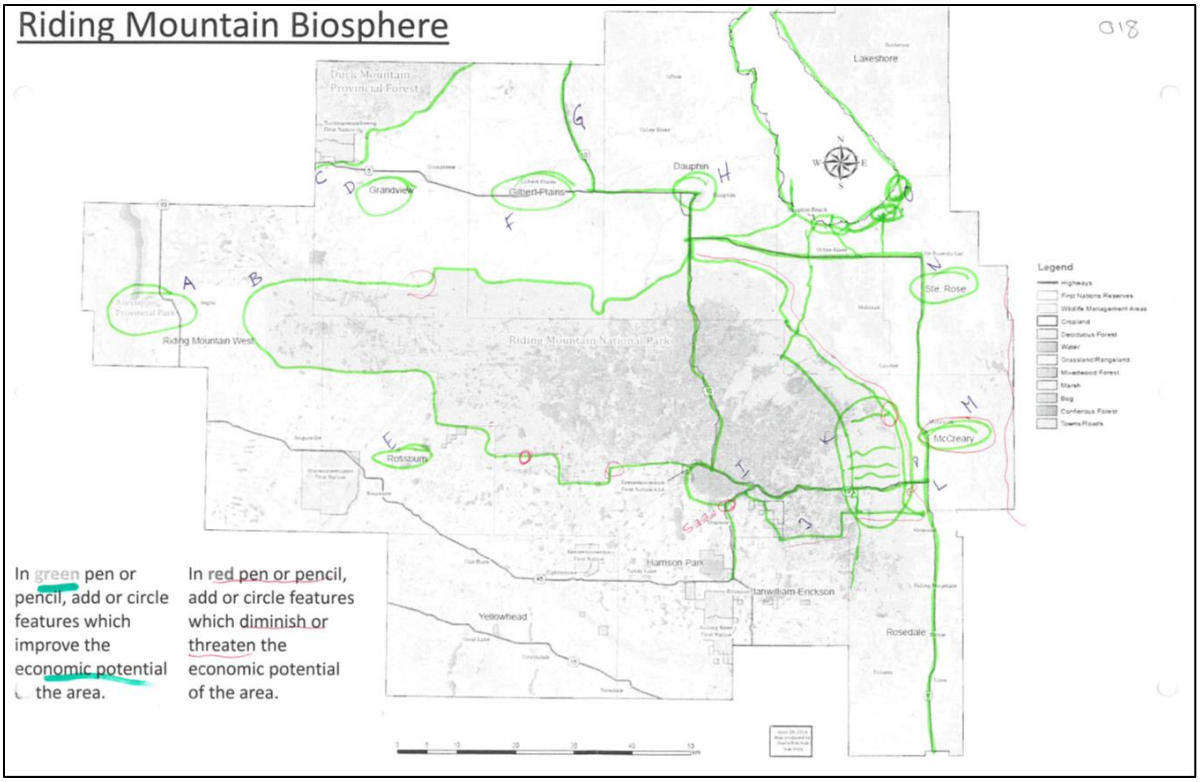

Figure 18 - Sample of P18's mapping activity

The impacts of participant attributes on their mapping activities were varied. Age did not factor significantly in how participants interacted with the mapping activity. On average, participants 18 to 40 years of age identified 8.19 mapped features, 5.94 of which were considered to have positive effects on the local economy and 2.25 of which were considered to have negative effects. On average, participants 41 years of age or older identified 8.72 mapped features, 6.90 of which were considered to have a positive effect on economic well-being and 1.82 of which were considered to have a negative effect. Gender factored more significantly than age in the way in which participants interacted with mapping activities. On average, participants who identified as female (n=13) marked 10.31 features on maps, 8 of which were considered to have positive impacts while 2.31 were considered to have negative impacts. On average, participants who identified as male marked 6.86 features on their maps, 4.79 of which

were considered to have positive impacts and 2.07 of which were considered to have negative impacts.

5.3.2 Comparing Maps and Surveys as Methods of Data Collection

Data collected through mapping activities demonstrated qualities which differed from data collected through surveys. One of these qualities related to the richness of depicted details. Figure 21, which showcases data collected from P26, exemplifies this richness of detail. We see that P26 has outlined a square circuit in green which begins in Neepawa, continues north on Highway 5 (turning west with the road), south on Highway 10, and finally east on Highway 19. P26 believes this circuit is ideal for experiential tourism due to its diverse physical and cultural landscapes. When asked why the circuit begins in Neepawa (a town which lies beyond the extent of the data sample presented in Figure 21), the participant indicated that this was the junction at which travellers going to RMNP or Dauphin have to make a decision to either continue west on Highway 16 or turn north on Highway 5. The participant further explained that anyone using Google Maps or global positioning systems to get directions to RMNP from the east is instructed to continue west on Highway 16 until they reach Highway 10. Although this is the fastest way into the park, it bypasses a number of small communities which could benefit from increased visitor traffic due to low population densities. If travellers were to turn north on Highway 5 in Neepawa, their route to the park would be more scenic and they might be encouraged to explore the area. P26's data also illustrates other points of concern, including the 'fortress mentality' of RMNP's administration within its centralized working location; the 'parochial' attitudes within the City of Dauphin's administration; and 'no value added regions' to the north of the biosphere reserve. When asked to clarify what was meant by 'no value added', P26 indicated the area was

missing opportunities to combine agricultural endeavours with natural energy sourcing since both activities require many of the same environmental conditions.

The sample shown in Figure 21 demonstrates the level of detail that can be retrieved from maps. On his survey, P26 excluded details he had included on his map. For example, P26's survey did not record the significance of encouraging visitors to turn north on Highway 5 in Neepawa, despite the importance of this idea to distributing the benefits of tourism more equally throughout the region. The details P26 provided about the repercussions of directions to RMNP only emerged while he was completing a mapping activity, demonstrating the ways in which mapping activities help to reveal spatial details useful in decision-making.

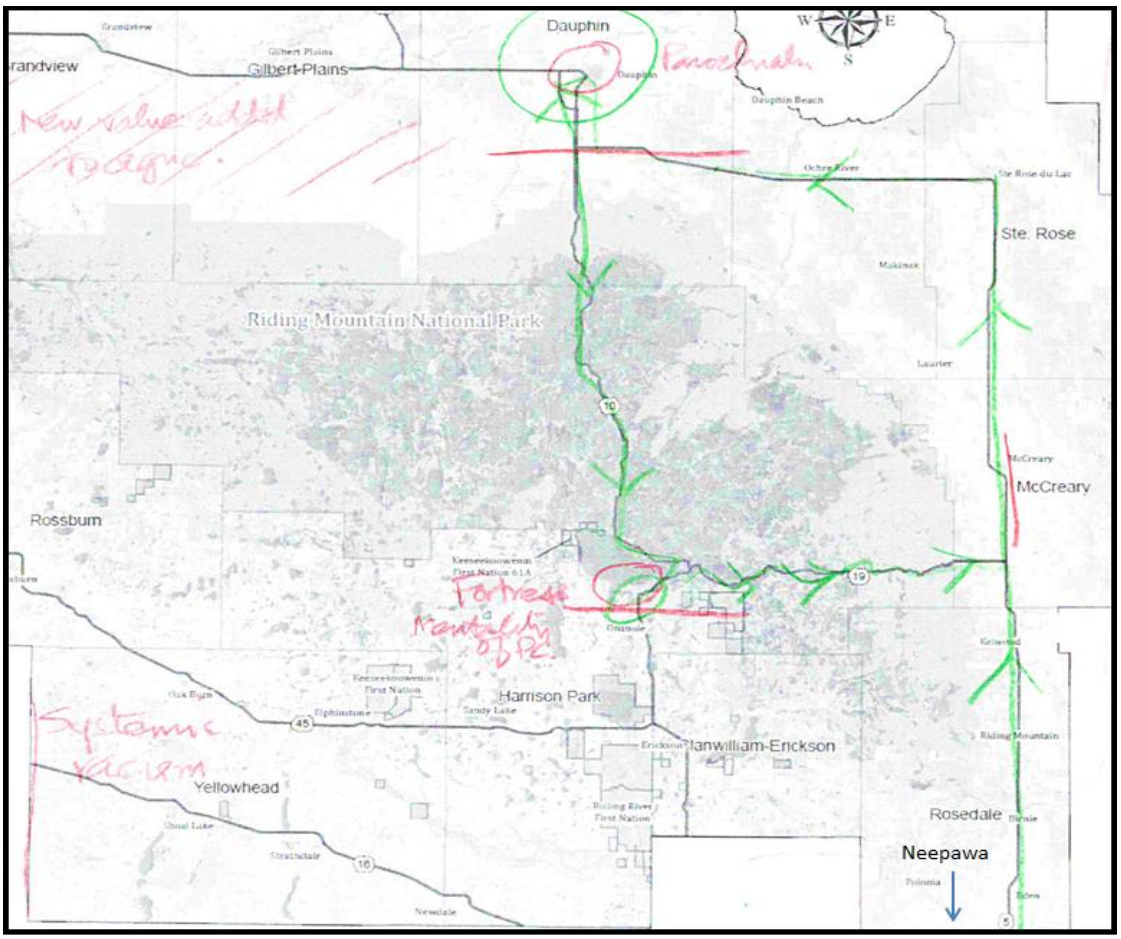

Figure 19 – P26 Mapping Activity Sample

Mapping activities also generated data that was more specific and actionable in nature than information collected through surveys, as demonstrated in Figures 22 and 23, which represent samples of P21's mapping activity and survey. The green box in Figure 22 contains all factors P21 recorded as economic benefits on his survey. Meanwhile, the red box contains all factors recorded as economic barriers on P21's survey. Figure 23 displays P21's mapping activity, with annotations in green marker indicating features contributing positively to the economic potential of the region, and with annotations in red marker representing economic barriers. As we can see, P21 spoke in broad, conceptual terms on his survey, indicating an 'increase of tourism' was positive for the region, while 'centralization' and 'government policies' were negative. P21's mapping activity, however, captures an entirely different set of economic factors. In Figure 22, we see that P21 marked pockets of flooding caused by beavers and the conditions of Highway 264 and Highway 45 west of Rossburn as features diminishing the economic potential of the area. Meanwhile, he marked features improving the economic wellbeing of the area as being the population bases in Waywayseecappo and Rossburn. While his survey related general, conceptual terms, the information recorded on P21's map was specific and actionable. Although the means may not be available, it is relatively easy to envision the steps to improving conditions on specific road segments and draining demarcated flooded areas, whereas it is less easy to understand and address trends like 'centralization', although no less important. Both the broader observed trends as well as specific information help to form understandings of a broader regional system.

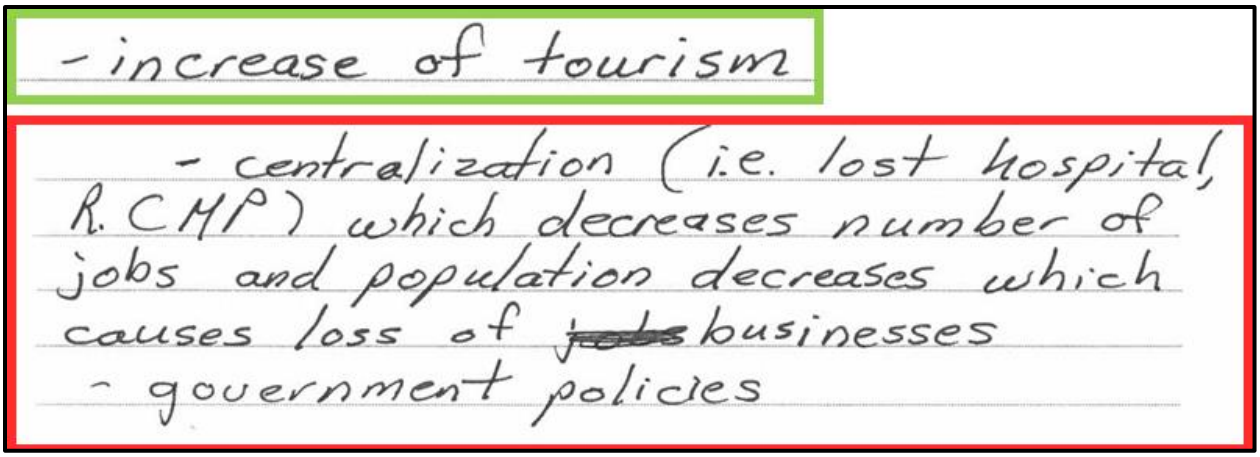

Figure 20 - Sample of P21's Survey

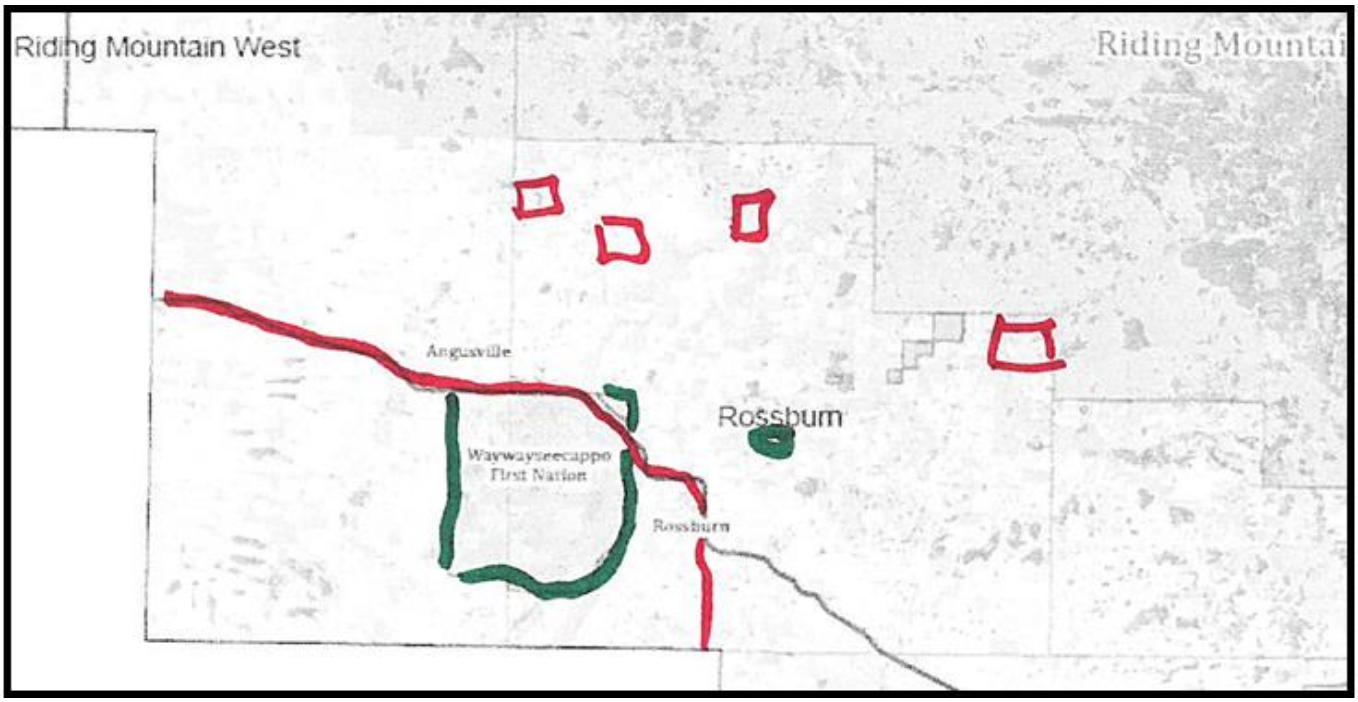

Figure 21 - Sample of P21's Mapping Activity

The location specific quality of information collected on maps is particularly advantageous to PA managers in the regional tourism planning context. Like P21, many participants indicated an 'increase in tourism' as a factor benefitting local economies. 'Tourism' is representative of a broad concept involving travel for pleasure or business. 'Increase in tourism' would indicate a trend towards increased numbers of people travelling to the area for leisure or business.

Although this is pertinent information, it is missing important details. We are still left to wonder what is generating tourism in the area. What are the tourism drivers of the area and where are they located? Mapping activities were more effective in capturing answers to these types of questions. For example, ten participants marked Asessippi Provincial Park on their maps in green, considering it to be a feature contributing to economic development due to the tourism it generated (P2, P5, P8, P14, P15, P18, P19, P22, P24, P25). Meanwhile, only one participant identified Asessippi Provincial Park as being a factor contributing to tourism on his survey. Maps naturally encouraged participants to think in more precise, geographic terms, and to identify concrete examples of broader concepts such as 'tourism generators'. This is helpful in matters of land management because it focusses the attention of decision makers on specific examples of success or failure present on the landscape, allowing them to concentrate efforts strategically.

While maps were better suited to capture specific information, surveys were better suited to capture trends and non-physical factors, particularly ones related to population dynamics. Maps sometimes failed to capture underlying non-physical factors. For instance, 5 participants indicate in their survey responses that there was a shortage of jobs and business opportunities in the area (P06, P11, P18, P24, P20). Participants who indicated these issues on their survey did not include this information on their maps. In fact, demographic trends and issues around employment opportunities were two of the elements that were almost solely addressed through surveys as opposed to mapping activities. Being visual representations, maps tended to encourage participants to think in terms of what already exists on the landscape, and to contemplate which existing features were useful, problematic or in need of attention. By not guiding participant

feedback with a visual representation of space, surveys allowed more room to think in abstract terms and contemplate less concrete elements of the region (e.g. a shortage of jobs).

In summary, surveys collected fewer points of data than mapping activities, and a larger percentage of these points were identified as barriers to economic development. Information collected on surveys was more abstract and related to perceived trends. Mapping activities collected more points of data than surveys, and a larger percentage of the data points were identified as features which benefit the economic potential of the area. Both mapping activities and surveys generated a greater number of points representing features or phenomena deemed to improve economic conditions than points representing features or phenomena considered detrimental. On the whole, mapping activities captured information that may be of higher value in certain management decision-making contexts because of its actionable and specific nature. Combining methods was advantageous because it captured clear and detailed information. The level of clarity and detail would likely have diminished if either method was omitted. Investigating maps and surveys as possible tools for PA managers to assess their role and place in the larger landscape may lead to surer ideas around the ways in which PAs can work with their surrounding regions to foster sustainable development.

5.4 Chapter Summary

Chapter 5 provided an overview of the data results. Section 5.1 involved an overview of survey results; section 5.2 highlighted themes from interviews; and section 5.3 involved a presentation of the type of results generated by mapping activities, and compared these results to those generated by surveys.

Information collected from participants during research sessions generated 112 codes, which were organized into seven broad categories: ‘Riding Mountain National Park’, ‘Infrastructure

and Services', 'Tourism', 'Environmental Concerns', 'Population Characteristics', 'Economics', and 'Direction of the Riding Mountain Biosphere Reserve'. Thematic tables were created for each category to guide analysis and better illustrate the way participant feedback was classified.

When comparing mapping activities to surveys, it is clear that both methods had strengths and weaknesses. Predictably, information collected through mapping activities was more location specific and actionable. Surveys were easy to administer and could be used to collect information on participant attributes as well as information directly related to the research topic. Surveys were also familiar to most people, and did not require much direction for completion. Meanwhile, mapping activities required slightly more time and direction to administer. The principle investigator had originally predicted participants would have varying degrees of comfort with the mapping activity, depending on their experience reading maps. Contrary to the researcher's initial expectations, however, none of the participants found it challenging to interact with a map of their region regardless of their occupation or background.

Mapping activities collected more points of data than surveys, 227 points of data as opposed to 150. They also collected a higher percentage of data points representing positive economic factors (i.e. 75% as opposed to 55%). Due to their spatial emphasis, mapping activities tended to collect data that was more precise and actionable that data from surveys. Data from surveys, however, was more apt to convey problems related to demographic trends and employment.

6.0 Discussion

This chapter discusses the research findings in relation to the RMBR region, PA governance in the RMBR and RMNP, and theory related to nature-society and conservation. The results described in the previous section will be further examined and critically analyzed in order to achieve a more comprehensive understanding of the potential contributions of the research. Section 6.1 comprises an analysis of results most closely related to the RMBR; section 6.2 consists of an analysis of the results as they relate to PA governance; finally, section 6.3 comprises an analysis of the results which connect to nature-society theory as it relates to PAs.

6.1 Analysis of Research Results Relating to Region

An objective of the research was to contribute to an improved understanding of economic-ecological intersections in the RMBR. As stated in the introduction, this involves investigating the way in which RMNP economically impacts jurisdictions in the RMBR; and informing the way in which the RMBR and RMNP operate so as to improve their community relationships while remaining committed to their conservation goals.

Overall, RMNP was considered to have positive effects on the economic well-being of the region. That said, most indicated that changes in park management approaches were required for the park to fulfill its economic and ecological potential. These changes primarily involved paying more attention to communities and amenities in the west of the park, as well as taking more steps to collaborate with communities around the boundary. In terms of management, both the RMBR and RMNP were criticized for favoring the Wasagaming-Onanole-Erickson area while overlooking the needs and potential of other communities. In the following paragraphs, the

research results will be analyzed in order to gain insights into the relationships between various actors within the RMBR.

Participants' perspectives on economic well-being were moderately affected by the municipal jurisdiction in which they resided. The mean annual income within the RMBR region was approximately $22 404 (Statistics Canada 2011). The average annual incomes of jurisdictions in the RMBR are listed in Table 14. Notably, all participants from municipal jurisdictions with average incomes lower than $22 404 indicated that tourism was an important factor in regional economic wellbeing, with most (n=7) indicating tourism-generated revenue contributed to their annual income. Furthermore, most (n=7) underscored RMNP as being an important driver of tourism within the area. All participants from jurisdictions with lower average incomes who were also occupied in both agriculture and tourism expressed concerns about the centralized nature of park activities and administration in Wasagaming (P10, P11, P12, P13). They felt that this approach discouraged people from visiting trails and campgrounds in other parts of RMNP and exploring the entire RMBR region.

Table 14 – Average incomes of Jurisdictions in the RMBR (after Statistics Canada 2011)

Jurisdiction	Average Income (in $CAD)
Tootinaowaziibeeng	10 766
Waywayseecapo	12 642
Rolling River 67	15 634
Rosedale	19 807
Rossburn	21 194
Lakeshore	22 288
McCreary	22 996
Ste. Rose	23 403
Yellowhead	23 638
Grandview	25 162
Gilbert Plains	25 485
Clanwilliam-Erickson	25 515
Harrison-Park	26 216

Riding Mountain West	27 478
Dauphin C	27 730
Dauphin RM	28 516
Keeseekowinin	N/A

The three most common areas of occupation among participants were tourism (n=8), conservation (n=7), and agriculture (n=6). Other areas of occupation among participants were: entrepreneurship (n=4), economic development (n=3), finance (n=2), skilled trades (n=2), health care (n=1), and politics (n=1). Two participants indicated they were students, and one was retired from politics. It is important to mention that 12 of 27 participants reported themselves as holding multiple occupations. P10, P11, P12 and P13, for example, reported they worked as tourism operators and as ranchers or farmers. Tourism appeared to supplement many incomes. 6 of 8 participants who reported occupations in the tourism industry also held other occupations: four in agriculture, one in economic development, and one in healthcare. Meanwhile, none of the participants employed in conservation and skilled trades described themselves as holding more than one occupation. The government, be it provincial or federal, is the chief employer of individuals working in conservation. Jobs tend to be relatively high paying and stable, which may explain why no participants employed in conservations reported additional occupations. There were no strong links between occupation and geographic location. However, several participants travelled far and frequently throughout the region in order to fulfill the obligations of their occupations.

There were no major disparities in the way participants holding different occupations rated economic opportunity and identified positive and negative factors in maps and surveys. People employed in the agricultural sector tended to rate economic opportunity in the RMBR as lower than others. This finding is somewhat negated, however, since on maps and surveys the same

people tended to identify more positive factors and fewer negative factors than the average. Participants occupied in tourism rated economic opportunity in the RMBR higher than others. They also identified more positive factors and fewer negative factors on maps and surveys. This may speak to the ingenuity and positive regional outlook that tourism practitioners require for success.

Results revealed that participants, particularly from jurisdictions with lower average incomes, supplemented their incomes with revenue generated by tourism. Specifically, those involved in the agricultural sector who also managed small-scale sustainable tourism operations expressed concerns over the centralized nature of RMNP's activities in Wasagaming. It may be constructive for RMNP to increase their efforts to consult and collaborate with small tourism operators in the RMBR. P15 indicated her tourism business would likely benefit from organized volunteer opportunities within parts of the park, in order to better cater to travellers in search of 'volunteer vacations'. She indicated that she draws some clientele by promoting the opportunity to volunteer on her farm, and she suspects that she could capture a wider market if she could also promote opportunities for visitors to volunteer in a Canadian national park. RMNP might consider developing a system in which guides and other tourism operators can register for permission to bring volunteers into the park to maintain trails. Alternatively, RMNP could host regular volunteer trail maintenance events which tourism operators could attend with clients. This would benefit tourism operators because it has the potential to increase their marketability. Meanwhile, RMNP would benefit from additional help in maintaining trails in areas which tend to receive less attention from employees due to operational constraints. Such an exchange creates closer connections between RMNP and the local tourism sector, exposes more people to different parts of the park, and encourages sustainable initiatives. Allowing for this type of active visitor

participation in the park also aligns with Weaver and Lawton's (2017) new park visitation paradigm, which is further discussed in section 6.3.

Several participants expressed dissatisfaction with the way in which RMNP collects park entrance fees. It was reported that fee rates were confusing and that it was unreasonable to expect visitors entering the park from the east or west to drive to Wasagaming or the North Gate to purchase a park pass. To address this, the park should improve their current system enabling businesses to sell park passes. Clear criteria for the size, location and type of business qualified to sell park entrance passes should be drafted and distributed throughout the RMBR in order to inform locals of the opportunity to work with the park. Furthermore details on the terms of contract, commission rates, and the application process should be made publically available so that those interested in selling passes know how to proceed. Businesses that qualify to sell park passes could also be provided with promotional materials to assist in their sales. Additionally, RMNP could help bring awareness to businesses selling park passes through social media, by listing them on their website as locations where visitors can pay entrance fees. Ideally, businesses near park entrances far from the North Gate and South Gate could be solicited to sell passes in order to better serve those looking to pay their entrance fees. The park would benefit from additional revenue, while businesses would benefit from additional traffic.

Many participants expressed a desire to see improved maintenance of trails and campgrounds in western and eastern areas of the park. Some participants reported that the well-being of their community was affected by the conditions of nearby trails and campgrounds. Furthermore, participants desired more opportunities to do trails on the north side. RMNP may want to focus efforts in trail and campground maintenance. P19 suggested that RMNP consider opening an 'epic trail' that connects the Sugarloaf trail to Central trail, and then connects Central trail to the

Ochre River trail, in order to span the length of the park from west to east. A copy of RMNP's trail map is included in Appendix E for reference. P19 indicated that 'epic' trails are more marketable since outdoor travelers are achievement oriented. They are looking for adventures they can add to their list of accomplishments.

Transportation and road signage were also reported to be in need of improvements. Specifically, the park should invest in larger, more visible signs promoting the East Gate National Historic Site, Gorge Creek, Burls and Bittersweet, and the Sugarloaf trail along Highway 5; and Deep Lake campground along Highway 45. To improve access to transportation, the park may want to collaborate with a transportation company to offer shuttles to different parts of the park, since some visitors might be without a vehicle.

In summary, the most prominent areas of occupations among participants were in conservation, tourism and agriculture. Overall occupations did not appear to significantly influence participant responses. While participants generally thought RMNP contributes to the economic wellbeing of the region, neglect of areas and amenities within the park was considered a factor limiting the potential of the area. This had a particularly strong impact on participants involved in tourism, who expressed a desire for the park to engage with their communities more frequently in collaborative initiatives. In decision making, RMNP should remain cognisant of their geographic extent, and give more consideration to communities that are near their boundary but far from their administrative center. The park should make consistent efforts to approach governing bodies and community organizations in rural municipalities, and First Nations around their boundary in order to exchange information on activities and priorities.

6.2 Analysis of Research Results Relating to PA Governance

The RMBR is a non-profit organization managed by a committee of representatives from the jurisdictions within it. Its stated mission is to "foster and encourage a sustainable community based regional economy, with high biodiversity, landscape, and social values, with Riding Mountain National Park of Canada as a key component" (RMBR 2016, pars 1). The general RMBR region encompasses multiple PAs with different types of governance frameworks as per the 2013 IUCN guidelines on the governance of PAs (Borrini-Feyerabend et al. 2013). RMNP, the central 'core zone' of the RMBR, falls under governance by the federal government; Asessippi and Duck Mountain Provincial Park fall under governance by the government of Manitoba; areas protected by farmers, land trusts and corporations fall under governance by private individuals and organizations. The following paragraphs will examine results to assess the RMBR's management in relation to top biosphere reserve success factors as identified by Cuong, Dart and Hockings (2017). These include stakeholder participation and collaboration, governance, and awareness and communication (Cuong, Dart and Hockings 2017).

The factor of 'participation and collaboration' was defined as the level of engagement and collaboration from the local community as well as public and private stakeholders (Cuong, Dart and Hockings 2017). One participant referred to the farmer's market held in the Onanole Recreation Center as a successful initiative by the RMBR to involve local vendors and communities. The participant remarked, however, that he would like to see the market occur in other jurisdictions as well, to allow a higher level of participation throughout the entire RMBR region. In similar manner to RMNP, participants felt the RMBR's direction was focussed in the municipalities of Harrison-Park and Clanwilliam-Erickson. The RMBR management committee

may want to consider holding more forums in jurisdictions on the west and north sides of the biosphere reserve in order to increase their level of participation and collaboration.

The factor of 'governance' was also considered to involve leadership, building partnerships and ongoing government and stakeholder support (Cuong, Dart and Hockings 2017). The concept of leadership in the region was discussed by a few participants. P26, for instance, indicated that a shortage of individuals willing and capable to take on strong leadership roles within the RMBR was the principle deterrent to the region's success, in consideration of all the resources and infrastructure already available. This posits a directional challenge, since strong leadership is subjective, and often contextual. A way to increase the probability of strong leaders emerging to take on important responsibilities within the RMBR organization, however, is to increase levels of awareness among residents. Many participants remarked that there was little understanding of the RMBR's role. The RMBR management committee may want to prioritize outreach activities focused on increasing awareness of their role and priorities. Outreach activities would also provide opportunities to solicit membership, bring attention to gaps in leadership, and request support. Carrying out these actions might create capacity within the RMBR to build leadership and improve on the factor of governance.

The factor of 'awareness and communication' was defined as the level of awareness around the biosphere reserve concept and the degree to which stakeholders have an understanding of their ownership and potential involvement of the program (Cuong, Dart and Hockings 2017). As mentioned above, understanding among participants of the role and activities of the RMBR appeared limited. Knowledge of the RMBR was reported to be especially low in the Rural Municipality of Yellowhead (southwestern quadrant), the Rural Municipality of Lakeshore (northeastern quadrant), and in the Rural Municipality of Grandview (northwestern quadrant).

While conducting the outreach activities suggested in the paragraphs above, the RMBR management committee may want to pay special attention to those locations. A key message to relay to residents of the RMBR region is that their participation in the program is desired and valued, as well as necessary for the program to function.

The remainder of this section will discuss RMNPs management practices, based on participant feedback, according to the IUCN's five principles for good governance: legitimacy and voice, direction, performance, accountability, and right and fairness. This is done, in part, to offer suggestions for protected area management, which may be applicable in other contexts.

The principle of 'legitimacy and voice' calls on PA practitioners to engage with stakeholder so that they are consistently informed, to ensure the maintenance of an open dialogue, and to "enjoy broad acceptance and appreciation in society" (Borrini-Feyerabend et al. 2013, p.59). For the most part, RMNP was appreciated by participants who, although recognizing there was room for improvement, regarded the park as being an important part of the regional landscape for its environmental and economic impacts. It should be noted, however, that P20 and P21 found RMNP's actions related to conservation initiatives were damaging enough to surrounding communities that the negative impacts of the park were larger than the positive impacts. Furthermore, many participants who had corresponded with park managers reported challenges in communication processes, primarily to do with delayed responses from managers, or no responses at all. PA managers should ensure their preferred avenues of communication are well known by parks employees and made clear on their website. Furthermore, communications can sometimes be lost because of disconnects between park employees managing different communication channels (i.e. phones, email, mail, fax, or in person communication at the visitor center). Personnel receiving communication from any of these channels should be well

coordinated to ensure communications and complaints directed to the superintendent are received.

Furthermore, although protected areas have multiple competing obligations, they should consider restructuring their operating principles to prioritize local stakeholder issues, so as to correspond with them in a timelier manner. Doing this will strengthen the park's relationships with local stakeholders, and may ultimately save the park time and resources. Stakeholders around RMNP's boundary are likely in a good position to inform the park of issues or concerns which may be overlooked by the central park administration. Strong communication between managers and these stakeholders may create a capacity for environmental monitoring that saves the park from needing to employ resources to verify remote locations around the park regularly.

The principle of 'direction' calls on protected area managers to evaluate and guide the results of their actions through regular monitoring, and that strategic visions demonstrate an "appreciation of the ecological, historical, social and cultural complexities unique to each context" (Borrini-Feyerabend et al. 2013, p.59). Some participants indicated that RMNP management had become more integrated and interested in the regional context in recent years. Nonetheless, neglect of certain areas and communities in and around the park boundary was a chief concern among participants. Park managers should consider improving their direction by undertaking regular annual consultations with the governments of rural municipalities and First Nations within the RMBR.

The principle of 'performance' encourages PA practitioners to maintain consistent reviews and evaluations of their management decisions and style, as well as to be responsive to stakeholders in a timely fashion (Borrini-Feyerabend et al. 2013). This principle requires management actions that align with those called for in the principles of 'legitimacy and voice'

and ‘direction’. To improve upon their performance, PA agencies should ensure that their avenues of communication are clear to external actors and well-coordinated internally; that they prioritize stakeholder issues; and that they regularly consult with adjacent jurisdictions to inform of their direction. The principle of performance may also be improved by the establishment of external mechanisms of evaluations. For instance, Parks Canada may have more success in ensuring their jurisdictions are performing well if they require them to send reports of their community consultations and communications to the national or regional office.

The principle of ‘accountability’ requires PA practitioners to seek feedback from appropriate bodies, and to prioritize answerability and reporting; as well as to make their reports and activities available to the public to foster transparency (Borrini-Feyerabend et al. 2013). As mentioned, some participants reported the park seemed indifferent to their community and business needs. RMNP and other PAs should consider publishing regular, comprehensive reports on community consultations on public forums, to demonstrate their commitment to stakeholders and to invite further feedback from any interested party. In mandating their PAs to conduct regular community consultations and subsequent public reporting, Parks Canada could meaningfully contribute to Canada’s Federal Sustainable Development Act. Furthermore Parks Canada would also be improving their adherence to the IUCN’s five principles of good governance.

Finally, the principle of ‘rights and fairness’ highlights the importance of not compromising the livelihoods of local actors, and ensuring there is active engagement with implicated actors (Borrini-Feyerabend et al. 2013). RMNP could improve upon rights and fairness considerably by consulting with all bordering jurisdictions equally, as opposed to focussing their efforts on communities along Highway 10 (i.e. Wasagaming and Onanole). Furthermore, the

superintendent and higher level managers (PM-05s) should consider participating in a self-organized information session on the jurisdictions within the RMBR. Examining information on average incomes, leading occupations, and tourism generators within adjacent jurisdictions may help managers have a better sense of how their decisions impact the area at large. These types of proactive actions may save the park time and expense in the long run since they decrease the chances of management making uninformed decisions that could lead to conflicts between the park and stakeholders.

6.3 Analysis of Results Relating to Theory

A third objective of the research is to make modest theoretical contributions to the geographic discipline of nature-geography by critically examining concepts of conservation, region and bounded space. As stated in section 1.1, this involves interrogating assumptions on conservation and nature in PA administrations. Specifically, by examining mapping and its results as a method of data collection through a theoretical lens, we are better able to understand how such a method might contribute to our overall perception of PAs and conservation.

The research builds upon existing literature on post-natural geographies by examining assumptions associated with conservation that are made evident in the administration of Canada's PAs, including RMNP. Furthermore, in examining an emergent data collection method, the research expands on ways of 'knowledge mapping' and of bridging between concepts of 'nature' and 'society'. Lastly, the research also emphasizes the capacity for mapping activities to ground and illustrate theory. These ideas are further described below.

Post-natural geographies take issue with assumptions around the idea 'nature' as being pristine and separate from society. Such assumptions are believed to be entirely subjective and to create tensions between what is conceptually 'nature' and what is not. This is evident in Weaver

and Lawton's (2017) discussion around what they dub 'second generation approaches' to park visitation. These approaches, they maintain, consider visitors as entities from which the park has to be protected. Weaver and Lawton call for a revised 'third generation' approach to visitation in which park visitors are encouraged to participate and integrate themselves into the park landscape. This discussion illustrates the subjectivity of perceptions of nature (e.g. the park being a 'natural' area requiring protection from 'unnatural' visitors), and how this can effect decision-making, particularly in the realm of conservation and sustainability. Instead of treating people and their environment as integrated, PA structures often operate on assumptions that the environment must be protected to maintain 'naturalness'. Although there are important and valid reasons for the ways PAs operate, their structures may also encourage people to see themselves as separate from 'natural' environments. Upon analysis of completed mapping activities, one gains important insights about participants' constructions of self and of PAs.

The ethical issues which accompany the qualification of nature and society as distinct ontological zones underscore a need to review representations of place, as well as how these representations are produced. In "Materialist returns: practicing cultural geography in and for a more-than-human world", Whatmore (2006, p.607) explains that "more-than-human styles of working" require two things: 1) "an urgent need to supplement the familiar repertoire of humanist methods that rely on generating talk and text"; and 2) a need to engage "knowledge practices and vernaculars beyond the academy in experimental research/politics." Whatmore (2006) points to the work of Gail Davies in 'deliberative mapping' as being an example of an operative "more-than-human" style of working. Effectively, Gail Davies (2003) pioneered a method of collecting information which brings members of the public and specialists together to discuss complex issues, and to 'map' deliberate opinions and values associated with certain

challenging phenomena. Perhaps against the general presupposition of a geographer, Davies use of the term 'mapping' does not relate to geographic mappings of values, but rather diagrams of held values.

To a degree, the research presented in this thesis attempts to meet Whatmore's call for innovative styles of working while also aligning with the geographer's spatial calling. By having non-experts and experts imbue maps of their regions with their held values and worldviews, mapping activities allow people to inscribe themselves into the landscape. There are underlying structures which constitute limitations, particularly the template of the map with which every participant was required to work. Nonetheless, allowing people to make annotations to these maps and contribute to them in creative, flexible ways permitted constructs of individual selves, communities and environments to manifest spatially. Furthermore, it also revealed that participants often associate the value and validity of PAs and conservation initiatives with the positive or negative character of their economic impacts, as opposed to their environmental impacts. For instance, P20 and P21 did not find the park's actions towards conservation valuable or valid because they felt their livelihoods and communities had suffered from them. Understandably, they felt it was unfair that their wellbeing should be second to species the park was interested in protecting, since they saw their occupation of space within the RMBR as equally legitimate.

The resulting maps generated by participants demonstrate the fluidity of boundaries, and illustrate the theoretical suppositions of Marston (2000), Thrift (2003) and Paasi (2002). Participants were cognisant of political and social boundaries, but their area mappings, knowledge formulations and landscape values were more entrenched in the physical-social structures of places. For an example of this, see Figure 14 (in section 5.3.1), in which P07

annotates outside the technical boundary of the RMBR to include Lake Manipogo, a feature which she perceives as important to her lifeworld and to the economic wellbeing of the region. Furthermore, mapping activities aligned with theoretical commitments of feminism, making it clear that agency was subject to political and social structures which determined individual interactions and access to the physical landscape and resources. For an example of this, see Figure 22**,** in which P22's annotation indicates a shortage of wheelchair accessible trails, pointing to the way in which lived experiences impact which elements of the landscape come to the fore. When it came to conceptualizations of RMNP, factors such as occupation, geographical location of residence, and age impacted the values placed on the park's role and activities

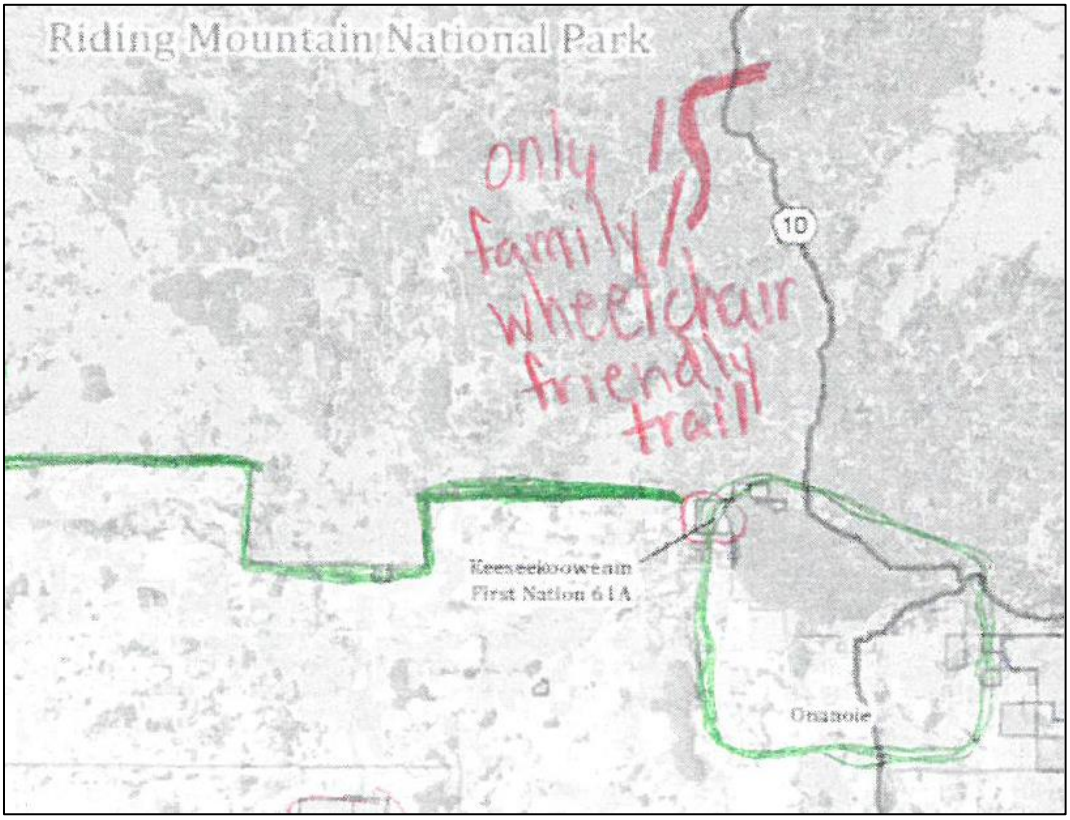

Figure 22 - Sample of P22's mapping activity

Maps have always had a capacity to communicate, illustrate and support theory. Dr. Snow, for instance, famously supported his theory on the origins of cholera in London with a map of the locations of cholera fatalities (Orford 2003). The maps generated by participants in this study support and illustrate theories in 'cultures of nature', most closely associated with the work of Bruce Braun (2002). The maps illustrates that 'nature' is contingent on individual perspectives. Every participant had a unique lens on what constituted a natural area, and the degree to which conservation in the region was legitimate. Where some saw natural areas that contributed ecological services to nearby places, other saw areas where physical features did not permit land-use change.

There are limitations to the degree to which the presented research can contribute to the sub-discipline of nature-society. Proponents of post-naturalism suggest current ways of conducting research and of knowledge forming are rooted in the nature-society binary, and as such, limit meaningful insights and actions. Some scholars have indicated a need to abandon notions associated with being human, since these imply that humans are 'denaturalised' and distinct from other organisms. It is no small task to reject ideas of humanism during a consultative mapping activity in an attempt to probe the human and nonhuman binary, however, particularly when activities are intended to be participatory and inclusive. As Haraway (1991) argues, humans are not self-made, and as such they have an innate desire to access and act out 'humanity'. The data collection methods used in this research do not attempt to dismantle human-nonhuman binaries, since eliminating the distinction between human and non-human overly complicates the task at hand.

Additionally, some proponents of post-natural ideas assert dualism and an over reliance on 'representation' detract from knowledge formation, since they imply that people can only

perceive rather than know. The implication of a researcher's agency, however, renders it challenging to carry out 'knowledge-mappings' through corporeality rather than through perception. Perhaps this requires a revision of how institutions traditionally carry out studies, including the relationships between 'researchers' and the 'researched'. Until then, however, it is challenging to remove the factor of perception from this study due to the embedded role of the researcher in collecting, analysing and presenting data. Despite these limitations, exploring participatory mapping techniques for data collection is valuable to theory since mapping activities overlay and intermingle the 'human' in the 'non-human', or the social with the physical. Mapping activities help researchers account for the fact that people are integrated into a physical landscape and interact with different variables depending on their geographic location. This is important in PA management because although stakeholders may share the commonality of owning land near the park boundary, they often inhabit different geographic contexts and interact with different variables from one another due to the expanse of the park. Accordingly, they have different requirements for maintaining successful relationships with park managers.

To summarize, mapping activities help to contribute to nature-society by providing an alternative to standard research methods, by revealing the way in which people inscribe their lifeworld into physical landscapes, and by illustrating facets of critical theory. The principle limitation of the mapping activity in the context of these theoretical contributions was its dependence on a pre-existing political map of the RMBR, which likely influenced what participants chose to record. Mapping activities can be useful to PA managers since they help to reveal the different variables local stakeholders contend with depending on their location around the park.

6.4 Chapter Summary

Chapter 6 discussed research results in relation to objectives pertaining to the RMBR region, to governance in the RMBR and RMNP, and to the contributions of mapping activities to post-nature theory related to conservation. At the regional level, section 6.1 discussed participant perspectives on economic opportunity, the role of RMNP, and the importance of tourism in relation to jurisdictions of residence and occupation. Furthermore, participant suggestions for RMNP management improvements were discussed. In section 6.2, participant feedback on the RMBR's direction was discussed in relation to Cuong, Dart and Hockings' (2017) top success factors for biosphere reserves. Additionally, participant feedback on RMNP's management was examined in relation to the IUCN's (2013) guidelines on good governance. In section 6.3, the potential of mapping activities were examined to provide an alternative to standard research methods, emphasising the way in which people inscribe themselves into the landscape.

7.0 Conclusions

This final chapter contains a summary of the thesis (section 7.1) and an overview of key contributions (section 7.2). Most importantly, it relates the researcher's recommendations with regard to objectives at the regional and governance levels. These include recommendations for RMNP management (section 7.3.1) and RMBR direction (section 7.3.2) as well as higher level considerations for PA organizations and decision-makers (section 7.3.4). The chapter also includes a section of final reflections and opportunities for research. It ends with the principal investigator's concluding thoughts.

7.1 Summary of Research

The central goal of this thesis was to investigate mechanisms for protected area agencies to identify and consider ecological-economic intersections within their regions. This required a critical examination of conservation practices through an investigation of local stakeholder perspectives. The current structure of PAs implies there is a discernable distinction between what is 'natural' and what is 'human'. Through a nature-society lens, we begin to deconstruct this assumption to achieve a more holistic understanding of the biosphere. It was important to investigate the relationship between PAs and socio-economic processes as part of a larger examination of conservation through a nature-society framework.

A case-study approach was used to examine ecological-economic intersections in the RMBR. Multiple methods were employed to collect data. Research sessions were held with 27 participants from the RMBR region. Profiles of the participants are laid out in Chapter 3. Research sessions included a written survey, a mapping activity and an interview, in that order. All research sessions were conducted in person. The mapping activity was developed and

pioneered as a method of collecting data on the economic relationships of PAs, in part to inform the tools PA managers employ for decision making and during community consultations.

To complete the mapping activity, each participant was given a black and white map of the biosphere reserve region which they were told they could mark up, as well as a colored map of the region as a reference. They received red and green pencils and were instructed to indicate features on the map which improved the economic potential of the area in green, and features which diminished the economic potential of the area in red. These instructions were also printed in the bottom left corner of the map handouts.

Research objectives were to investigate stakeholder relationships within the RMBR; to explore potential tools for PA managers to measure their local impacts; and to better understand the contributions of maps to PA management through a post-natural lens. The results of the research underscored the links between economic wellbeing and local consideration for biodiversity preservation, as well as the need for PA managers to approach stakeholder issues geographically. Participant responses demonstrated the degree to which their location in the biosphere reserve impacted their perception of the park and of the economic wellbeing of their area. Frequently cited concerns related to centralized administrations, poor infrastructure conditions, and a shortage of support for regional economic opportunities. Mapping activities proved useful in their capacity for generating specific and actionable information, which could be of high value to PA decision makers. From a nature-society perspective, the use of mapping activities allowed participants to directly inscribe their lifeworld into the physical landscape, and provided them with an alternative method of expressing their connections with the environment. This allowed unique insights into participant perceptions of self, of PAs, and of the region.

7.2 Recommendations

Recommendations have been developed based on aggregated research results, as well as specific comments from individual participants. They have been compiled according to the research objectives described in section 1.1. They are discussed in the following subsections. With relation to objectives at the regional level, sub-section 7.2.1 overviews recommendations to managers of RMNP, while sub-section 7.2.2 discusses recommendations to the RMBR's board of directors. Finally, sub-section 7.2.3 relates to objectives at a slightly broader governance level, providing considerations to PA agencies pertaining to community consultation and inclusive management.

7.2.1 Recommendations for Managers of Riding Mountain National Park

The following recommendations are made with the intention to strengthen relationships between RMNP and its nearby communities, and to assist RMNP in fulfilling its obligations to stakeholders while remaining committed to conservation.

- *Recommendation 1: In decision-making, RMNP should give more consideration to communities that are near their boundary but far from their administrative center.*

One of the most frequently cited concerns among participants, regardless of their jurisdiction of residence, was the perceived neglect of park areas that were not near Wasagaming. This was seen to be unfair to communities around the boundary since they did not receive the same quality of park services as communities near Wasagaming. Consistent efforts on behalf of park managers to approach governing bodies and community organizations in rural municipalities and First Nations around RMNP's boundary allows for the exchange of information on agents' activities and priorities. By consulting adjacent jurisdictions to assess their impacts and the

condition of amenities they hold at a distance from the park administration, RMNP might improve their capacity for environmental scanning.

- *Recommendation 2: RMNP should consult and collaborate with small tourism operators in the region to allow for increased participation in 'park enhancement activities'.*

Participants with occupations in tourism expressed a desire for more opportunities to bring clients into the park as volunteers. Furthermore, Weaver and Lawton (2017) indicate that measures towards encouraging visitor participation in on-site 'park enhancement activities' are necessary to progress meaningfully in conservation. Collaborating with small tourism operators is one means of accomplishing this task.

- *Recommendation 3: RMNP should create a clear, publicly available set of procedures for businesses wanting to apply to sell park passes.*

The procedural document should include detailed criteria for the size, location and type of business qualified to sell park entrance passes. Additionally, the terms of contract, commission rates, and the application process should be made available online so that those interested in selling passes know how to proceed. Once the document has been created, it should be distributed to the municipal governments of the jurisdictions which border the park for dissemination, so as to inform locals of the opportunity to collaborate with the park. RMNP could also request that an organization such as the RMBR distribute the document to their mailing list.

- *Recommendation 4: RMNP managers should employ strategies to inform park visitors of the activities and amenities available in communities around the park boundary, as well as of regional tourism organizations.*

The inequity between the benefits different jurisdictions derive from their closeness to the park was frequently mentioned during research sessions. Wasagaming, Onanole and Erickson

were seen to benefit from RMNP more than other communities due to their location along Highway 10. Although communities along major thoroughfares always benefit from a higher volume of traffic, RMNP could use various strategies to inform people of the communities which exist outside the park boundaries. For instance, RMNP has a *How to Get There* page on their website which directs visitors to the park from locations within the area at large, such as Winnipeg, Saskatoon and Banff (http://www.pc.gc.ca/eng/pn-np/mb/riding/visit/visit1.aspx). The directions are simple and undetailed, and follow primary thoroughfares. While there is value to listing the most uncomplicated routes, there is also an opportunity to offer information on alternative routes to the park which bypass communities that might not otherwise receive tourism traffic. RMNP could to collaborate with regional tourism organizations to promote scenic or themed routes to the park, as well as activities and businesses in nearby communities. Parkland Tourism, for instance, offers a number of publications on themed 'trails' in the parkland region (Parkland Tourism 2012). Promoting these kinds of activities on webpages intended to assist visitors in planning their trips is a collaborative approach to trying to bring more tourism benefits to communities off of principal thoroughfares.

7.2.2 Recommendations for the RMBR's Management Committee

The following recommendations are made with the intention to assist the RMBR in fulfilling their mission to "encourage a sustainable community based regional economy, with high biodiversity, landscape, and social values, with Riding Mountain National Park of Canada as a key component" (RMBR 2016, pars 1).

- *Recommendation 1: The RMBR Management Committee should employ strategies to increase awareness of their role and activities among all their member jurisdictions.*

Several participants observed that there was little awareness of the RMBR's function throughout the region. The RMBR may benefit from strategies to increase awareness of their role among residents in member jurisdictions. The RMBR should consider setting up meetings, in person or over the phone, with municipal government officials and band offices in rural municipalities and First Nations in order to provide them with information on the organization's priorities and upcoming activities. This will help open lines of communication and facilitate interactions, so that actors interested in pursuing collaborative initiatives with the RMBR, or who would like to participate in the RMBR's planned activities, will have an easier time connecting with the appropriate actors. Since a component of the RMBR's purpose is to encourage sustainable economic development, ongoing communication with economic development groups of member jurisdictions should remain a priority. As a volunteer-run organization, the RMBR is limited in its capacity to commit financial and human resources to projects. Increasing their connections with governments and organizations throughout the area, however, may aid them in acquiring more interest, resources and volunteers to assist with their activities.

- *Recommendation 2: Expand upon the success of 'At the Farm Gate' to assist other RMBR jurisdictions in hosting sustainable farmers' markets.*

Complementing the current market in Onanole with a travelling market in other locations throughout the RMBR, in rural municipalities and First Nations groups interested in collaborating to host the event could prove useful to both the RMBR program and individual jurisdictions. In addition to giving communities guidance on measures for successful markets, the RMBR might benefit from added exposure throughout the region. The RMBR could also partner with the Manitoba Agri-Food and Rural Economic Development Division and public health inspectors to assist communities in growing the capacity to set up farmers' markets, since

these are often a viable revenue generating options for small businesses seeking to supplement their income.

- *Recommendation 3: Establish forums for member jurisdictions to share information related to biodiversity conservation, sustainability and economic development.*

The creation of a community page on the RMBR website on which actors could share information about activities, plans and events of interest, could contribute to a stronger sense of community between neighbouring jurisdictions. Since community economic development organizations are required to be internally oriented, they do not invest significantly in information sharing with other jurisdictions, or cross-promotions. An agent with the capacity for more collective action across municipal boundaries would be a valuable addition to the region. Furthermore, the RMBR management could utilize a digital common space to inform municipalities and First Nations about their planned activities and priorities, and perhaps to share information about sustainable practices pertinent to the area.

- *Recommendation 4: Investing in a vehicle to serve as a travelling storefront.*

Participants suggested the RMBR incest in a vehicle to serve as a travelling storefront. The RMBR currently occupies an office in Erickson which, although useful, does not give the organization much visibility throughout the region. A vehicle serving as a travelling storefront would give the RMBR committee more mobility and increase their presence throughout the area.

- *Recommendation 5: Partnering with regional actors to run a cultural foods festival*.

In a similar fashion to a Farmers' marker, a food festival allows small, local foods businesses to showcase what they offer. Furthermore, festivals were seen to be an important component of economic wellbeing in the RMBR due to their capacity to draw in visitors. A celebration of local

foods could be used as an opportunity to share information about agriculture and its dependence on ecosystem services with festival attendants.

7.3.3 Recommendations for Improved PA Management

The following recommendations are made with the intention of improving PA management throughout Canada. Although the findings were generated from a single case-study, some may be relevant in broader protected area management contexts.

- *Recommendation 1: Protected Area managers should employ mapping approaches in park management decisions to maintain an awareness of their geographic expanse and wider regional context.*

One of the most commonly cited points of concern among participants stemmed from the inequity among regions regarding the administration of the park. As P18 indicated, park actions and inactions had direct effects on the wellbeing of communities. Participants from jurisdictions at a distance from Wasagaming felt the park overlooked the maintenance of trails and sites near them, disregarding the importance of these features to their communities. This underscored the importance of geographic approaches in park management decisions. When a park is as large as RMNP, it is natural for managers to be more familiar with one area over others. In the case of RMNP, the administration is based out of Wasagaming. Although central administrations are practical, they may contribute to a tendency to overlook the extent of a park's impacts.

- *Recommendation 2: Protected Area Managers should prioritize the maintenance of relationships with the jurisdictions which border them.*

To avoid creating or contributing to negative stakeholder relationships, jurisdictions and communities around a park's boundary should feel that there are open lines of communication between them and park managers. To maintain consistent contact, park managers should engage

in regular initiatives to exchange information with governing bodies of jurisdictions and communities which border them. Keeping open lines of communication also aligns with the Federal Government's *Policy on Communications and Federal Identity* (Government of Canada 2016). The policy advises that federal agencies "should consider the views and interests of the public when developing policies, programs, services and initiatives," and that communications with the public should be "non-partisan, effectively managed, well-coordinated, clear and responsive to diverse information needs" (document sections 5.2.1 and 5.2.2). Meeting with residents in communities around PA boundaries is an important component of fulfilling these policy requirements.

- *Recommendation 3: Park Managers should integrate mapping activities in face-to-face consultations with local stakeholders.*

Integrating mapping activities in face-to-face consultations about economic wellbeing in the RMBR region proved useful, and helped generate location-specific actionable information. As demonstrated, maps uncovered information that surveys did not, and information tended to be more precise. Maps increased understanding between the researcher and the participant, since they could be used as a common reference. Furthermore, while completing mapping activities, participants recorded more positive features. Thinking in positive terms is helpful to decision-making processes, since it allows those participating to underscore, encourage and possibly protect elements of the landscape perceived as valuable. PA managers in other contexts and field units may find it helpful to include similar mapping activities related to their regional contexts in consultations with stakeholders.

Understanding stakeholder locations and contexts, and the way in which geography will affect the distribution of outcomes of PA management decisions, is essential to successful conservation

since conservation is contingent on collaborative social action. To better understand stakeholders and to maintain constructive relationships with them, it is suggested PA agencies regularly undertake systematic community consultations and subsequent self-reporting.

7.3 Key Contributions

The key contributions of the research involved 1) documenting some of the economic-ecologic interconnections in the RMBR; 2) providing recommendations to RMNP and the RMBR with regard to management decisions; 3) exploring tools to help PA managers in decision making, and; 4) examining the potential of mapping activities in illustrating critical theory and questioning current assumptions on PA structures.

The findings of the research are expected to contribute to the literature on effective PA management, and to clarify the ways in which parks impact their surrounding communities. The principle investigator also expects to draft an executive summary of recommendations for managers in RMNP and for members of the RMBR. The summary will highlight any observations or recommendations which might better help them fulfill their mandates. Since the research relates to strategies for regional integration, the results may also help strengthen partnerships between regional actors if additional work is done to involve them in discussions about results and recommendations in order to share information and solicit feedback. The economic conditions within the RMBR stress the importance of accountability and inclusivity in matters of conservation within the area. From a theoretical perspective, the results may contribute to a discussion about diversifying data collection methods to better enable individuals to express their interactions with the physical environment. Through spatial and visual approaches, maps have the capacity to unify elements of the landscape generally considered ‘social’ with elements of the landscape generally considered ‘natural’.

7.4 Final Reflections and Opportunities for Future Research

The following section details the strengths and limitations of the study. Additionally, it suggests opportunities for future exploration related to some of the questions that arose during the research.

Although this study provided insights into the ways geography and agent location determine the felt and perceived impacts of PAs, additional research is required to affirm findings due to the small sample size (n=27). The study's sample was diverse enough to collect a range of perspectives, but if funding and time permitted, it would be valuable to return to the field to conduct additional interviews with individuals from the jurisdictions the researcher was not able to access (e.i. Tootinaowaziibeeng, Keeseekoowenin, Rolling River), from lower income jurisdictions, as well as individuals occupied in health care, since these populations were proportionally underrepresented in the sample.

In order to better gauge the value of geographic approaches to PA impact assessments, it is important to employ a similar methodology involving mapping activities in other PAs in Canada in order to understand how geographic contexts may impact results. Furthermore, it would be valuable to test the methodology in PAs of different sizes as well, to investigate if scale impacts the utility of mapping activities in community consultations.

In terms of methodology, it may be worthwhile to discuss the base-map with participants who have already completed the activity to assess how they found it facilitated or limited their contributions. For research with more theoretical inclinations, it could be interesting to examine how prescribed base-maps affect information collected. For example, how might a base-map that only includes political boundaries collect information differently than a base-map that only includes waterways?

A methodological limitation which became increasingly apparent throughout the research process was the mapping activity's reliance on a positive-negative (or green-red) binary. As demonstrated, several participants highlighted elements of their map in both red and green, because features had complex impacts on the environment and the economy. Constraining participants to expressing themselves in 'red and green' terms may have oversimplified issues at hand. Furthermore, employing the 'positive-negative' binary appears at odds with the holistic approach to the environment which frames the research, which, in-part, seeks to reject nature-society binaries. The advantage of having participants identify features in red or green, however, is that it simplified data analysis by making it apparent which features were deemed assets and which were deemed barriers. If the mapping activity could be tailored and tested in the future, the researcher would include a neutral color for participants to make annotations which do not need to be considered positive or negative.

The use of a base-map likely influenced people's construction of space and freedom of expression. While mental maps allow people more freedom of expression, they are challenging to interpret and the information recorded on them may be less actionable. In this research context, the base-map proved useful because it helped solicit detailed annotations that were easy to interpret. These qualities are important when one considers using such an activity for protected area decision making.

At the regional level, there are opportunities for research in industry, especially in renewable energy. Multiple participants indicated an interest in the renewable energy sector, suggesting that the RMBR had qualities well suited to specific industries (solar, among others). Two participants indicated a desire to invest in renewable energy initiatives. Furthermore, another participant suggested the RMBR would be an ideal location to research ways of combining

agricultural endeavours with technologies to generate renewable energies. Researchers interested in investigating renewable energy would likely find cooperative and engaged individuals to work with throughout the area. Preliminary research gaging the feasibility of solar power in various locations throughout the RMBR would likely be of value to several agents.

Activities involving wildlife were considered a prominent tourism driver within the region. This clearly illustrates the way economies and ecology overlap. To protect the revenue generated from tourism, regional actors must protect wildlife. Research designed to better understand and meet the needs of species that inhabit the RMBR will help inform regional actors on ways of sustaining biodiversity and wildlife, as well as their associated industries.

7.5 Concluding Thoughts

PA management is complex, and it is challenging to determine which of many competing priorities takes precedent. Without regional integration, however, what is achieved inside of PA boundaries becomes redundant. Understanding and accounting for the broader landscape should always remain at the fore of PA management decisions. Achieving this, however, is easier in theory than in practice.

Parks Canada has indicated their agency is committed to stakeholders and openness in their communications with the public (Parks Canada 2014). Furthermore, the Federal Government's *Policy on Communications and Federal Identity* indicates government should "engage with Canadians and use innovative methods when developing policies, programs, services and initiatives" (section 5.2.3). Investigating and employing mapping activities in regular community consultations is one way in which Parks Canada can ensure they are adhering to policy requirements and increasing their accountability to stakeholders. Using maps to collect information generated useful and precise data during this study. More importantly, it increased

levels of understanding between the researcher and the participant since maps were used as points of common reference throughout research sessions. Furthermore, mapping activities appeared to be widely accessible to participants. None expressed difficulties understanding the activities and interpreting the map.

Perspectives revealed by participants during mapping activities also served as a reminder of the inextricability of economic wellbeing from the physical environment. The depletion of walleye fisheries in Lake Dauphin, for instance, as well as the effect of fragmented landscapes on farm size in the north of the biosphere reserve, are two clear examples of the area's ecological-economic interrelations.

A company whose activities have large impacts on an area's resource availability is expected to take on corporate social responsibility for ethical reasons. Similarly, PA agencies whose activities substantially impact a region's access to resources should be expected to engage with local communities for ethical and practical reasons, in view of local actors' implicit role in regional conservation. Despite this, there is a discernable absence of communication from Canada's national PA agency regarding its jurisdictions' respective regional impacts. One explanation for this absence may lie in internally-oriented management approaches, which are common among PA administrations (Eidsvik, 1984). PA managers are responsible for demarcated parcels of land, and their funds are to be spent on activities and infrastructure within those lands (Eidsvik, 1984). The framework in which they perform their roles does not encourage them to engage in sustainable development outside of PA boundaries, despite its importance to overall ecological integrity. Internal and external perceptions of PAs as bounded space may need to be reviewed in order to make meaningful progress in the realm of conservation. If long-term conservation goals are to be achieved, it is important to investigate

whether park managers should be given more leeway to invest funds and resources in sustainability initiatives adjacent or near PA boundaries in order to encourage regional integration.

To conclude, participants in this study were remarkably helpful and open to discussing factors impacting their wellbeing. They expressed a desire to engage in communication with the park, and to participate in more joint initiatives throughout the biosphere reserve. Overall, individuals were committed to their area and enthusiastic in sharing plans for improvement. Considering participants' positive outlooks, innovative ideas and encouraging words, RMNP and the RMBR would likely benefit significantly from increased consultations with regional stakeholders.

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Appendix A: Survey Handout

Research Survey: Economic Opportunity in Riding Mountain Biosphere Reserve

1) Select your age from the options below with a checkmark. (E.g.: If someone is 52 years old, she should select her age to be '49-58 years'.)

☐ 18-40 years ☐ 41-60 years ☐ 61-80 years ☐ 81 years or older

2) What is your gender?

_____

3) Do you live in Riding Mountain Biosphere Reserve? ☐ Yes ☐ No

4) If you answered 'Yes' to question 3, since which year have you lived in area which is presently designated as the Riding Mountain Biosphere Reserve?

_____

5) What is/are your occupation(s)?

_____

_____

6) Do you work in Riding Mountain Biosphere Reserve? ☐ Yes ☐ No

How would you rate economic opportunity in Riding Mountain Biosphere Reserve?
1 2 3 4 5

What do you consider to be factors helping the economy in Riding Mountain Biosphere Reserve region?

_____

_____

_____

_____

What do you consider to be barriers to economic opportunity in Riding Mountain Biosphere Reserve region?

_____

_____

_____

_____

Appendix B: Code List

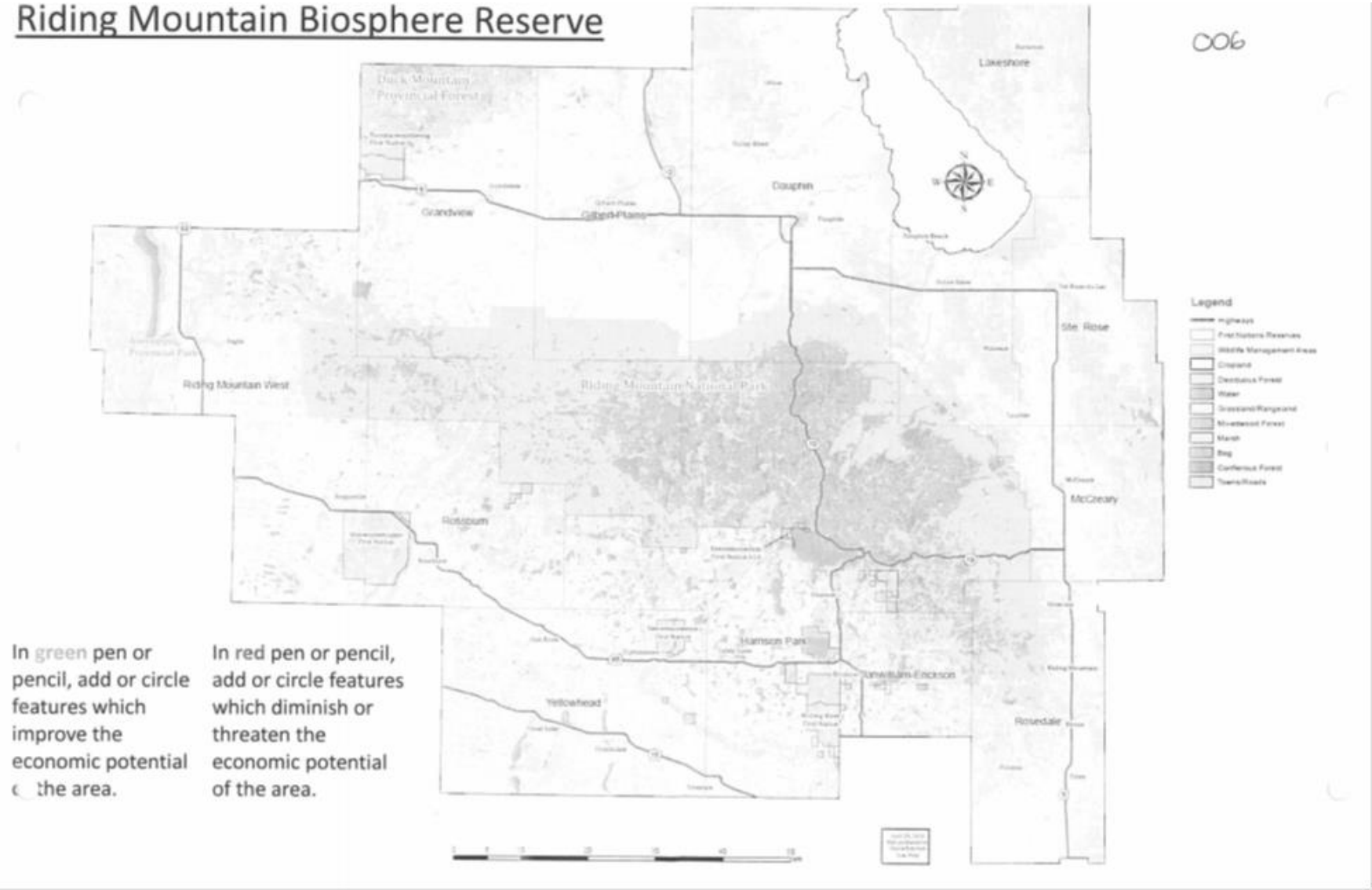
Codes Generated from Research Sessions

Code	Participant Identifiers
Access to services	P01, P06, P17, P19, P23, P27
Aesthetic landscapes	P10, P11, P15, P19, P22, P26
Agassiz ski hill	P09, P18, P20
Agricultural Pollution	P02, P10
Agriculture (limited in ability to contribute to economic growth)	P02, P09, P10, P19
Agriculture (positive for economic growth)	P02, P03, P05, P09, P14, P18, P20, P23, P25, P27
Area purchased for conservation	P21
Arrow Lake	P14, P16,
Asessippi Provincial Park and ski resort (as a generator of tourism)	P02, P05, P08, P14, P15, P18, P22, P24, P25
Availability of jobs in conservation	P18, P24, P11, P25
Baldy Lake	P11, P12
Barriers to working with Parks Canada	P11, P13, P15, P16, P18, P22
Better use of the RMBR designation	P09, P13, P15
Birding	P08, P18, P20
Bovine Tuberculosis	P14, P16, P21
Bunge (canola producer)	P15
Bureaucratic barriers	P14, P20, P21, P22, P26
Centralization	P20, P21, P25
Challenges with obtaining daycare	P15
Challenging attitudes among some residents	P06, P09, P14, P18, P19, P20, P22, P23, P24, P26
Clear Lake	P01, P02
Cultural divides	P18, P23, P26
Dauphin City	P02, P07, P15, P17, P18, P19, P24, P26
Deep Lake	P11, P12, P25
Degraded landscapes	P11, P23
Disregard of the park mandate	P08, P09, P24, P26
Diversified agriculture	P06, P19, P20
Duck Mountain Provincial Park (as a generator of tourism)	P02, P08, P18, P22, P24
East Gate	P11, P18
Education	P10, P23, P24
Examples of local business success	P12, P13, P14, P21, P22
External economic variables	P10, P24
Farm Credit Canada	P05
Festivals	P08, P14, P15, P18
Few viable opportunities for small businesses	P06, P18, P23
Fishing (other than fly fishing)	P08, P09, P13, P16, P20, P23, P24
Flooding	P02, P06, P07, P17
Fly-Fishing	P09, P13, P14, P22, P24
Food	P13, P26
Good road accessibility	P01, P06

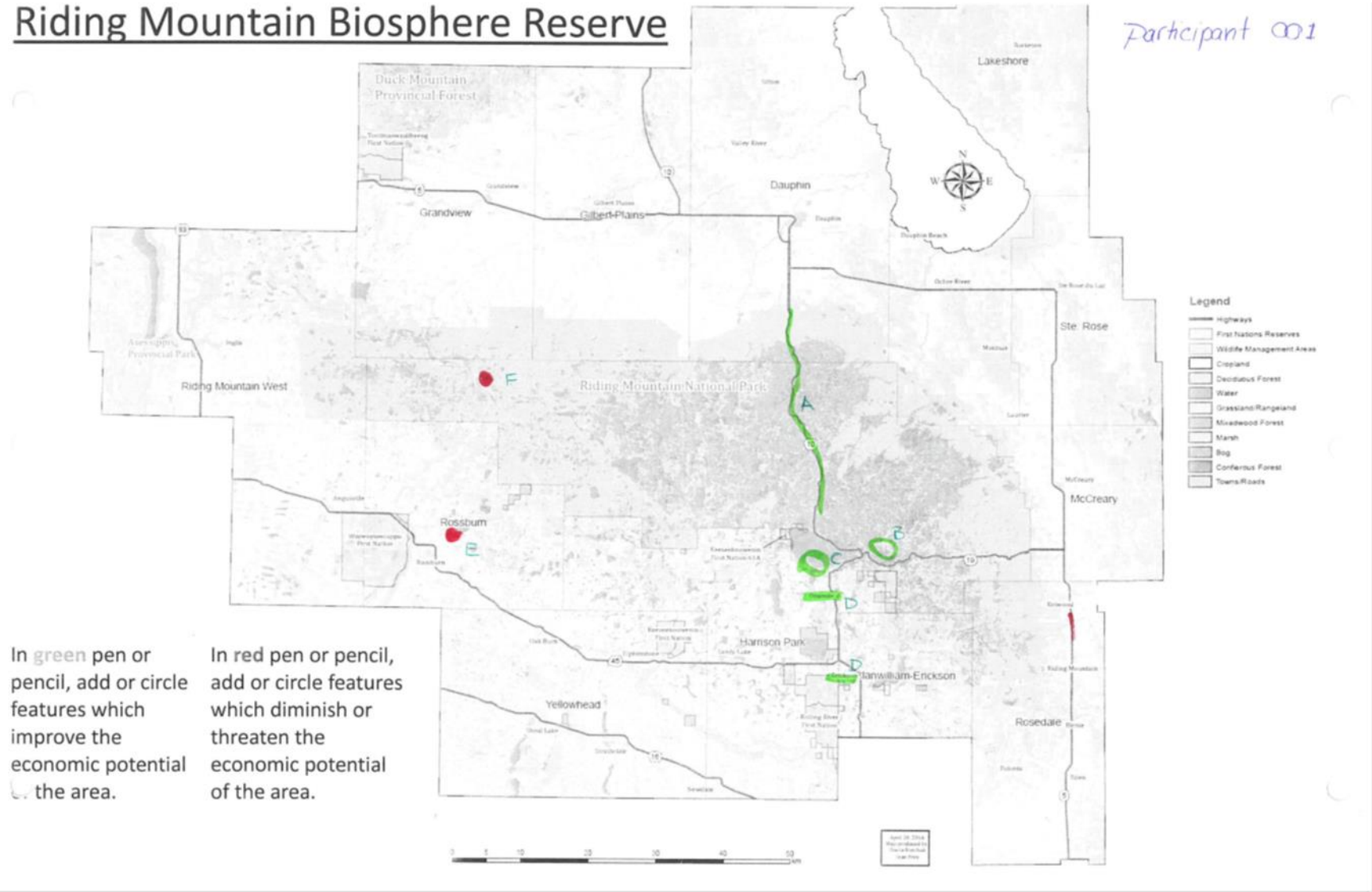
Health Care	P15, P18, P19, P20, P24
High living costs	P06, P23, P24, P25
Highway 10	P01, P02, P03, P04, P08, P18, P27
Highway 16	P06, P14, P19
Highway 19	P01, P10
Highway 5	P03, P18, P26, P27
Historic sites	P09, P13, P18, P19, P26
Hutterite Colonies	P05
Inadequate internet services	P10, P17, P25, P27
Indigenous communities	P04, P06, P09, P18, P19, P20, P22, P24
Industry	P20, P24, P26
Inequity between jurisdictions	P01, P13, P18, P21, P26
Inglis Grain Elevators	P08, P19, P24
Investments in economic development initiatives	P06, P18, P20, P23, P26
Lack of knowledge about the RMBR	P02, P07, P08, P10, P17, P23
Lake Dauphin	P02, P05, P07, P17, P18, P19, P24
Lake Manipogo	P07
Lake of the Prairies	P19, P24, P25
Leadership	P13, P18, P20, P26
Logging	P05, P18, P19
Long Lake	P11, P12
Low density population	P03, P13, P18, P27
Low living wages	P06, p18, P24
Municipal government	P09, P21
No cellphone service	P07, P17
Old Road Grandview to Rossburn	P09, P16, P19
Old warden stations	P09, P18, P19, P26
Otter Lake	P14
Outdoor recreation	P04, P05, P06, P08, P09, P13, P16, P17, P20, P21, P22, P24, P26, P27
Park gates and fees	P02, P18, P22
Politics	P13, P18, P20, P21, P26
Pollution in Lake Dauphin	P02, P18
Poor road conditions	P07, P13, P14, P15, P16, P18, P20, P21, P23
Poor road signs advertising RMNP	P01, P18, P19
Population decline	P02, P07, P10, P20
Population growth	P02, P19
Potash	P14, P22, P23,
Prohibited Resource Extraction	P03, P05, P20
Recreational facilities	P06, P08, P09, P26
Remoteness	P03, P05, P11, P12, P13, P15, P17, P18, P19, P25
Resource abundance	P10, P11, P26
Riding Mountain Biosphere Reserve	P10, P13, P15, P19, P23, P26
Riding Mountain National Park	P01, P02, P03, P05, P08, P11, P12, P13, P15, P17, P18, P19, P21, P26, P27
Rossman Lake	P14, P16
Rural living	P12, P24

Russel	P13, P25
Sandy Lake (as a tourism destination)	P02, P09, P14
Seasonal homes	P06, P21, P24
Seasonal industries	P04, P24, P26, P27
Sense of community	P07, P11, P15, P18, P23
Shoal Lake	P12, P23
Shortage of accommodation	P11, P13, P19
Shortage of high living wages	P15, P24
Shortage of jobs	P11
Shortage of services	P05, P21, P24, P25, P27
Sustainability	P10, P26
Tech industry	PP25, P26, P27
Tensions between levels of government	P04, P20, P26
Tokaryk and Patterson Lake	P14, P16, P23
Tourism	P01, P02, P03, P05, P07, P08, P09, P10, P11, P13, P14, P16, P17, P20, P19, P18, P21
Trails	P11, P13, P18, P22, P25, P27
Transcanada trail	P13, P19, P24
Transportation	P03, P04, P06, P13, P14
Ukrainian Heritage	P01, P09, P13, P15, P26
Undevelopable land (marsh, hills)	P04, P05, P14
Unproductive working relationships between RMNP and regional actors	P01, P02, P08, P09
Unresponsive RMNP management	P18, P21, P22, P26
Wasagaming and Onanole	P05, P08, P09, P11, P12, P13, P14, P15, P18, P19, P22, P25, P27
Water quality	P18
Waywayseecapo administration	P12, P13, P14, P21, P22
West side of RMNP	P01, P22, P25
Wildlife viewing	P08 P10, P12

Appendix C: Mapping Activity Handout

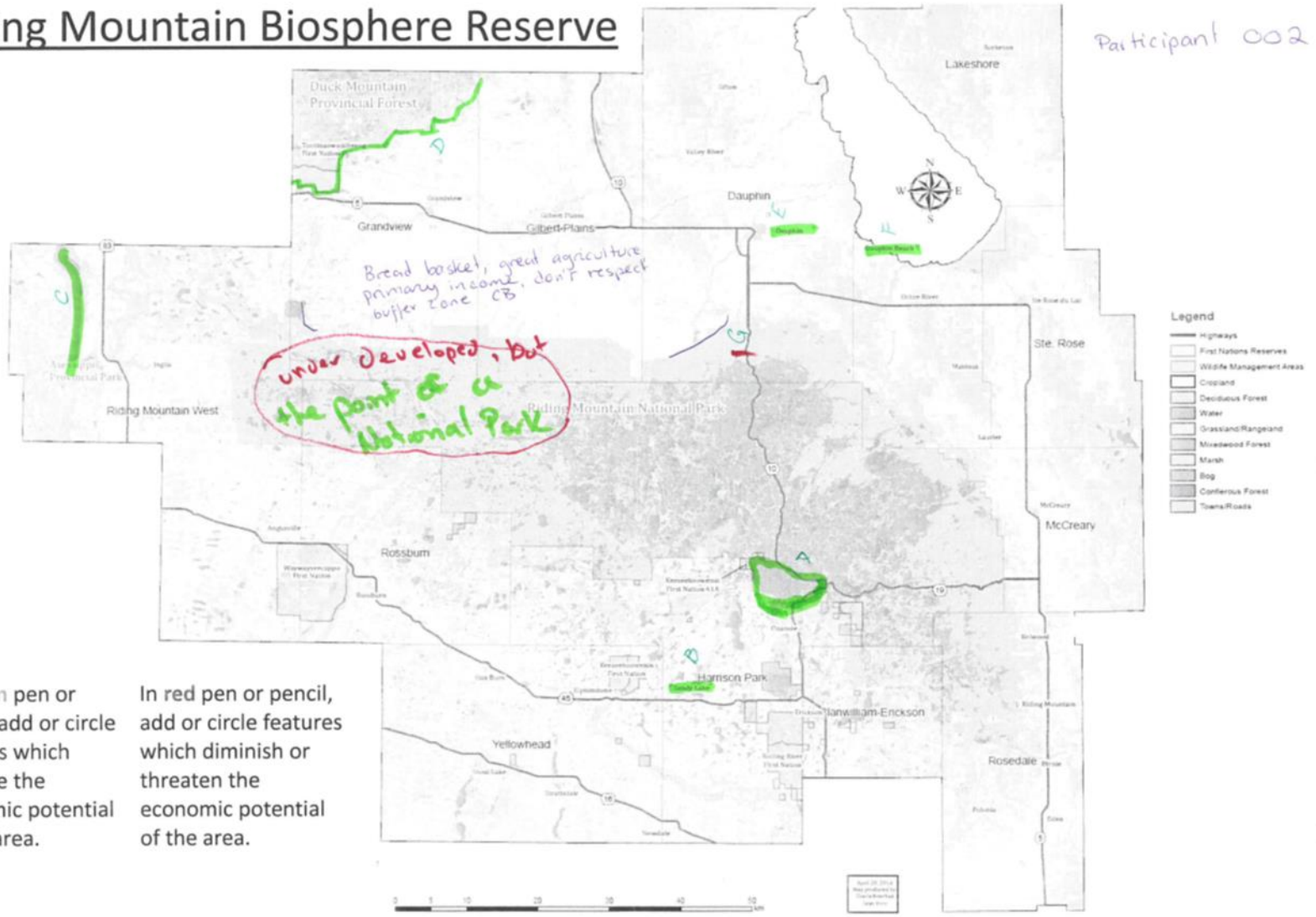


Appendix D: Participant Mapping Activities



Riding Mountain Biosphere Reserve

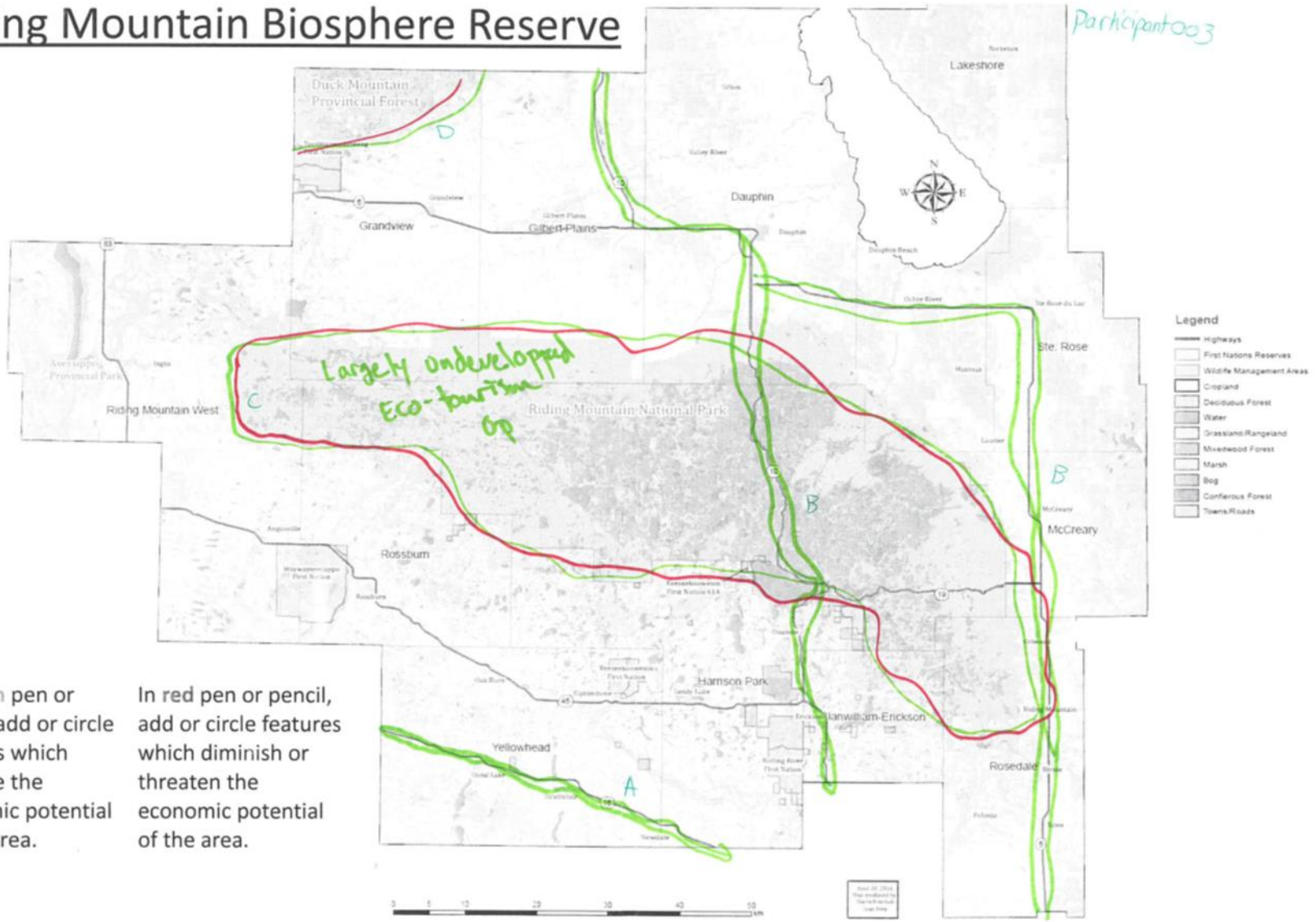
Participant 002



In green pen or pencil, add or circle features which improve the economic potential of the area.

In red pen or pencil, add or circle features which diminish or threaten the economic potential of the area.

Riding Mountain Biosphere Reserve



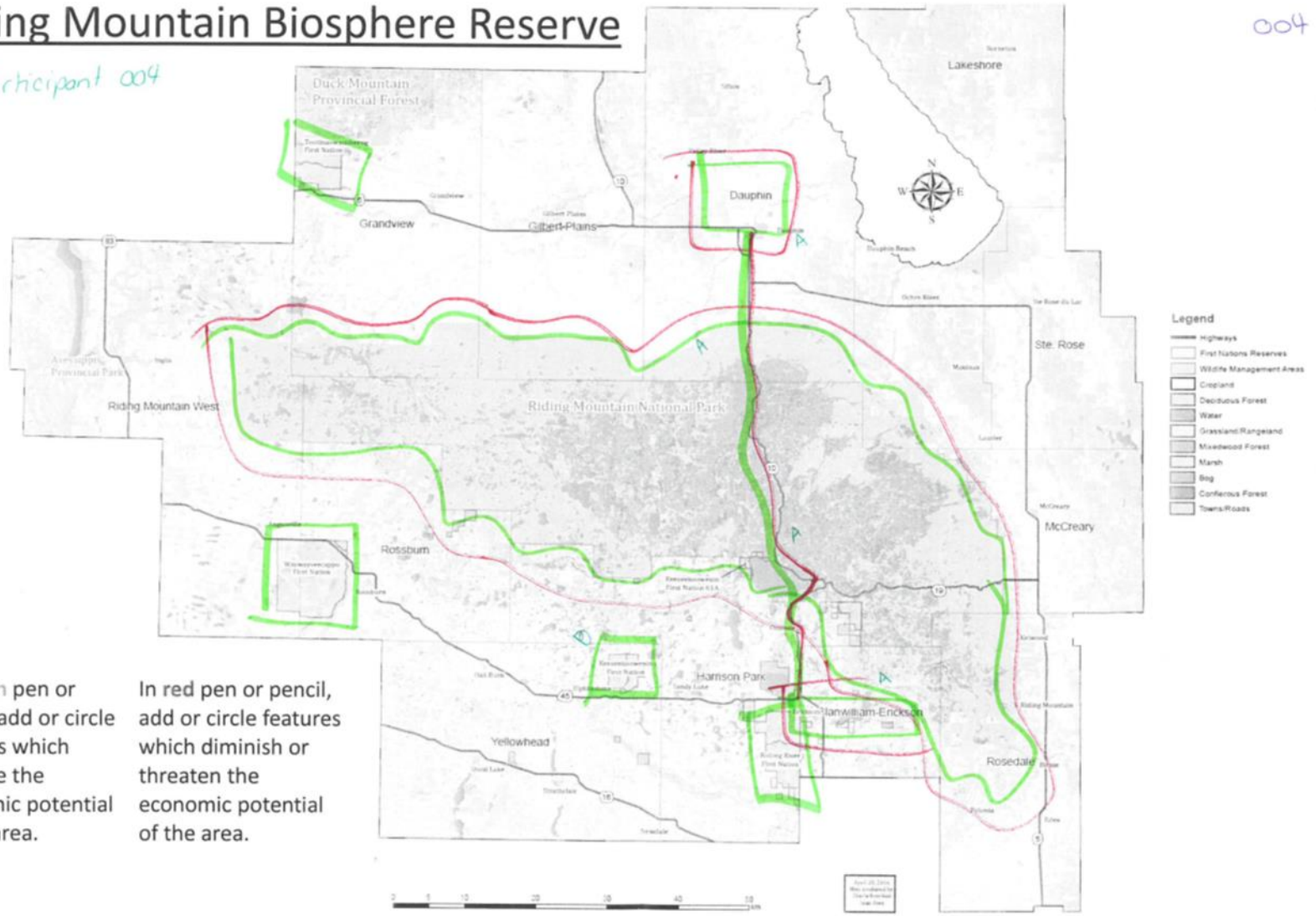
In green pen or pencil, add or circle features which improve the economic potential of the area.

In red pen or pencil, add or circle features which diminish or threaten the economic potential of the area.

Riding Mountain Biosphere Reserve

Participant 004

004



In green pen or pencil, add or circle features which improve the economic potential of the area.

In red pen or pencil, add or circle features which diminish or threaten the economic potential of the area.

Riding Mountain Biosphere

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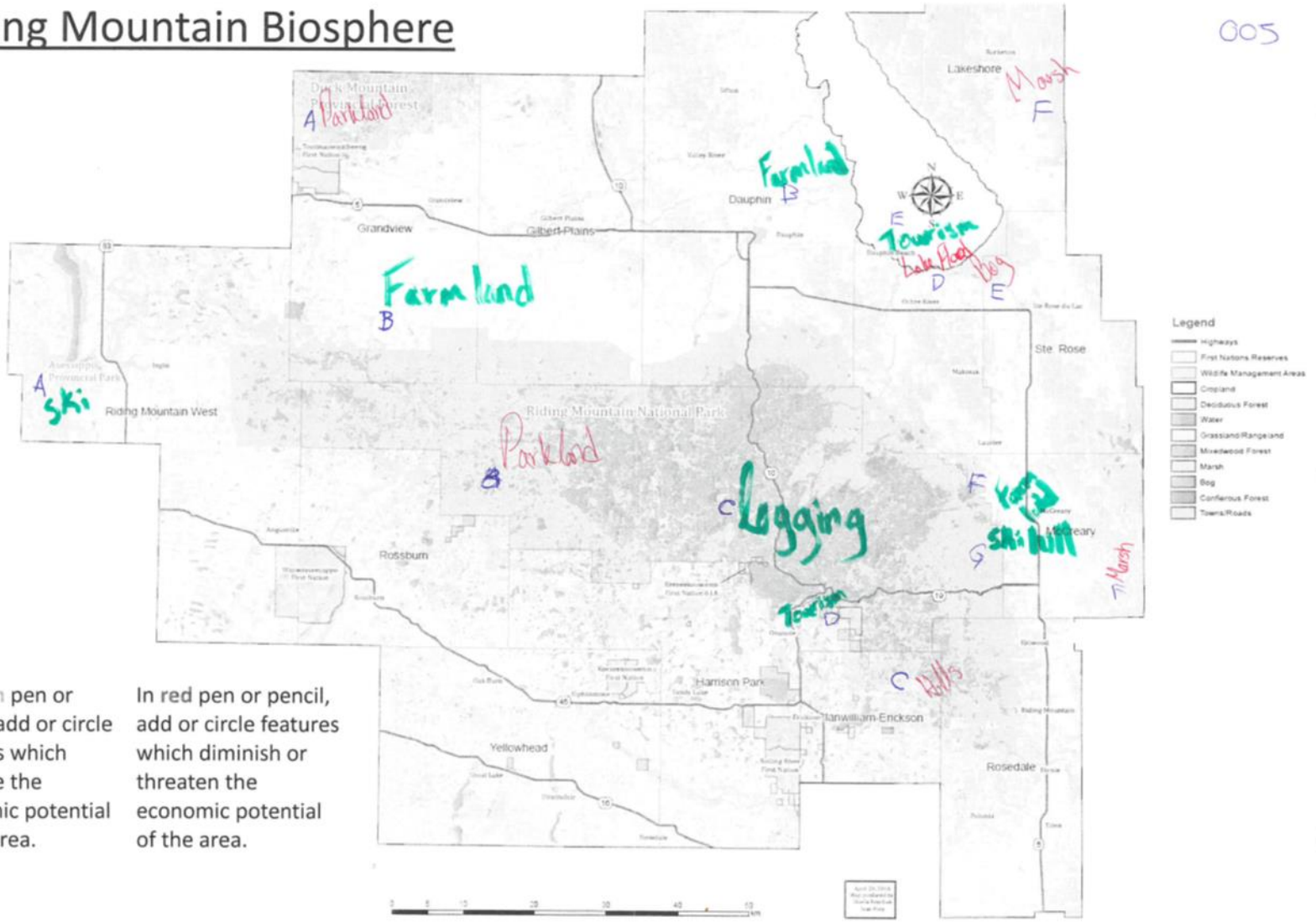
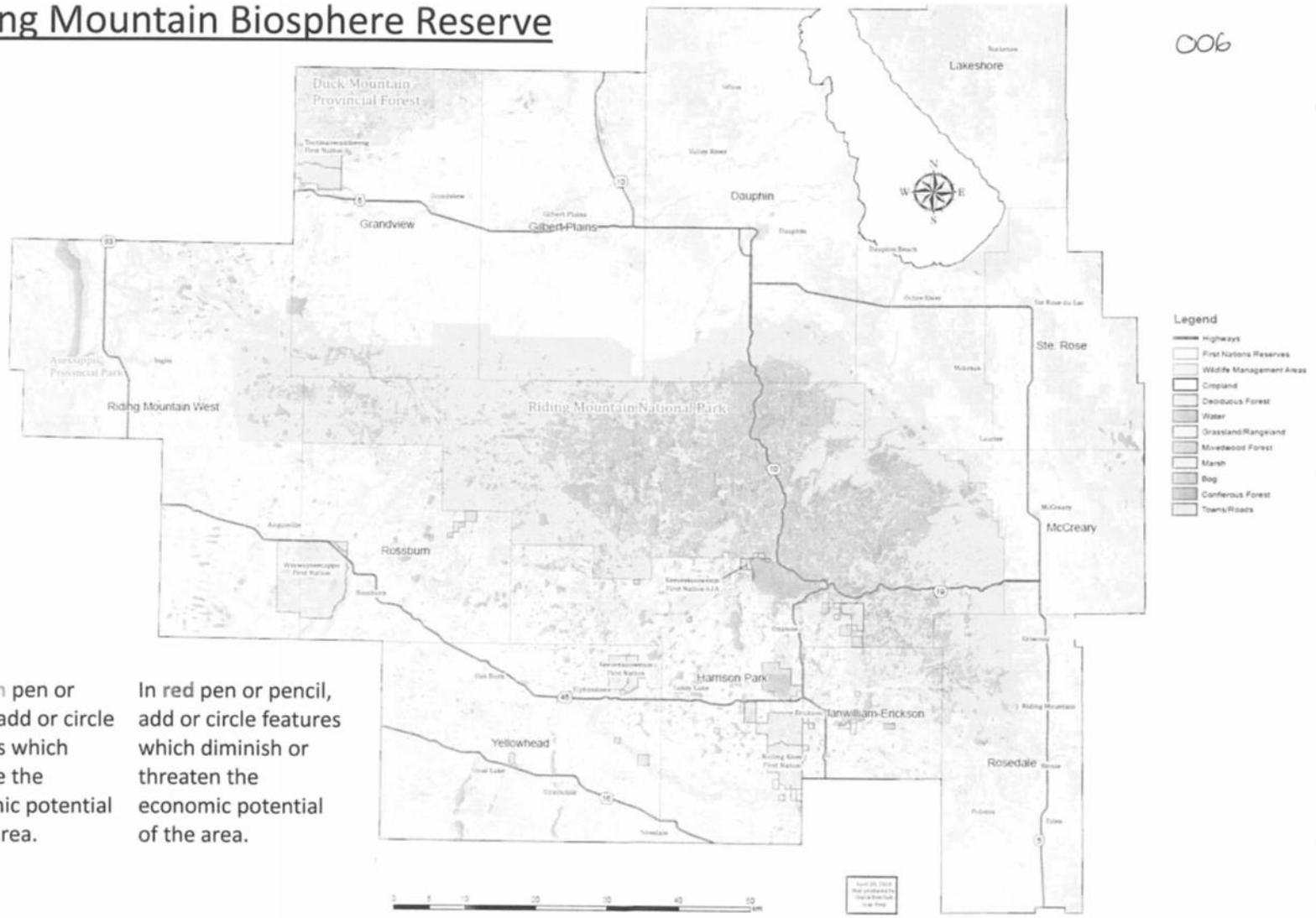


In green pen or pencil, add or circle features which improve the economic potential of the area.

In red pen or pencil, add or circle features which diminish or threaten the economic potential of the area.

Riding Mountain Biosphere Reserve

006



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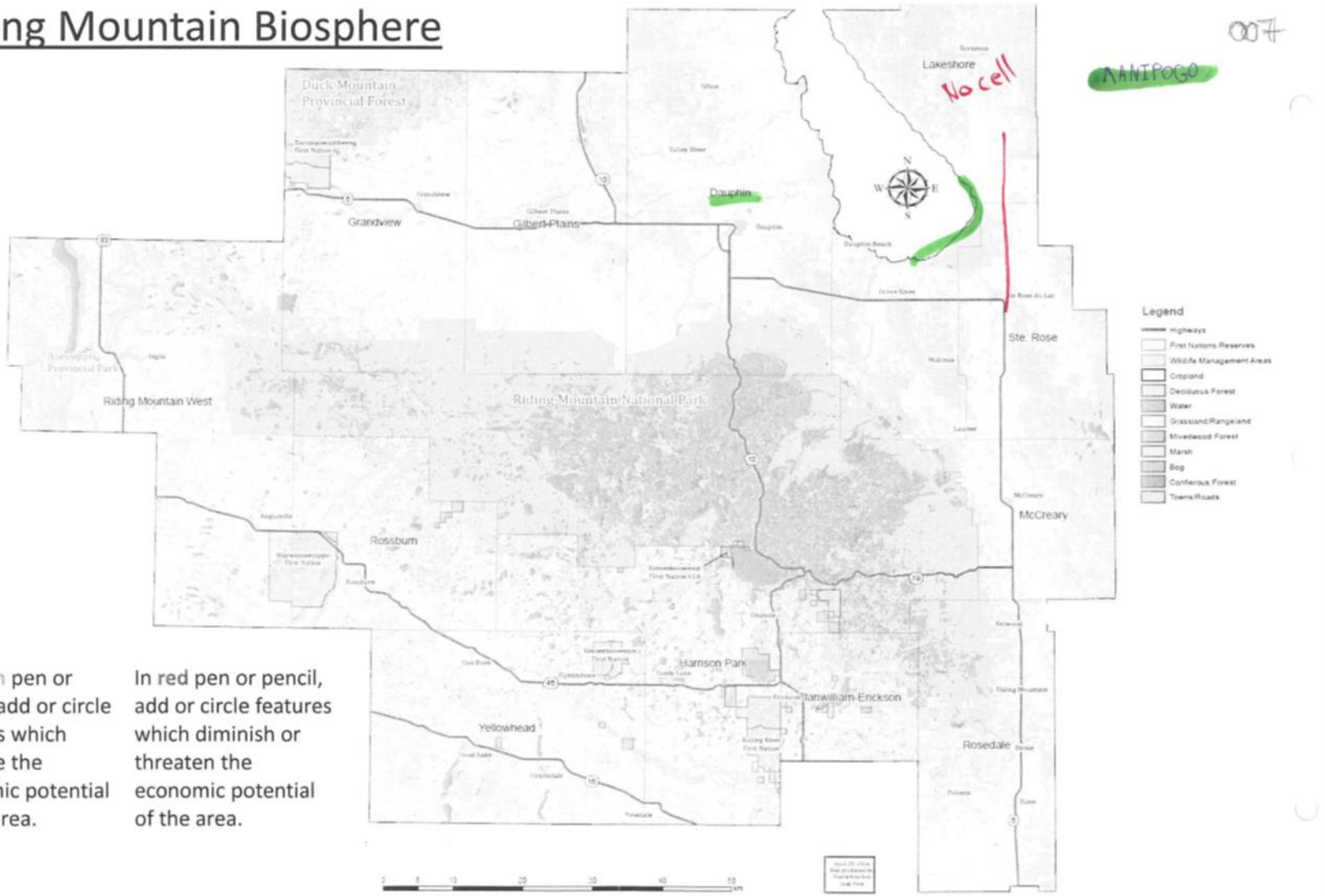
Riding Mountain Biosphere



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In red pen or pencil, add or circle features which diminish or threaten the economic potential of the area.

Riding Mountain Biosphere

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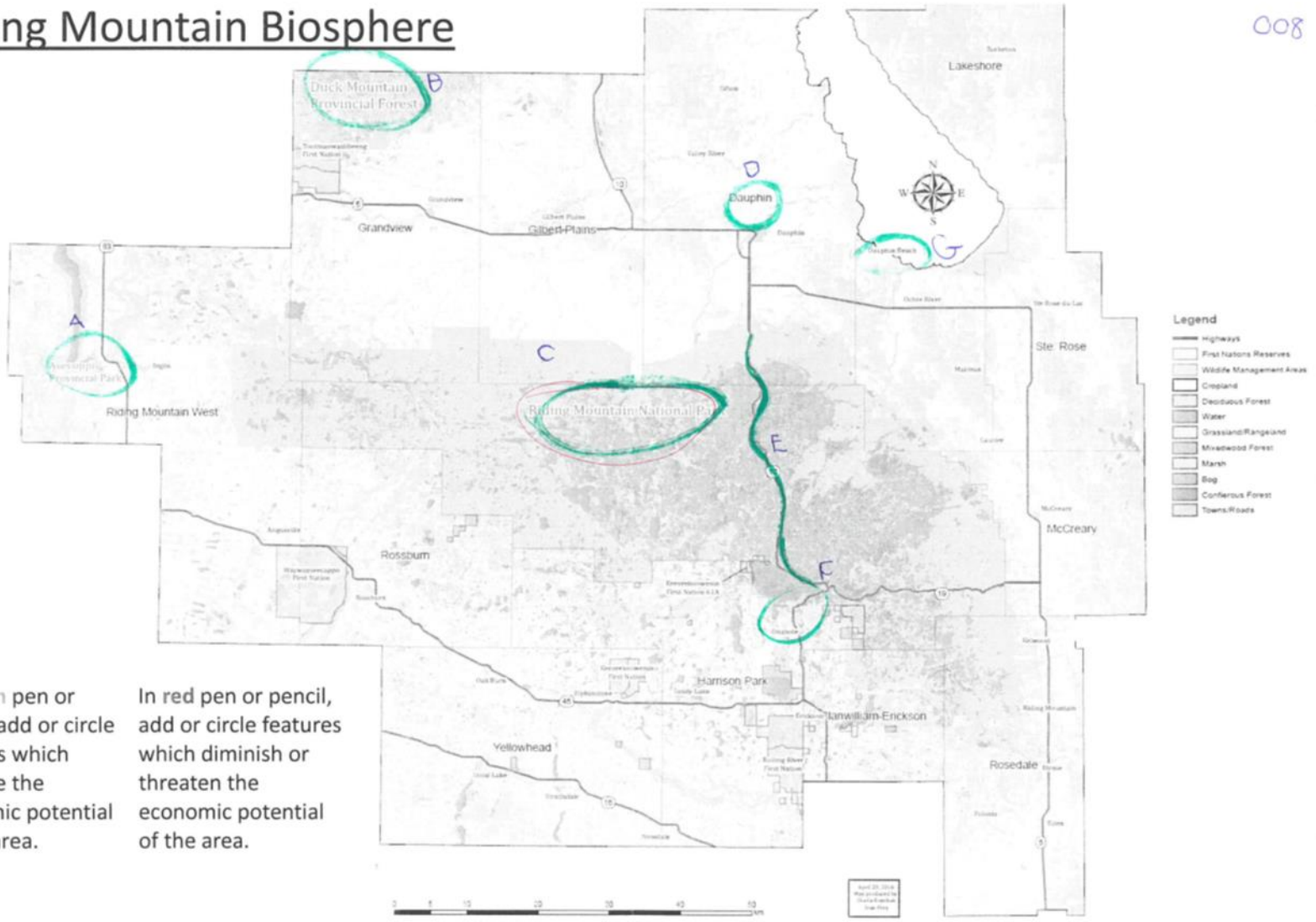

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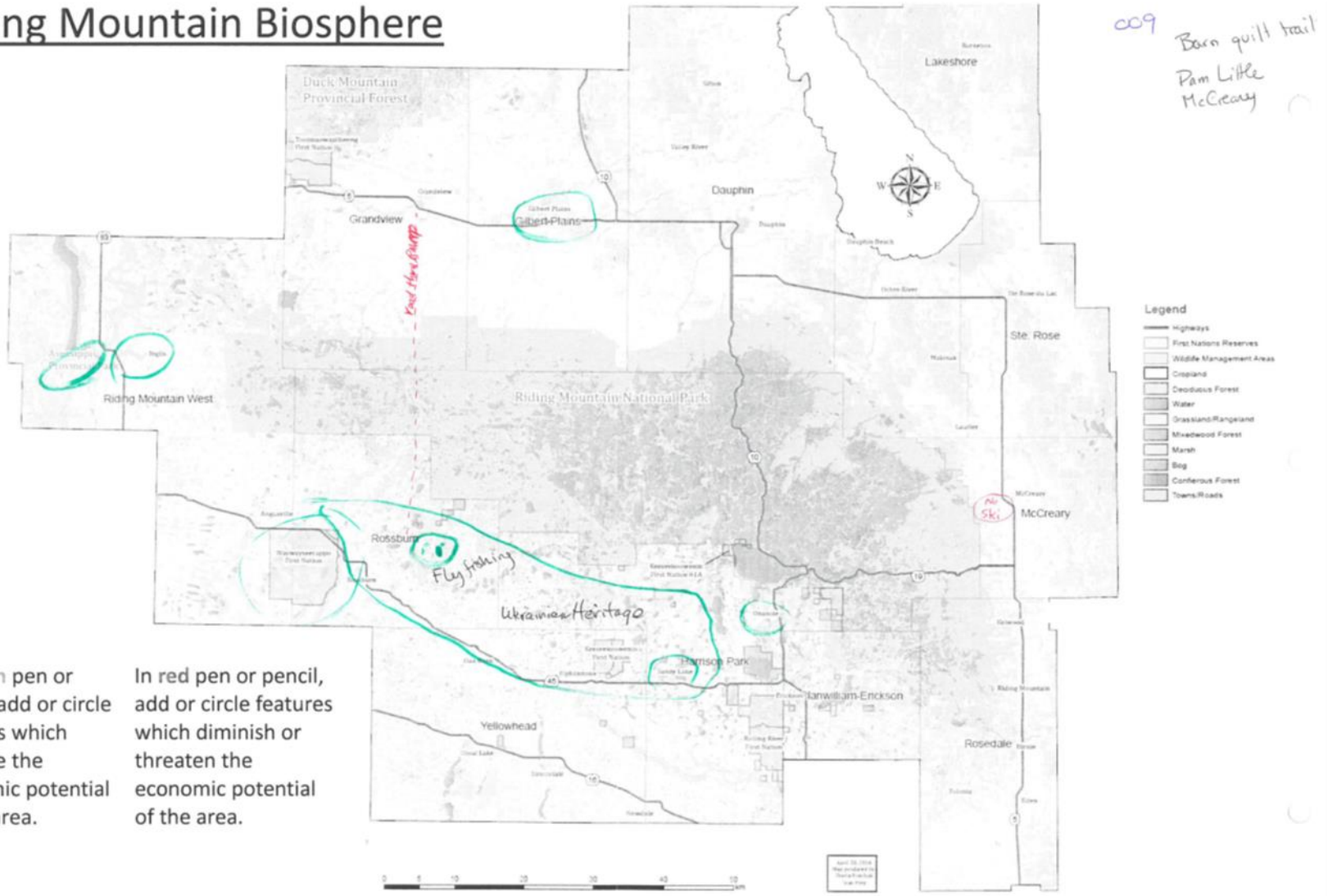
Riding Mountain Biosphere



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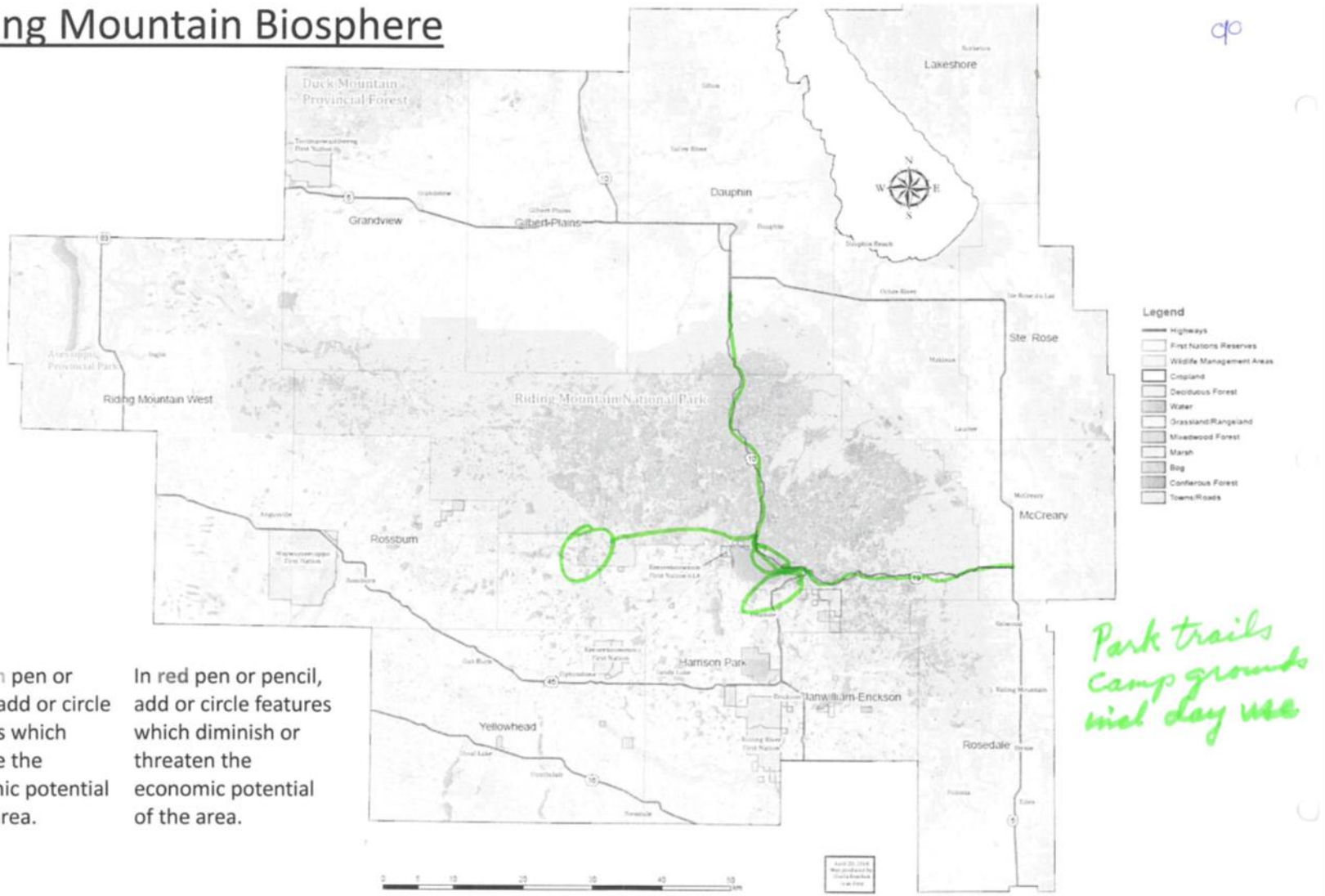

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Riding Mountain Biosphere

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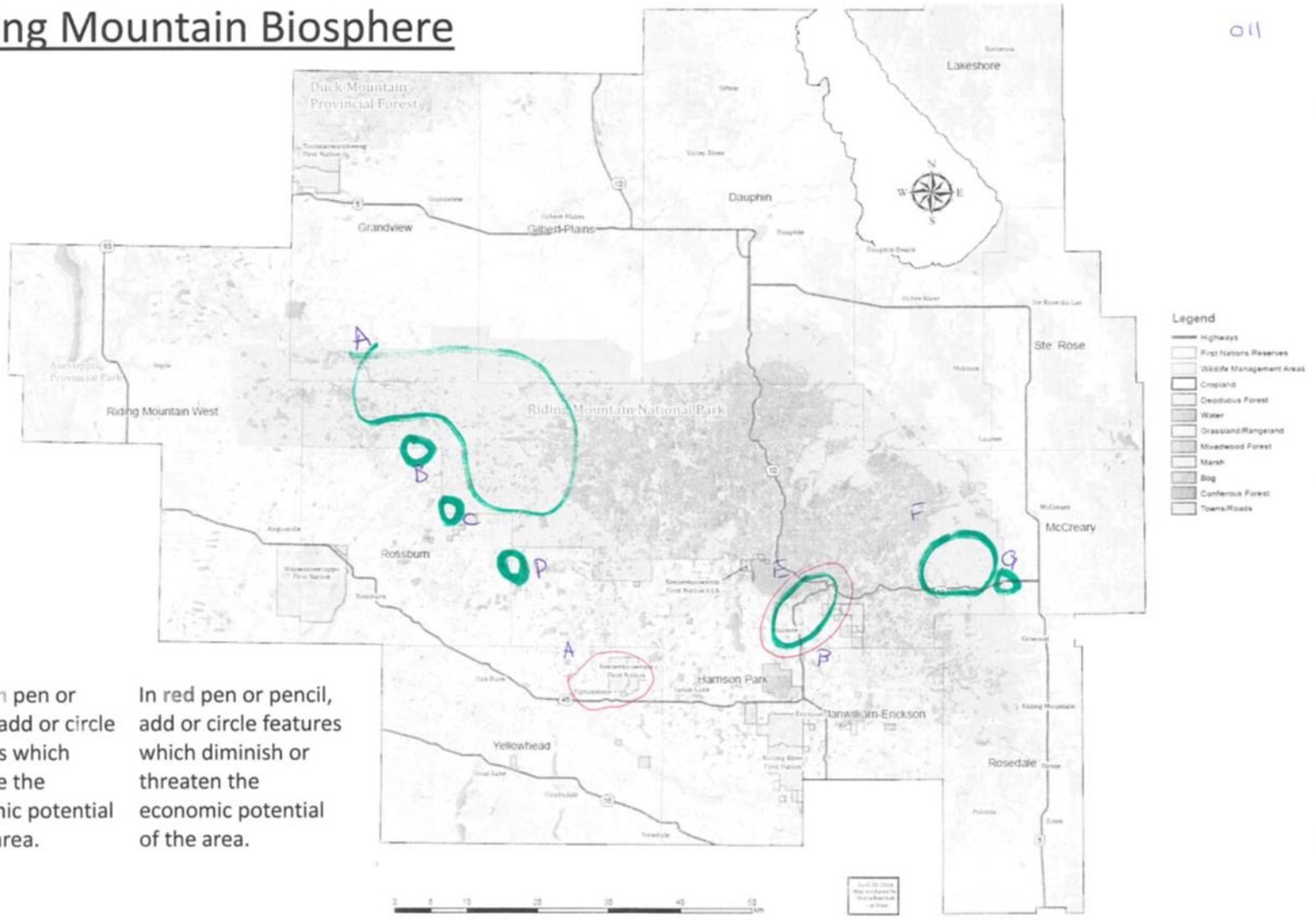

In green pen or pencil, add or circle features which improve the economic potential of the area.

In red pen or pencil, add or circle features which diminish or threaten the economic potential of the area.

Riding Mountain Biosphere

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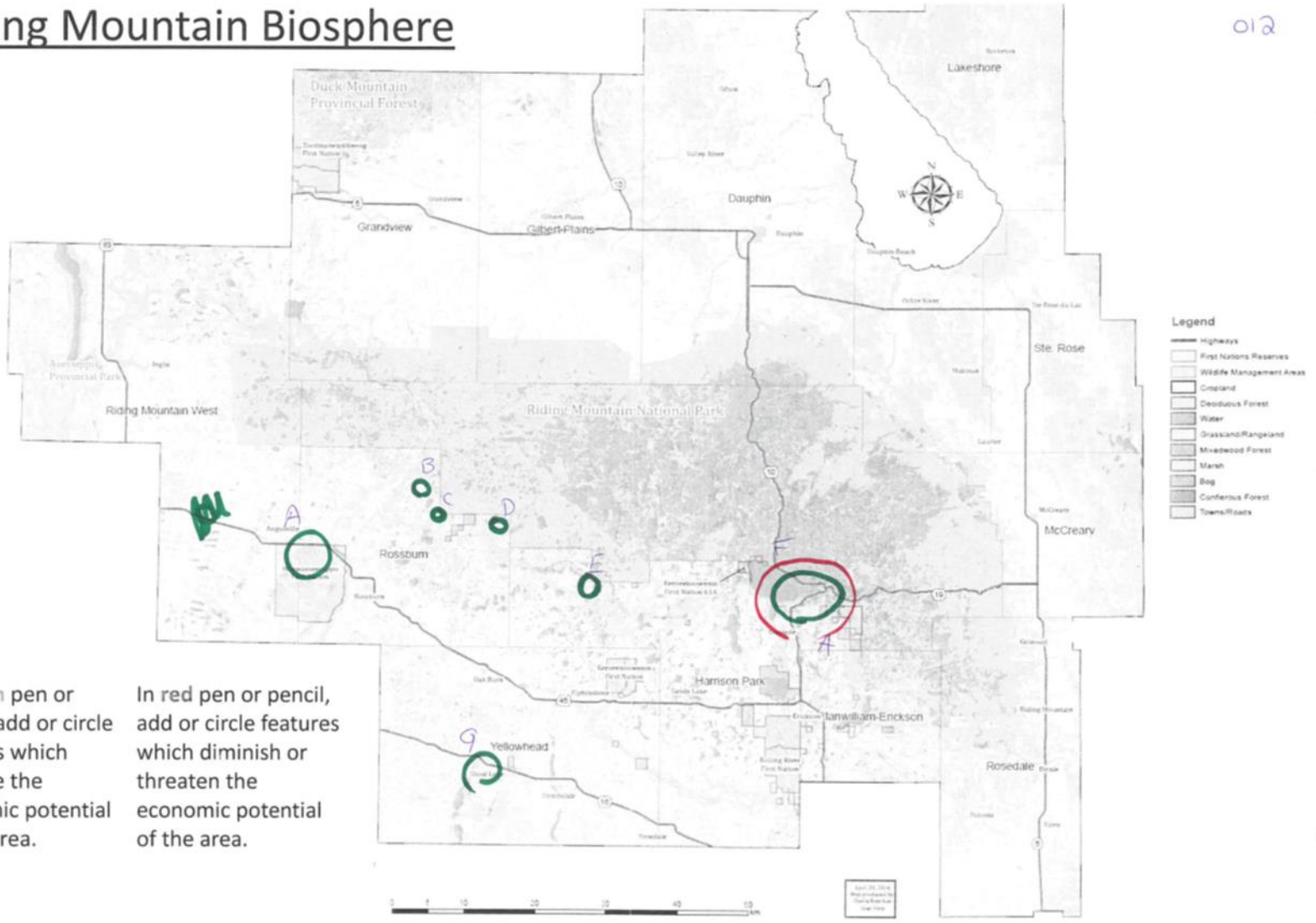

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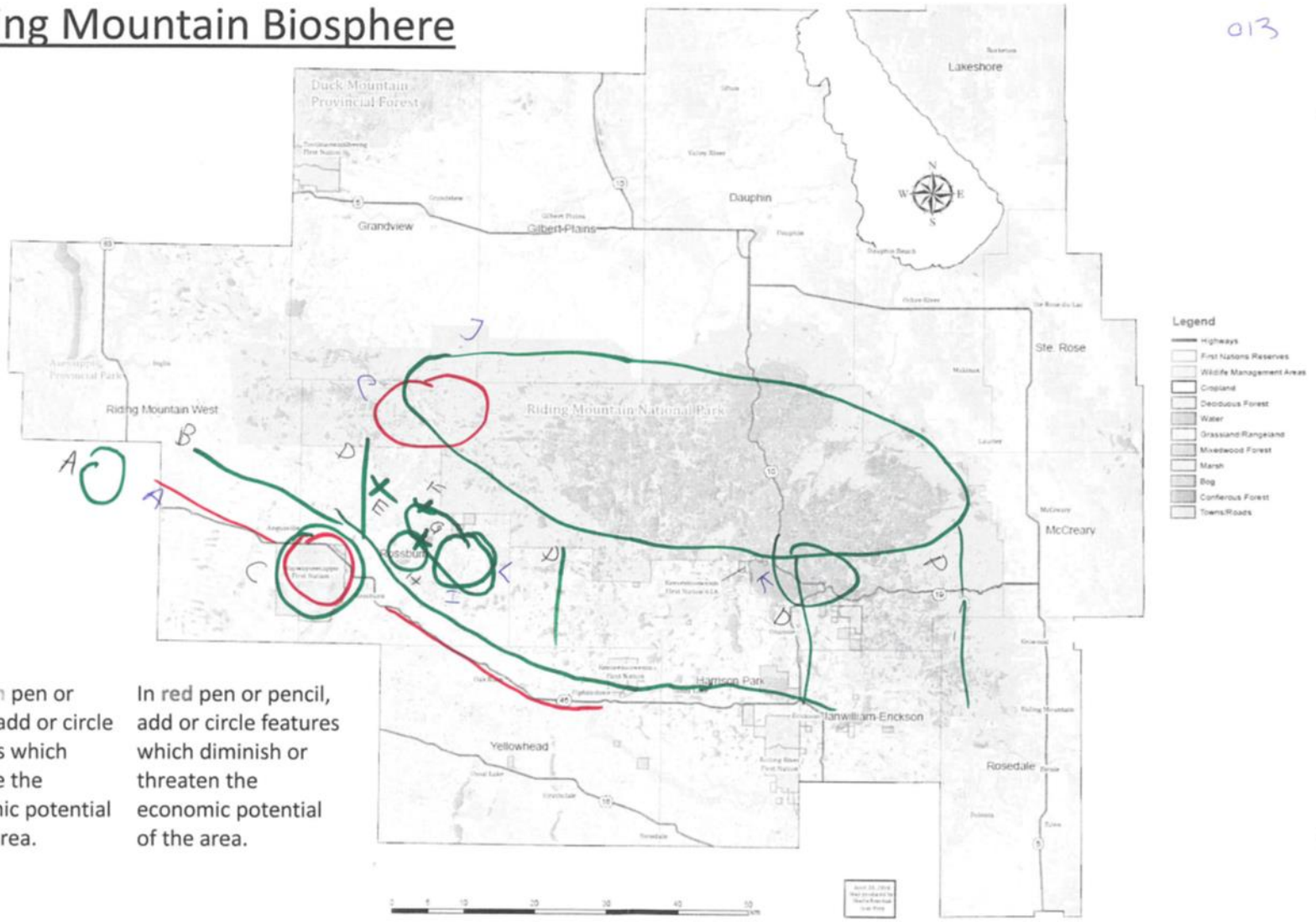
Riding Mountain Biosphere

013



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Riding Mountain Biosphere

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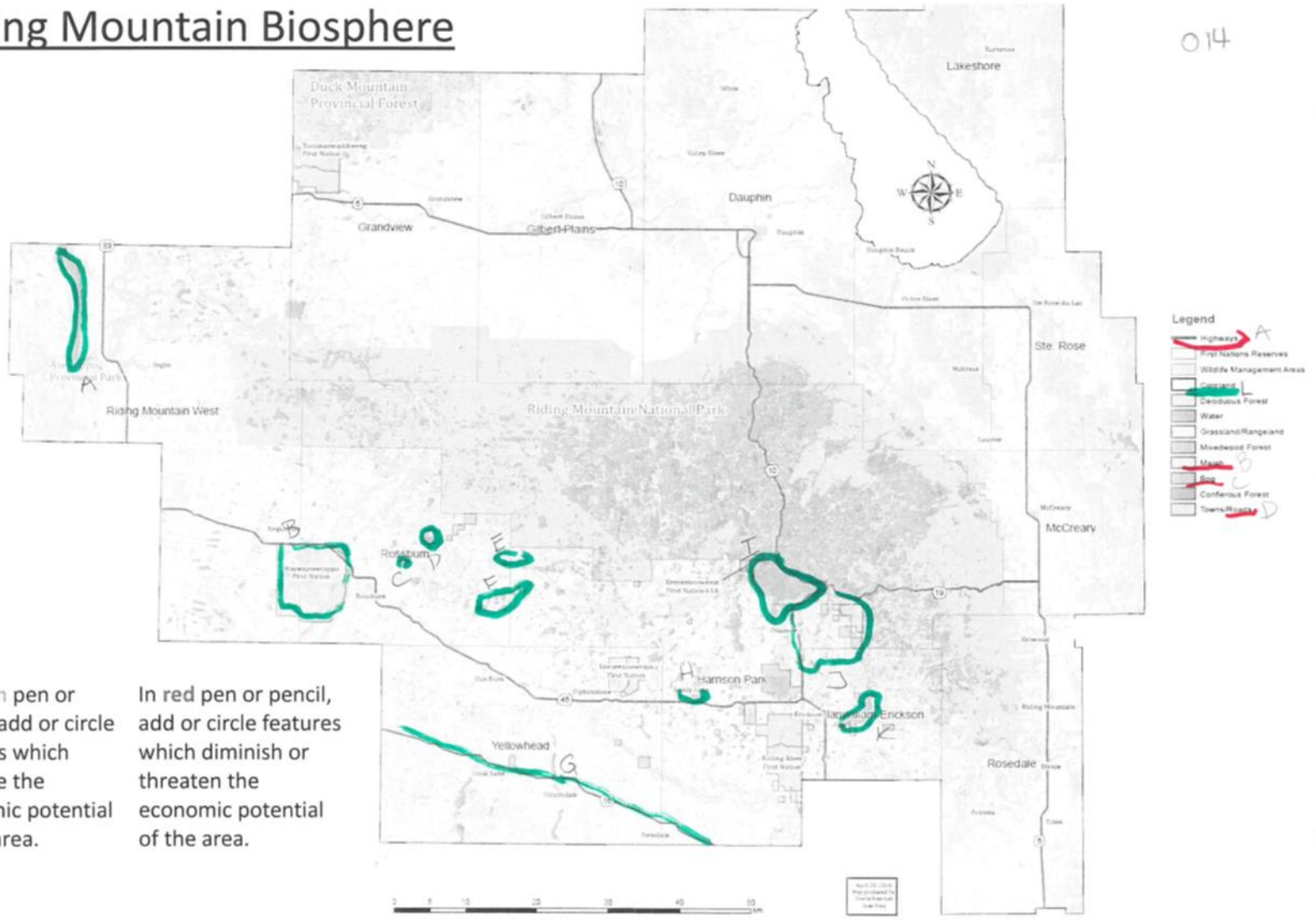

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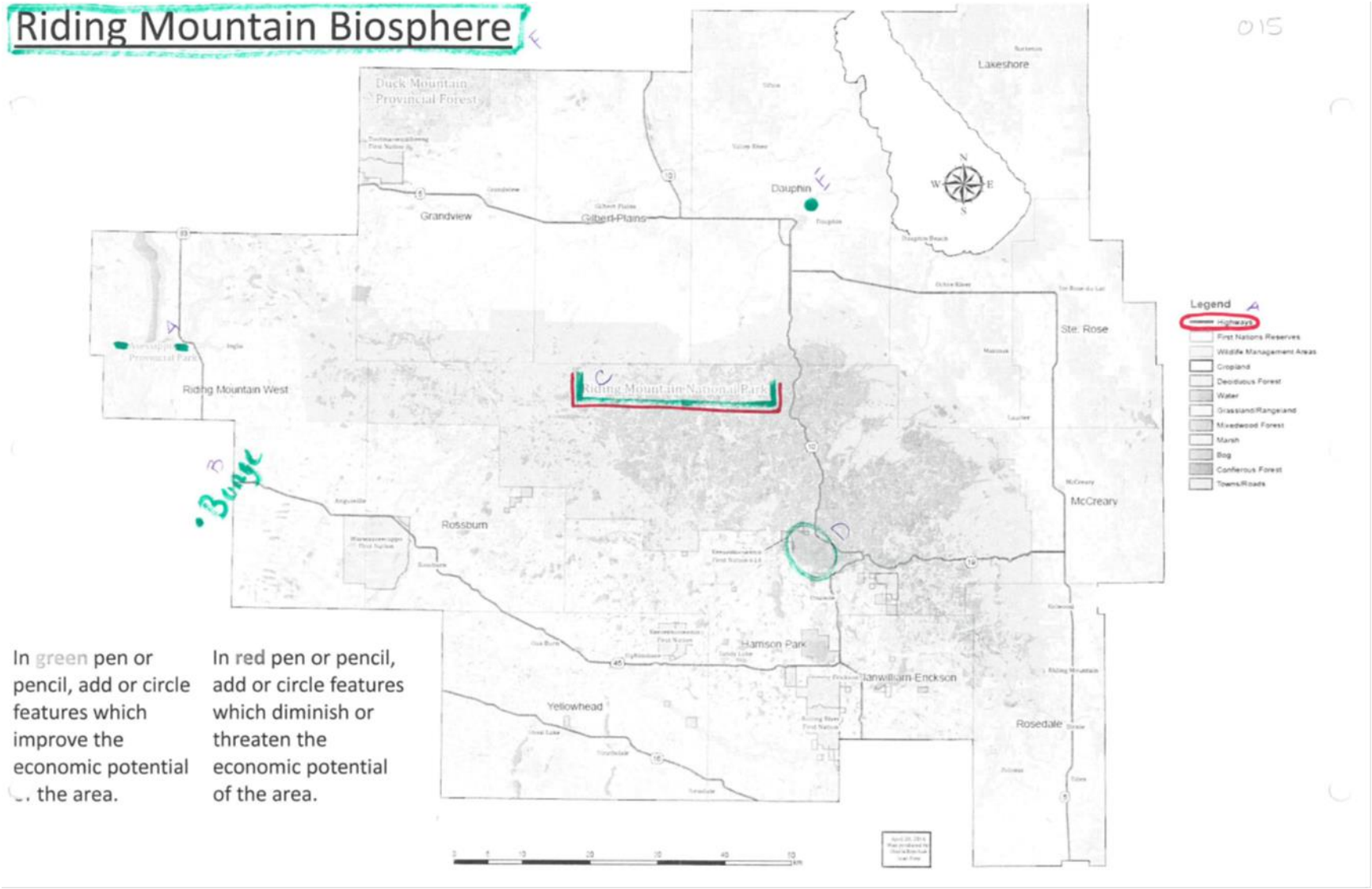
In red pen or pencil, add or circle features which diminish or threaten the economic potential of the area.

Riding Mountain Biosphere



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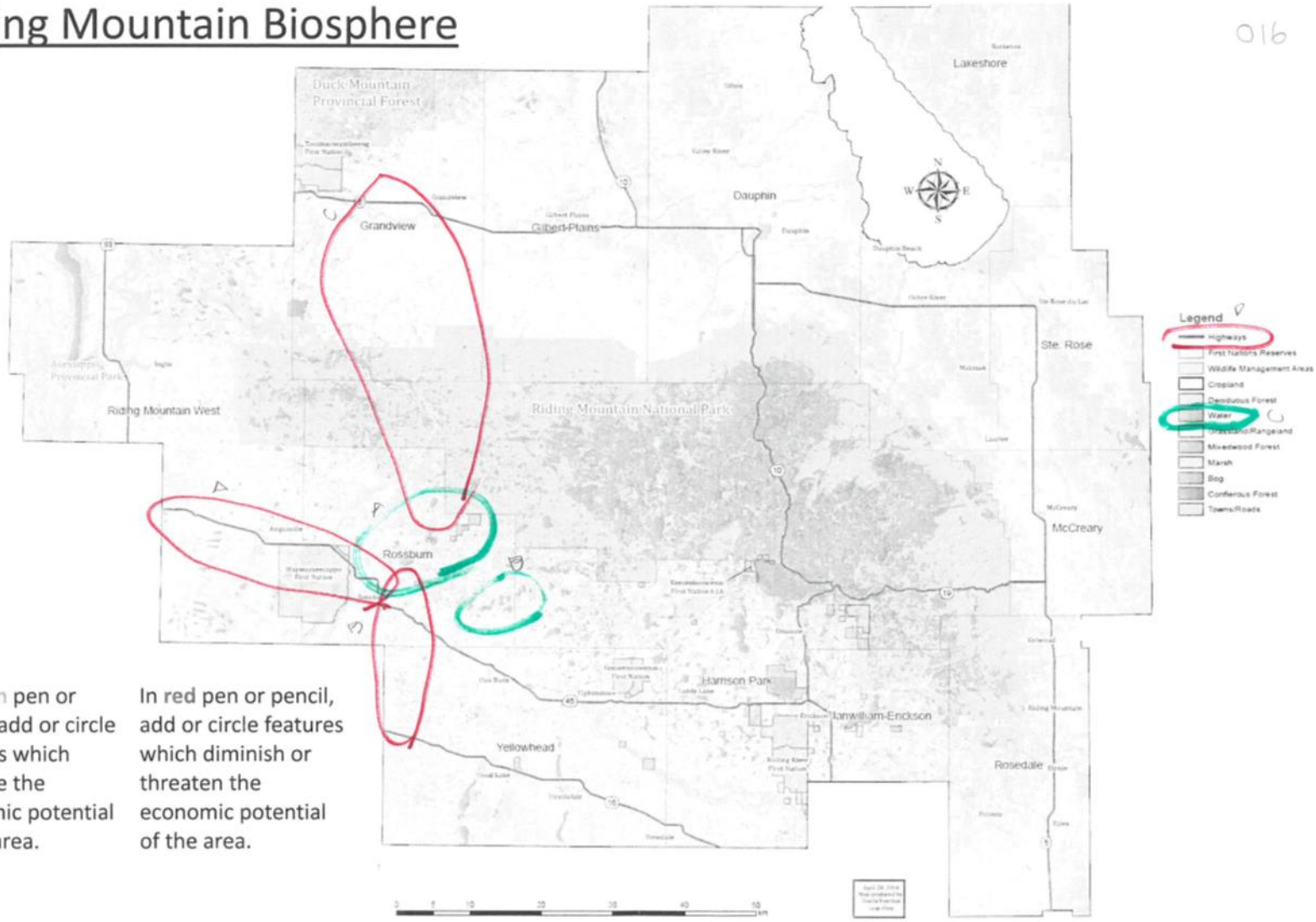
Riding Mountain Biosphere



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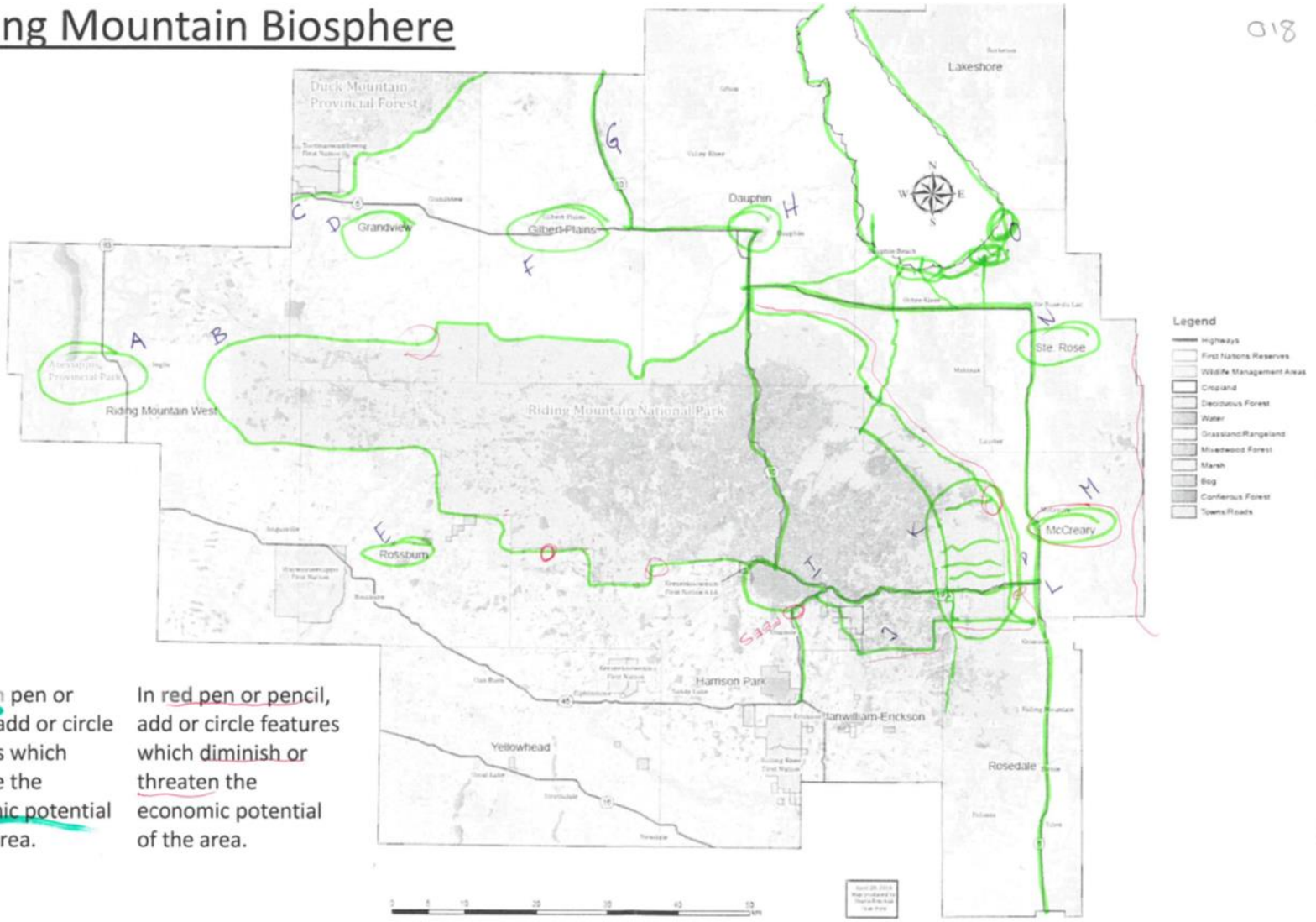

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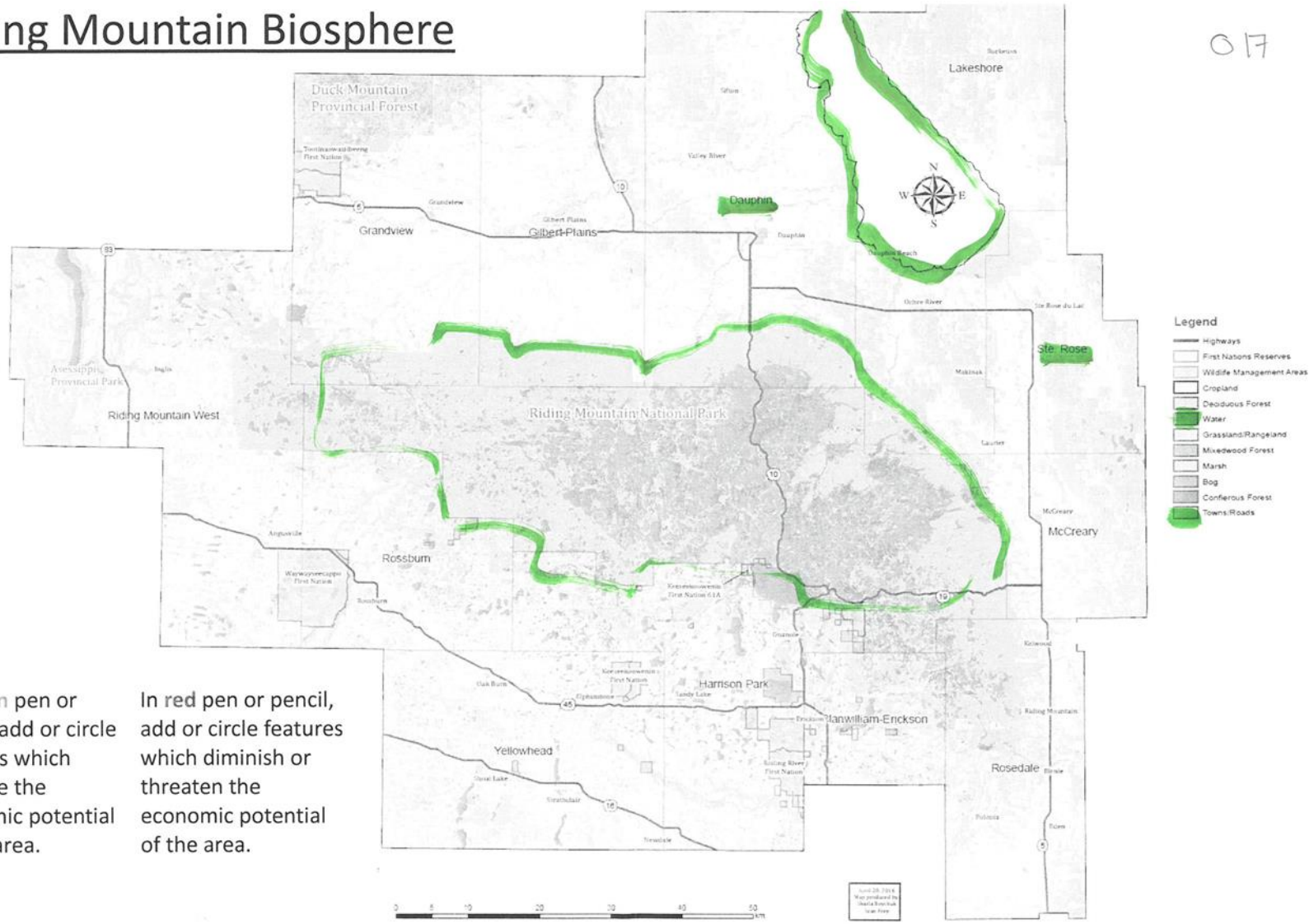

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Riding Mountain Biosphere

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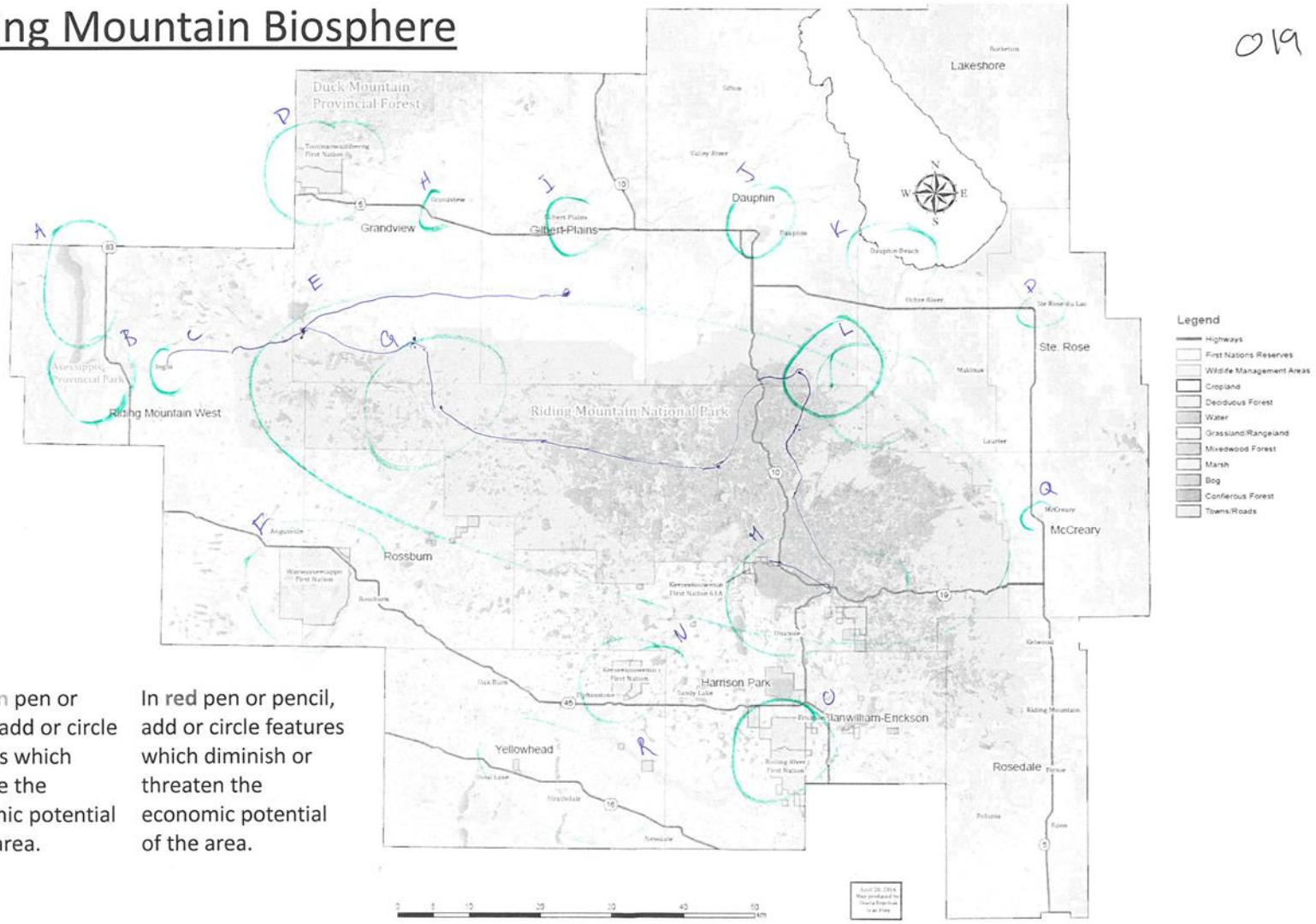

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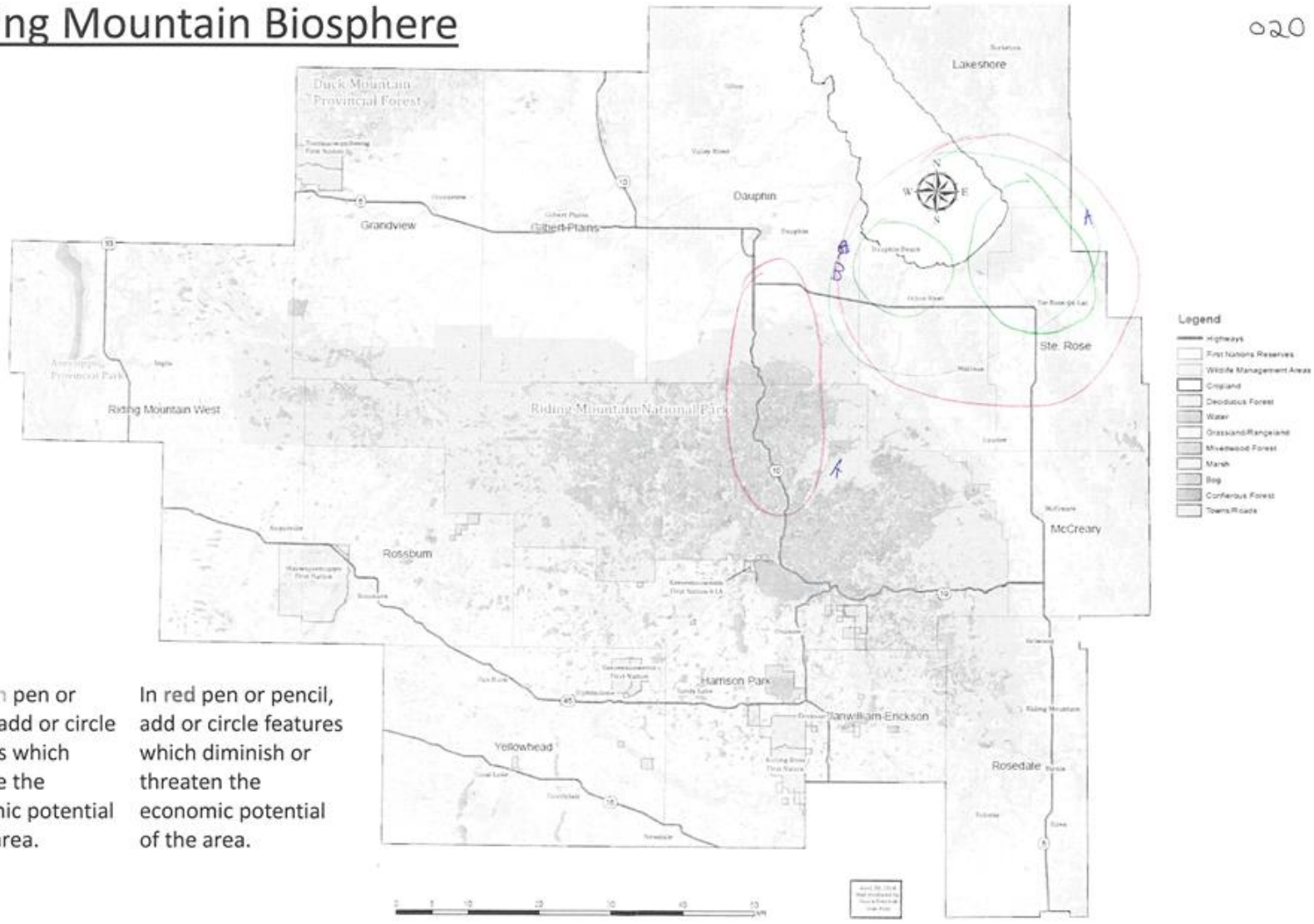

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Riding Mountain Biosphere Reserve

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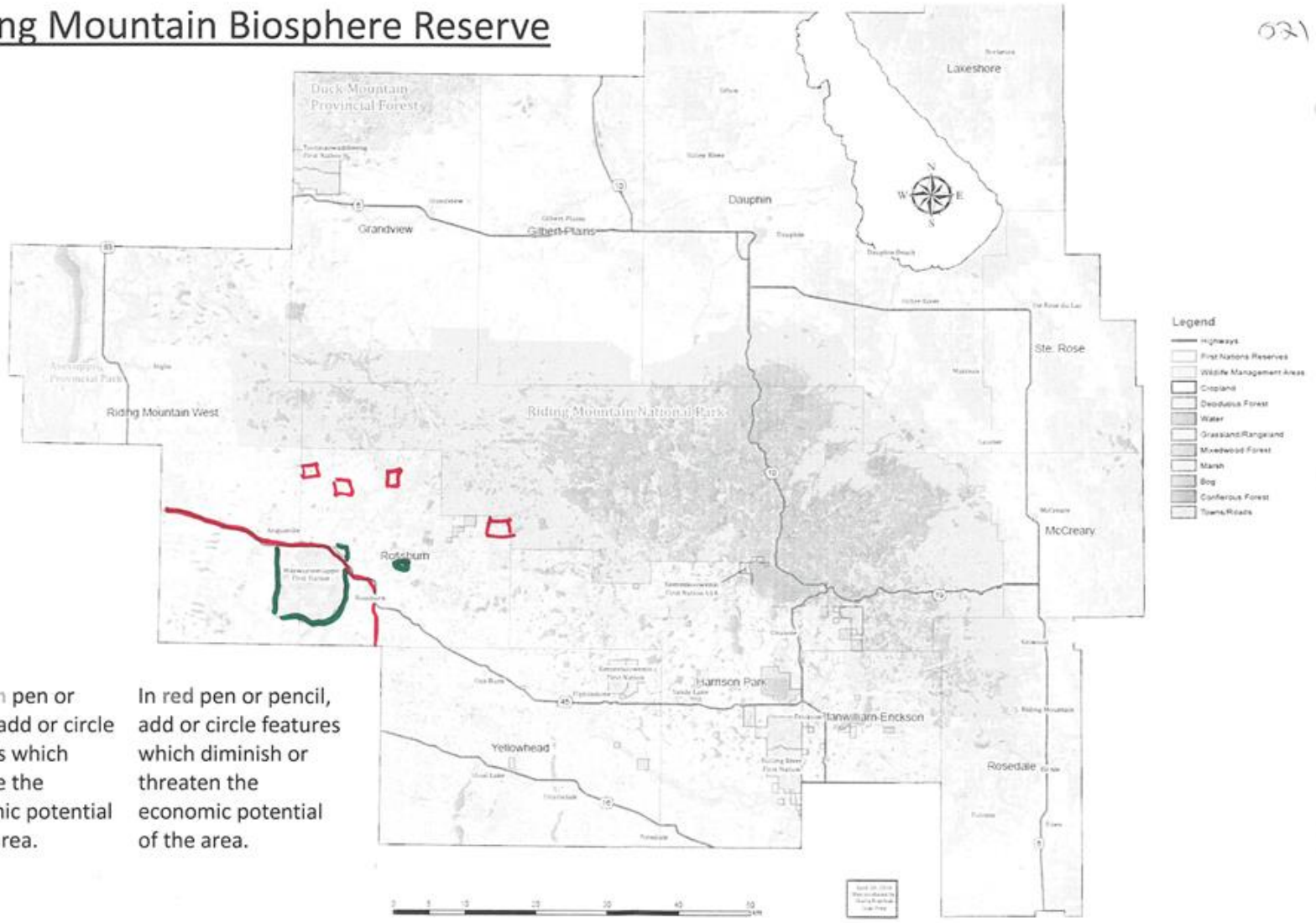

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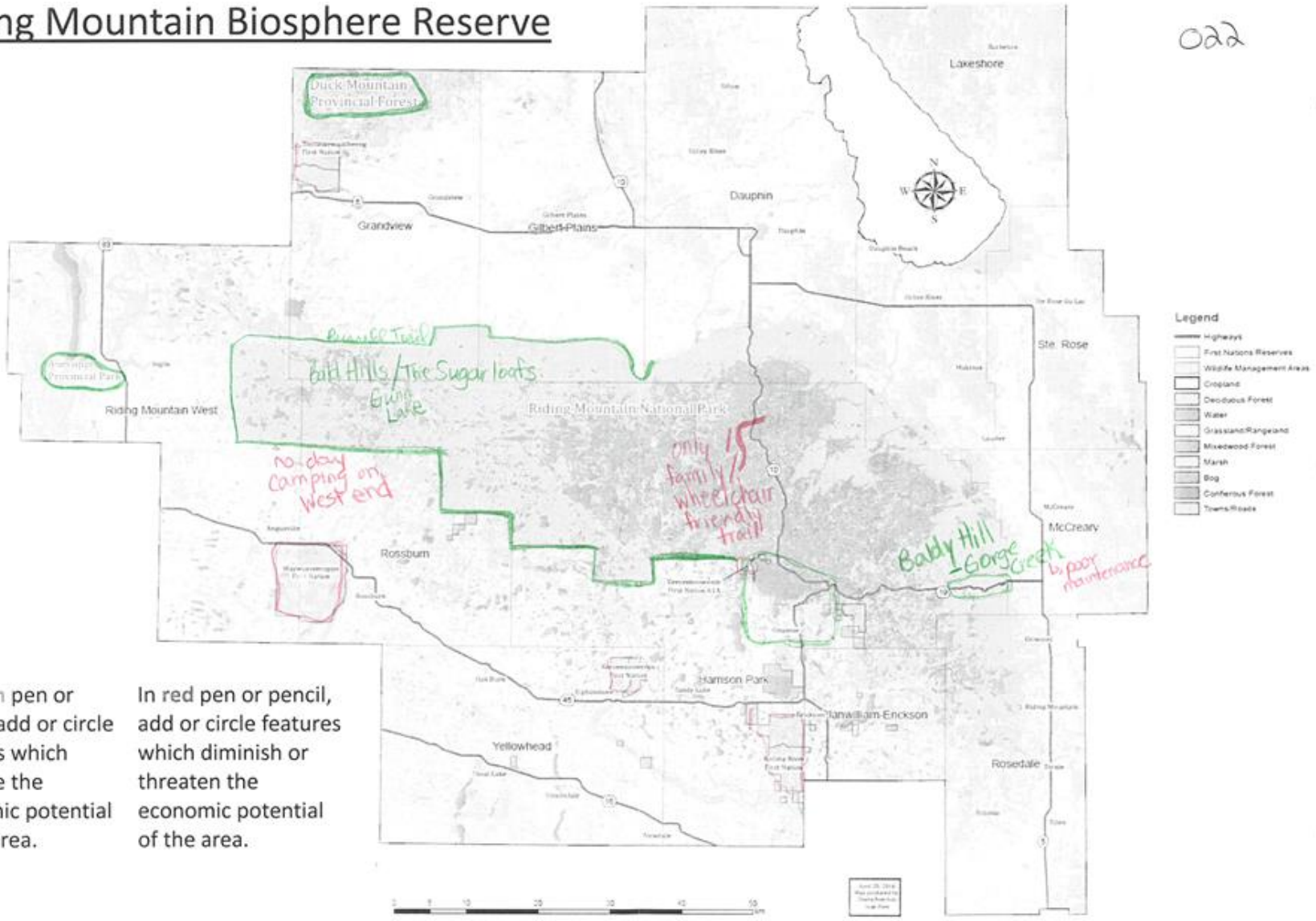

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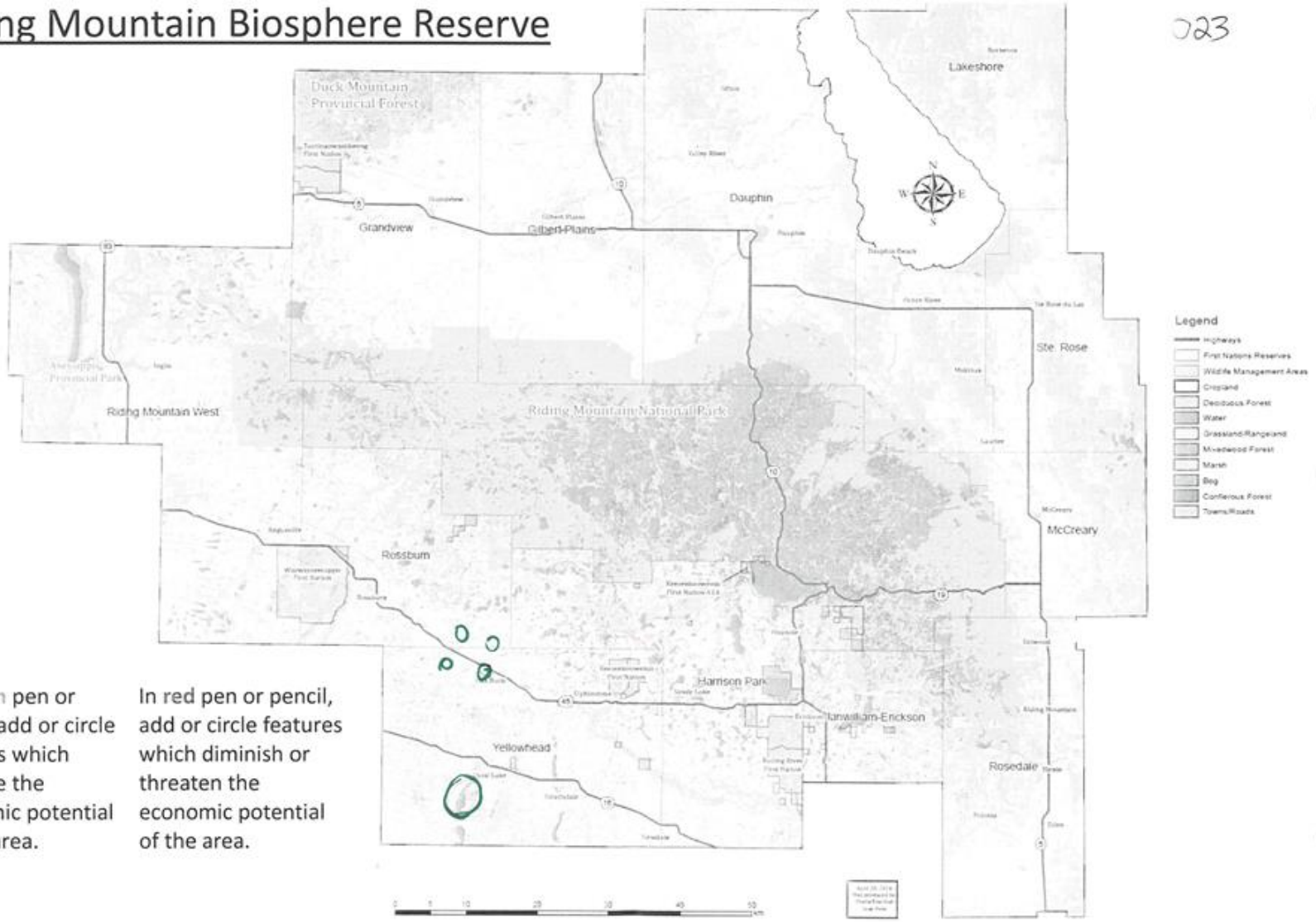

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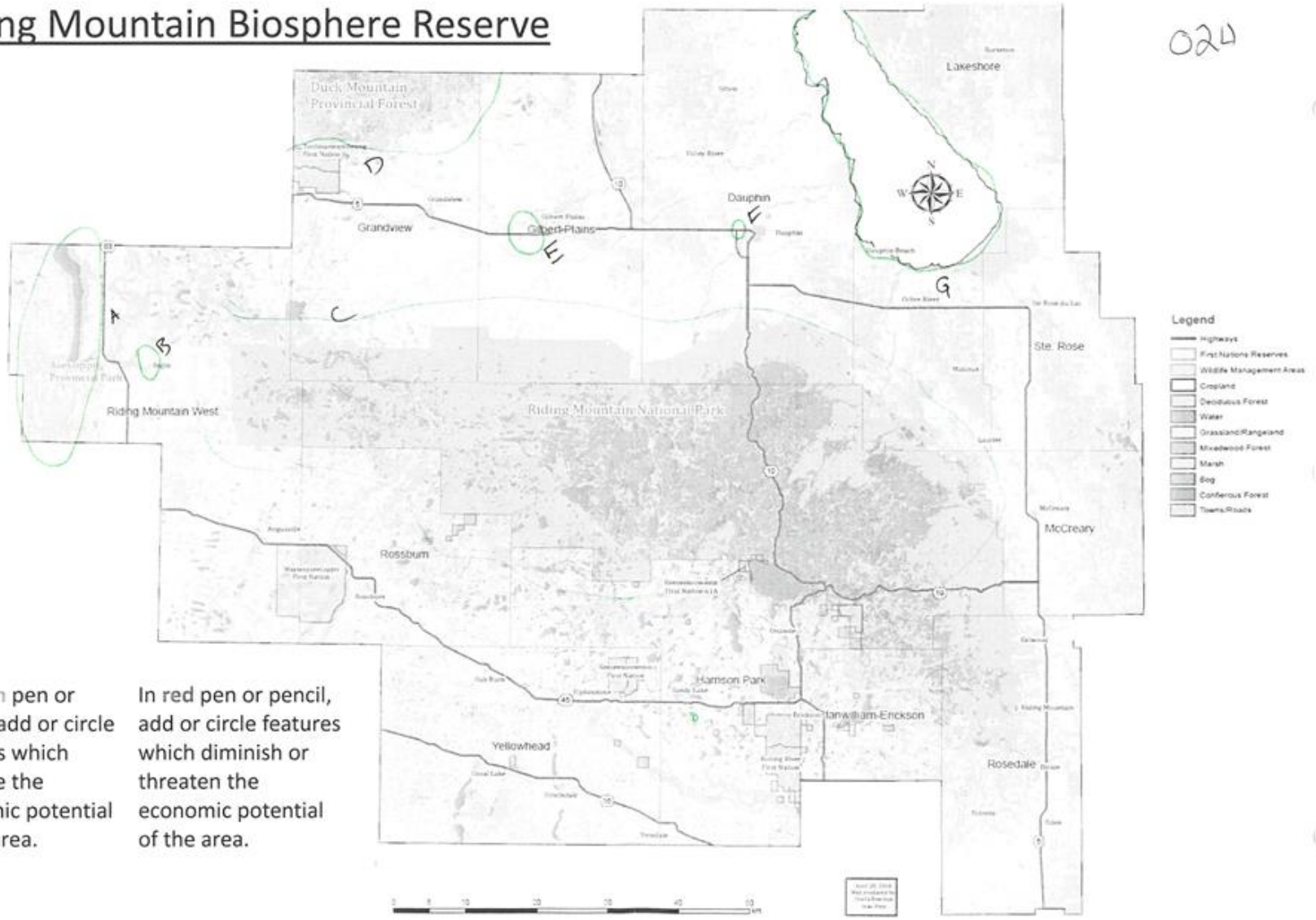

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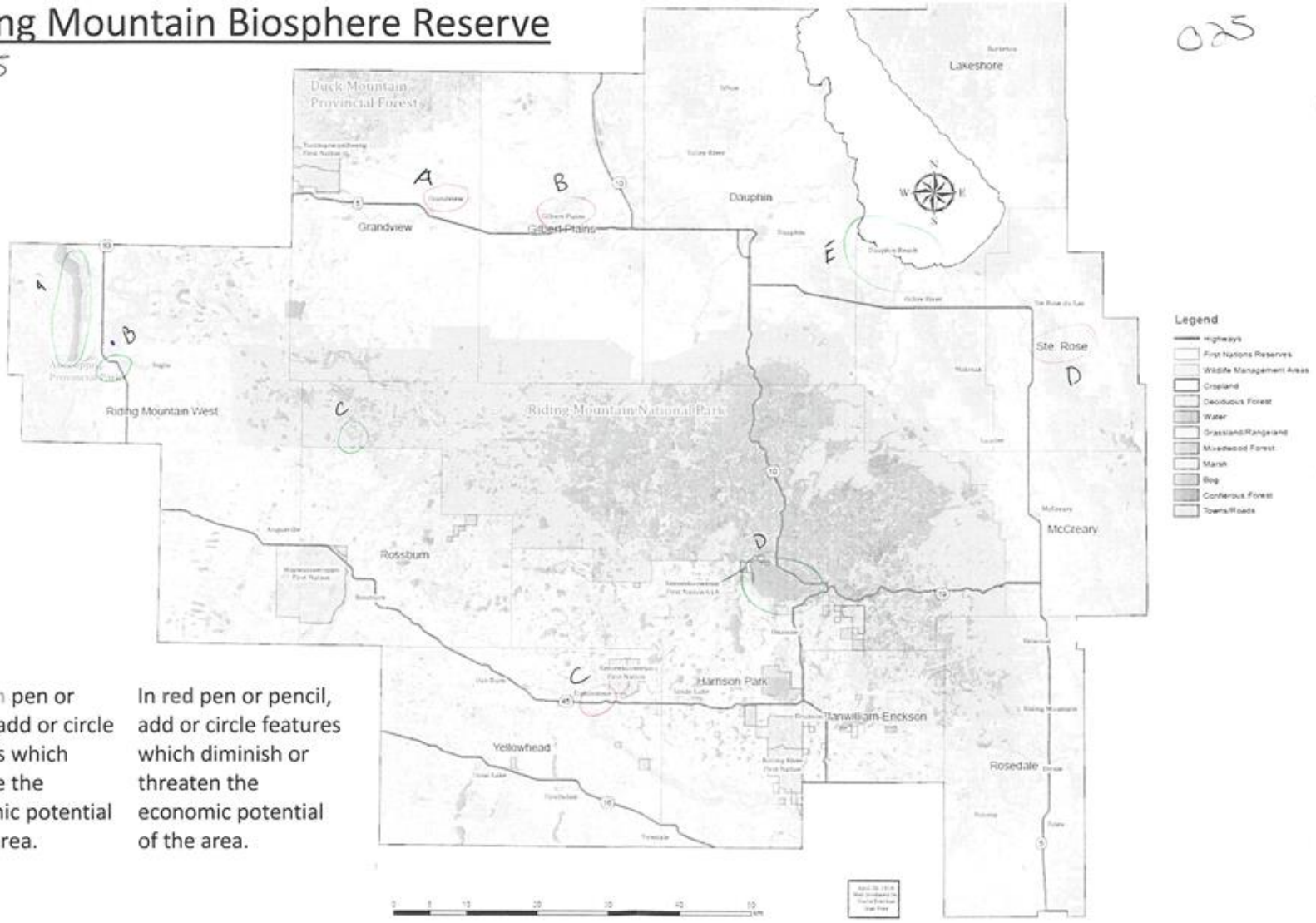

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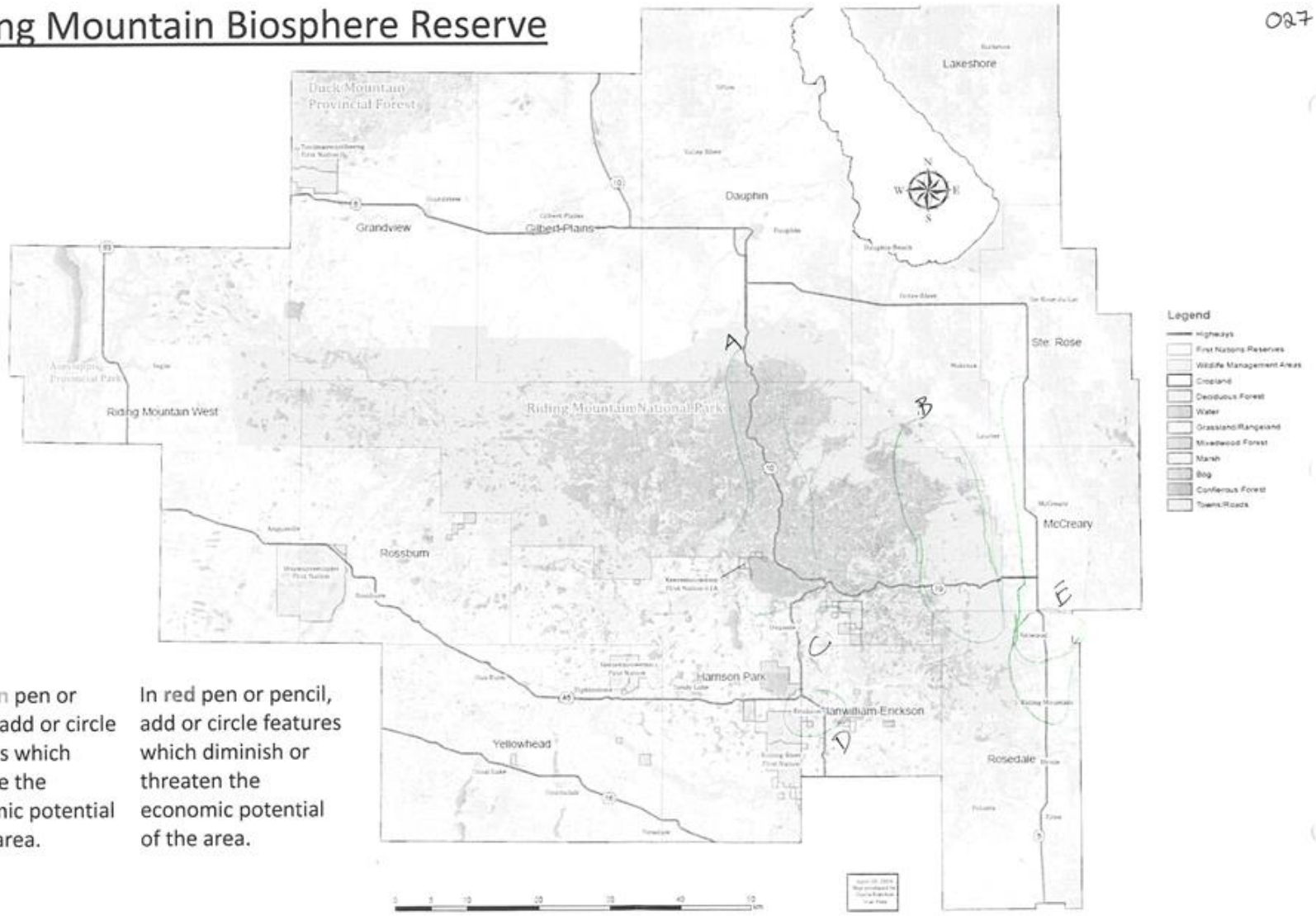

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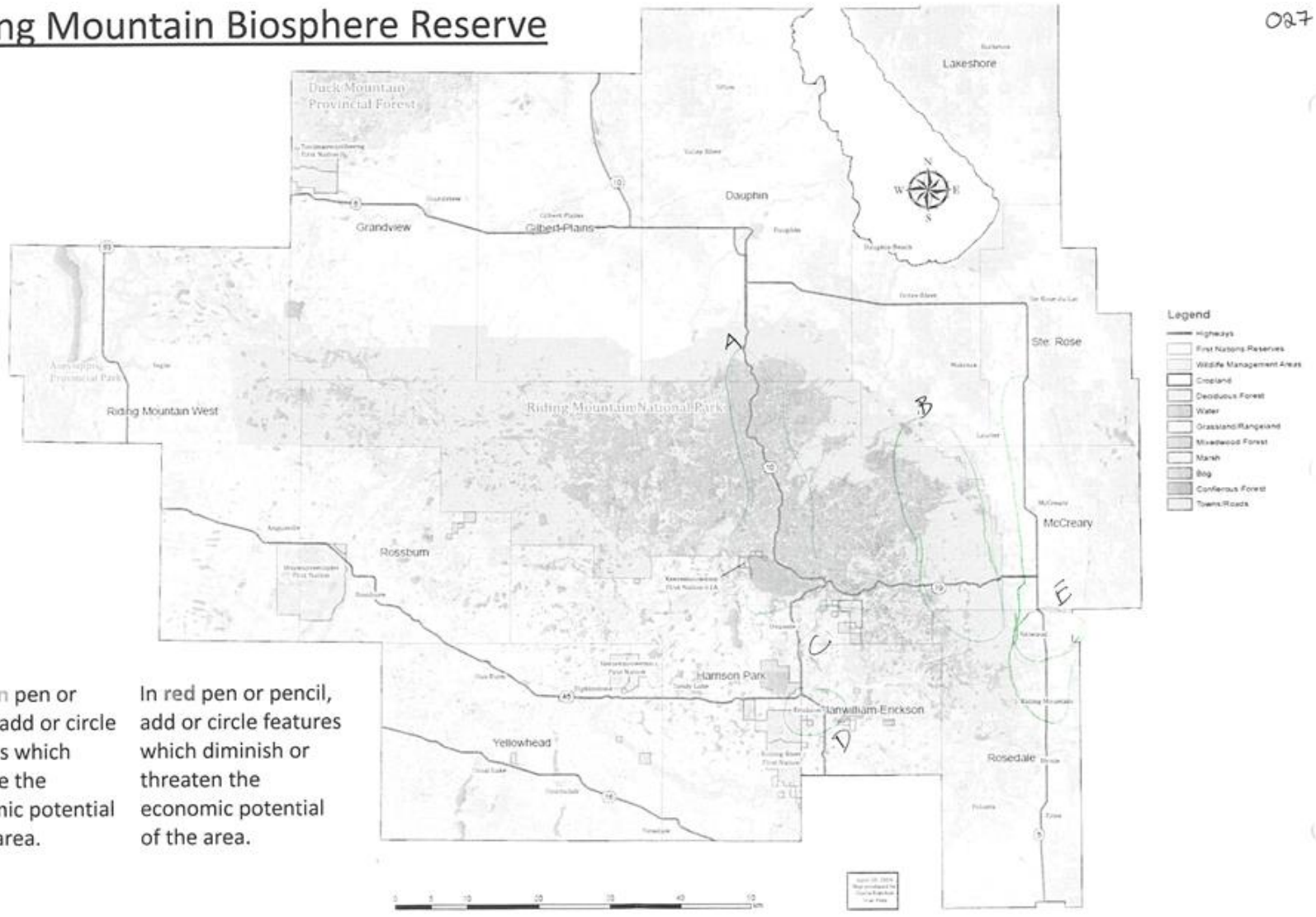

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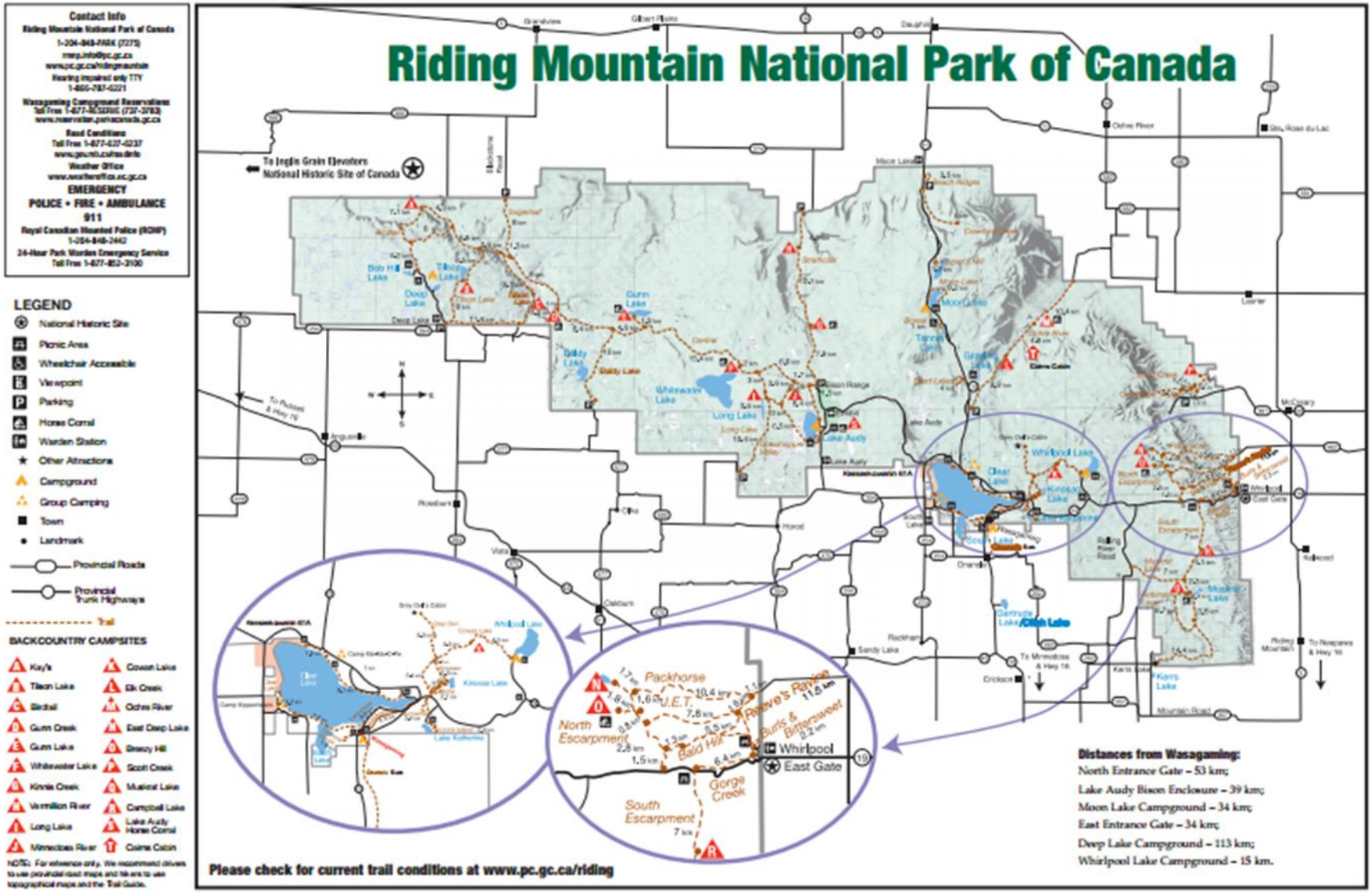
Appendix E: RMNP Trail Map (taken from Parks Canada (b) 2016)



Appendix F: Semi-Structured Interview Protocol

Instructions: The interview is to be conducted after the survey and mapping activity have been completed by the participant. The researcher should take a moment to review the participant's survey and mapping activity, identifying individual points of data (as described in section 5.1 and 5.3).

Objective	Suggested Prompts
Establish whether the participant found it challenging to complete the mapping activity.	- How did you find the mapping activity? o How challenging did you find it to read the map?

Establish the participants' level of familiarity with the RMBR.	- The map you annotated is a map of the Riding Mountain Biosphere Reserve, have you heard of it before?
	  o What do you know about the Riding Mountain Biosphere Reserve?
	  o Have you interacted with the RMBR management committee, or participated in initiatives led by the RMBR?

Overview the participant's survey responses.	- I'd like to go over your responses to the survey to ensure I have correctly interpreted them. You are welcome to elaborate on anything at any point.
Overview participant's mapping activity.	- I'd like to go over your mapping activity to ensure I have interpreted it correctly. I have marked each of your annotations with a letter as an identifier, and I would like to review each of them individually. You are welcome to elaborate on anything at any point.
Check if the participant has any final contributions, or questions for the researcher.	- Is there anything else you would like to comment on related to what we have talked about? Do you have any questions for me?
Close the interview	- Thank you for your participation. You have my contact information on your copy of the consent form. Please get in touch if you have any additional questions of comments.

Appendix G: Map of the Riding Mountain Biosphere Reserve