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Exploring Co-Reclamation: Gesturing Towards Intercultural Collaboration and the Renewal of Indigenous Cultural Landscapes after Oil Sands Extraction in the Fort McKay First Nation Traditional Territory, Treaty 8, Alberta, Canada

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Exploring Co-Reclamation: Gesturing Towards Intercultural Collaboration and the Renewal of Indigenous Cultural Landscapes after Oil Sands Extraction in the Fort McKay First Nation Traditional Territory, Treaty 8, Alberta, Canada

by

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A THESIS

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ABSTRACT

The sustainability of a landscape and its host community post-mining depends on careful and effective mine closure and reclamation planning. Such planning has the potential to support the renewal of cultural landscapes and to re-establish traditional land use capability on reclaimed lands for affected Indigenous communities to exercise Indigenous and Treaty Rights within their traditional territories. A collaborative approach to mine closure and reclamation, termed "co-reclamation", was conceived and evaluated by academic researchers and Fort McKay First Nation (Fort McKay) staff, representatives, and community members who are hosting oil sands projects on their traditional territory in Treaty 8, Alberta, Canada. An oil sands company participated in early portions of the study. The aim of this dissertation was to explore a participatory and inclusive approach to mine closure and reclamation of lands disturbed by oil sands activities in the Fort McKay Traditional Territory to support the renewal of cultural landscapes capable of supporting Fort McKay's traditional uses. The study applied a "Two-Roads Approach", which is an ethnoecological framework, to elevate Fort McKay's voices, research inquiries, knowledge system, and ways of working throughout the study.

The people of Fort McKay have been living off the land for many generations. The sustainability of their culture is rooted in their traditional lands and waters which supply food and other resources for subsistence activities and a connection to their community, history, traditions, knowledge, and spirituality. The Two-Roads ethnoecological framework supported an examination of the Fort McKay road whereby mine closure and reclamation processes were explored and developed based on Fort McKay's understanding of their traditional lands, waters, and aspects from their placed-based knowledge system. Furthermore, the Two-Roads Approach enabled the braiding of scientific and Indigenous perspectives and knowledges into co-created research products. This dissertation presents the following emergent intercultural mine closure and reclamation tools, approaches, and insights: consultation, engagement, and mine closure good practices; an indigenized code of conduct; traditional Indigenous cultural methods for creating a shared closure vision; a shared First Nation-industry aspirational story - *te mamano aski ki kakio asiniwak* (Cree) / *ʔeła ʔeghdalaída niha tuha* (Dënesuliné) / working together for the betterment of our people and land (English); a subset of the traditional use plants, wildlife, birds, amphibians, and fish taxa which are important to Fort McKay; insights from a systematic review of traditional land use planning in mine closure and reclamation at seven oil sands projects; and a Two-Roads Reconciliation & Reclamation Framework to assist oil sands operators and Canadian Provincial Government agencies with ethical intercultural dialogue and meaningful engagement with Fort McKay on mine closure and reclamation of their traditional territory. These research products illuminate steps

forward in problem solving towards reclamation as an act of reconciliation and a more just and equitable closure landscape with mutual benefits for all.

PREFACE

This doctoral dissertation was written in a manuscript style. Chapter 4 has been published as Daly et al. (2022), "Gesturing Towards Co-Visioning: A New Approach for Intercultural Mine Reclamation and Closure Planning". The International Journal of Architectonic, Spatial, and Environmental Design, vol. 16, issue 1. Citation style and format varies across the research studies in chapters 2-5 since they were prepared for different scientific journals which have different submission requirements.

The studies presented in chapters 2-5 were covered by ethics approval issued by Fort McKay First Nation on July 3, 2019, and the University of Calgary Conjoint Faculties Research Ethics Board (CFREB) on September 20, 2020, with Ethics Certificate number REB19-0534 for the project "Indigenous Co-Led Oil Sands Reclamation Research Project".

ACKNOWLEDGEMENTS

I wish to acknowledge that my learning journey occurred both on the Fort McKay Traditional Territory and at the University of Calgary in what we call Alberta, which is the traditional and ancestral territory of many peoples, presently subject to Treaties 6, 7 and 8. The University of Calgary is on Treaty 7 in Calgary within Southern Alberta, which is the traditional lands of the Blackfoot Confederacy, Tsuut'ina First Nation, and the Stoney Nakoda. The City of Calgary is also home to Métis Nation of Alberta, Region 3. Treaty 8 is the traditional territories of the Woodland Cree and Dënesuliné ("Dene") First Nations, which includes Fort McKay First Nation, and is also home to Métis Peoples.

This dissertation would not have been possible without the partnership, leadership, and patient teachers at Fort McKay First Nation. I wish to show my appreciation to the late Elder Clara Mercer for her leadership, wisdom and the sacred Cree teachings and experiences she entrusted us with to learn and grow. Jean L'Hommecourt, the community liaison for the project, has been called the "environmental conscience" of her community. She is an awe-inspiring, resilient warrior for the Fort McKay homelands, Dene language, and her children, grandchildren and future generations. I humbly thank you for taking so much time to educate, guide, and support me on this Two-Roads co-reclamation journey and for your friendship. Thank you to all the Fort McKay co-researchers for sharing your time, knowledge, experiences, hopes and vulnerabilities, including the late Elder Doug Mercer, Elder Marie Boucher, Gabe Desjarlais, Elder Joe Grandjambe, Elder Martha Grandjambe, Ryan Grandjambe, Elder Dora L'Hommecourt, James Ladouceur, Elder Edith Orr, Audrey Redcrow, and Elder James "Scotty" Stewart. I'm beyond grateful to Bori Arrobo, Sustainability Director at Fort McKay, for taking a significant amount of time to guide, support and mentor me about allyship and meaningful participation from project start to finish. Thank you for not giving up on me, and for your friendship! A special thanks to Dr. Gillian Donald, technical advisor and member of the Fort McKay First Nation research team, for very patiently teaching me about ethnoecology and how to start walking on the Two-Roads and for modelling allyship.

I would like to express my heartfelt thanks to my supervisor Dr. S Craig Gerlach for the immense support, encouragement, inspiration, and stories over the years of this research adventure. For not being only a supervisor and role model towards humble allyship but a friend, thank you. I would also like to extend my immense gratitude to the late Dr. David Adam Lertzman, Dr. Gillian Donald, Dr. Dan McCarthy, and Dr. Gord McKenna for their guidance throughout my PhD as part of my incredible, expert (formal and informal) supervisory committee and fellow co-researchers. Dan, I can never thank you enough for all the time, patience, encouragement, mentorship, humour, insights, camaraderie, and

direction - sometimes through rough waters - you supplied time-and-time again as we learned about co-reclamation together. David there truly are no words to express the profound and lasting impact you've had on me both personally and professionally. This thesis is dedicated to you. My thanks will also be extended to Dr. Adela Kincaid and Dr. Sarah Holocombe for their constructive comments and expert guidance on the final draft.

I gratefully acknowledge the assistance the employees of an oil sands company who took part in my research on top of their busy jobs. Thank you for sharing your experiences, perspectives and insights into sustainability, reconciliation, mine closure, and reclamation thinking.

I cannot conclude without thanking my family: mother, father, sister and her family for their boundless support and love. Same to my Alberta family - Sean, Lelaynia, Bonnie, Victor, Erica, Laureen, Caitlyn, and Lisa - for your true friendships, boundless support, encouragement, insights, and for always being there. Thank you, Dr. Julian Norris, for providing his place in Canmore on numerous occasions for an inspiring and energizing thesis writing retreat.

Finally, I would like to take this opportunity to express my thanks to those who helped me in one way or another in and around campus with this research. Special thanks to the following instructors that enlightened, guided and inspired me: Dr. David Lertzman, Dr. Reg Crowshoe, Rose Crowshoe, Vicki Bouvier, Dr. David Monteyne, Dr. Noel Keough, and Dr. Sasha Tsenkova. Thank you to Dr. John Brown for establishing a supportive and innovative learning environment in our school and being there for students, like me, through the ups and downs so we make it to the finish line.

DEDICATION

For my mentor and friend, the late Dr. David Adam Lertzman, who inspired and challenged me to grow. With love and gratitude.

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Te mamano aski ki kakio asiniwak (Cree) / *ʔeła ʔeghdalaída niha tuha* (Dene) / *Working together for the betterment of our people and the land* (English)

The late Elder Clara Mercer, Fort McKay First Nation

There have been industrial impacts and it's an overwhelming task, but we have to because it's here with us and it's urgent and it needs us. That's why I did the closure vision painting the way I did because it requires us to come together to do it.

The late Dr. David Lertzman, Haskayne School of Business, University of Calgary

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Navigating the environmental and societal challenges associated with energizing the world today poses major challenges for industry, policy makers, civilians and Indigenous communities alike. Businesses are adapting to a transforming global energy sector reaching for climate and sustainable development goals (UN 2015a, b). Investors and consumers are increasingly prioritizing companies with ethical business practices that score highly on environmental and societal responsibility scales (GSIA 2017). External stakeholders and Indigenous communities are seeking assurances that the mineral, metal, and energy projects delivering the materials to power our lives are responsibly cleaned up after operations are complete to avoid financial and social public burdens (Beckett and Keeling 2019; Caldwell 2013; Unger et al. 2020). Closure of energy project-affected lands must address complex technical and physical environmental hurdles, including changes to topography and landforms, safe disposal or treatment of waste materials, potentially contaminated soil and water, shortages of soil material, and the need to establish sustainable ecosystems. Sophisticated and interrelated social, economic, and cultural factors must also be addressed, including the need to braid traditional Indigenous Knowledge (IK) and perspectives into landform designs, and identify post-project uses of the land and the potential impacts on local cultures, community services, and employment. Including those most affected by resource management policy and practices, especially local Indigenous communities with different worldviews, allows the best of both worlds – western sciences and IK - to contribute insights and solutions not visible to those entrenched in the prevailing paradigm or system (Gundjeihmi Aboriginal Corporation 2017; Drylie et al. 2013; Lertzman 2010; McCarthy et al. 2014). Inclusion of key stakeholders and local Indigenous communities in energy project and mine closure and reclamation planning has potential to create an ethical space (Ermine 2007) for assumptions to be challenged in a constructive manner and mutual benefits to be found.

Mine closure and reclamation theory and practice has come a long way in its relatively brief history. The mining industry has been extracting natural resources from the Earth for thousands of years (Earth Systems 2006). Until recently, the norm was to abandon exhausted mines which has left scars across the globe and tainted the image of the extractive industry (Edward and Maritz, 2019; Khanna, 2000; McKenna, 2002). Abandoned and orphaned sites total more than 10, 000 in Canada (Hogan and Tremblay 2006; MacKasey 2020) and millions around the world (Worral et al., 2009). Partly driven by the inventory of legacy mines and growing awareness of the liabilities of unreclaimed lands, mine closure and reclamation legislation and environment-focused best practice guidelines became a widespread practice during the second half of the 20th century (AER 2021; Clark et al. 2022; ICMM 2019; Kero 2022; Lloyd 2019; Monosky and Keeling 2021; Rosa et al. 2020; Unger et al. 2020). Unger et al. (2020) describes the global evolution of priorities for mine closure and reclamation in three phases. Phase 1 (late

1960s to 1980s) started with the passage of environment-focused legislation and regulations and concentrated on management of reclaimed landforms against erosion control using soil replacement and vegetation cover (e.g., Anderson et al. 2010; Kero 2022). Phase 2 (1990s to 2005) saw an expansion of environmental planning efforts, both topically (e.g., geochemistry, ecology, wetlands, end pit lakes, sustainable development, social sciences, and the triple bottom line) and spatially (e.g., land uses, off-site impacts, and communities beyond the mine) (e.g., Anderson et al. 2010; Kero 2022; Daly 2011). Phase 3 (2005 to present) is dominated by increasing public scrutiny, demands from the public for the accountability of industry and government, and a greater diversity of stakeholder and Indigenous Peoples' participation. Companies now strive for social license to operate and legislation requiring financial provisions incents companies to follow through to reclamation completion to address premature mine closure, which is a common occurrence (e.g., Beckett 2019; Drylie et al. 2013; McKenna 2002). Planning for the social and cultural dimensions of mine closure and reclamation is the most recent period in the history of the global mining industry (BTKRG 2009; Christoffersen et al. 2019; Clark et al. 2022; Daly et al. 2022; Holocombe et al. 2022; ICMM 2015; ICMM 2019; ICMM 2020; LDI 2021; McCarthy et al. 2014; Sheldon et al. 2002). The physical and technical aspects of mine closure remain important, but mines around the world are increasingly anticipating the social demands upon mine closure to support positive legacies of mining, including sustainable social, economic, and cultural closure outcomes. Consequently, reclamation and closure principles, best practice (ICMM 2019, 2020; MAC 2008, 2021; Maloney 2019), and human rights instruments are increasingly recognizing that local communities have a right to have input to the decisions that affect them (TRCC 2015; UN 2007).

A promising trend for the future of mine closure and reclamation is the emergence of participatory processes for mine closure, such as participatory regreening, monitoring and evaluation of mine affected landscapes (e.g., Beckett 2022; Greater Sudbury 2022; Pareja et al. 2018; UNDP 2019), local community advisory committees (e.g., Drylie et al. 2013, Centerra Gold Inc. 2020; GOC 2016; Lloyd 2019; NSWMC 2021); impact and benefit agreements with participatory mine closure conditions (O'Faircheallaigh and Lawrence 2019); and community-led closure visioning initiatives (Daly et al. 2022; Parsons et al. 2013; Two Roads Research Team 2011, 2012). Likewise, reclamation and closure good practice instruments and principles are increasingly recognizing that it is just for local stakeholders and Indigenous rights holders to have input to the decisions that affect them (BTKRG 2009; ICMM 2013, 2015, 2019, 2020; LDI 2021). In fact, early involvement of the local community in the planning and preparation for mine closure and the accompanying social transition can reduce negative impacts and improve the benefits after mining activities are complete (Boadi et al. 2019; Christoffersen et al. 2019; Everingham et al. 2020; ICMM 2019; Maloney 2019). Current barriers are the lack of instruction manuals, tools, and case studies supporting planning for the social and cultural aspects of sustainable

mine closure (Bond and Kelly 2020; Daly 2021; Morrison-Saunders 2019; ICMM 2019; Unger et al 2019). Developing theoretically robust and applied approaches to enable landscape planning dialogue and planning across cultural paradigms has the potential to build bridges between colonial governments, companies, and Indigenous communities looking to navigate the energy transition and sustainable mine closure together.

1.2 Positionality Statement

This study was born out an aspiration from the people of Fort McKay First Nation (Fort McKay) to reclaim their homelands to a state capable of supporting their traditional land uses and culture, an industry's corporate Indigenous relations target to earn trust in reclaimed landscapes, and this doctoral student's interest to be of service to the inclusion of local Indigenous communities, like Fort McKay, their knowledge systems and perspectives, and Aboriginal, Treaty, and inherent rights into mine closure and reclamation of their lands and waters. This dissertation presents emerging intercultural mine closure and reclamation tools and approaches co-created by academic researchers and the Fort McKay research team, which consists of community researchers who are rights holders hosting oil sands mining on their traditional territory, community staff, and a technical advisor. An oil sands company took part in early portions of the project.

After experiencing a MSc in wetland reclamation and approximately two decades in mine closure, reclamation, and conservation planning and technology development, I, the student (co)author of this dissertation, returned to school to pursue a PhD in Environmental Design. As a non-Indigenous person, my aim was to continue my learning journey and to better understand truth and reconciliation between Indigenous and non-Indigenous Peoples in Canada within mine closure and reclamation, so I could more effectively support it in my career. My approach was to collaborate with and learn from Fort McKay knowledge holders, land users, staff, and community representatives and other leading scholars in this topic. Any errors, omissions, limitations, and misinterpretations in this dissertation are mine because I am still learning to overcome colonial biases and support ethical research spaces and the "Two-Roads Approach" (see below).

1.3 Co-Reclamation Definition

"Co-reclamation" is a movement towards a participatory and inclusive mine closure and reclamation process that empowers host communities with an equitable role in mine closure and reclamation planning decision-making in recognition that they will live with the mine closure outcomes for generations. In this case study, the community of Fort McKay's interests were to explore the renewal

of cultural landscapes within their oil sands industry-degraded homelands and to apply reclamation as an act of reconciliation.

1.4 Building from the Biodiversity Traditional Knowledge Study and Starting the Co-Reclamation Project

In 2018, the Co-Reclamation Project was conceived by the Fort McKay research team, the Universities of Calgary and Waterloo, and an oil sands company and was later formalized in a Collaborative Research Agreement. This dissertation is a part of the Co-Reclamation Project. This research supports collaborative oil sands reclamation between Fort McKay and industry and changes in the current unequal decision-making of industry- and government-led reclamation practices. The parties to this five-year research agreement acknowledge "there are significant opportunities to improve oil sands reclamation regulations and practices in the Athabasca region to better consider Indigenous Peoples' perspectives and serve their cultural needs. This collaboration reclamation ("co-reclamation") research efforts sets out to do just that" (The Parties 2019, p. 18). Aims of the Co-Reclamation Project were to "support intercultural knowledge exchange to enhance mutual understanding of oil sands reclamation, land reclamation, land use practices and community health and wellness for future generations" and "for scientific and Indigenous Knowledge, approaches and peoples to collaboratively heal a piece of the land degraded by oil sands development and return it to its original stewards through co-reclamation" (The Parties 2019, p. 18-19). The Project was framed to "support Indigenous community voice in decisions-making throughout the entire "co-reclamation research project plan" and to build on existing knowledge produced by Indigenous-informed studies about boreal forest ecosystem function, traditional values, and reclamation recommendations from Fort McKay" (The Parties 2019, p. 19).

The Co-Reclamation Project used existing knowledge from the Biodiversity Traditional Knowledge (TK) Study to further understand and advance the "Two-Roads Approach" (Two Roads Research Team 2011, 2012). Fort McKay has a long-established record of working collaboratively with the many oil sands companies in their traditional territory. For instance, from 2001-2015 Fort McKay took part in Cumulative Environmental Management Association (CEMA), a multistakeholder organization with a mandate to make recommendations to the provincial government to manage the cumulative effects of regional development on air, land, water and biodiversity in their homelands. Fort McKay community members, other local Indigenous communities, oil sands operators and the Alberta Government participated in a CEMA project called the Biodiversity TK Study. The aim was to gain an understanding of what biodiversity means to local Indigenous community members and to provide recommendations to inform guidelines used by industry and governments for the establishment and monitoring of biodiversity on reclaimed landscapes (BTKRG 2009). The study was designed to be

aligned with Article 8(j) of the Convention on Biodiversity (CBD) which recognizes the dependency of Indigenous communities on biological diversity, their unique role in conserving life of Earth (United Nations 1992), and the need to enhance the capacity of Indigenous communities to be effectively and ethically involved in decision-making related to Article 8(j) (Secretariat of the Convention on Biological Diversity 2011). The Biodiversity TK Study revealed a lack of meaningful participation of affected Indigenous communities in the mine closure and reclamation process by reviewing existing reclamation guidelines, including the Guidelines for Reclamation to Forest Revegetation in the Athabasca Oil Sands Region ("The Revegetation Manual")(AENV 2010) and regulations (Two Roads Approach 2011). Consequently, a new methodology was defined for establishing a participatory planning process grounded in ethnoecology to include Indigenous Peoples and IK in reclamation planning and monitoring in the oil sands region, called a "Two-Roads Approach", and was accompanied with recommendations for its implementation (Two Roads Research Team 2011, 2012). Ethnoecology is "the science of how people understand the relationship between humans, animals, plants and physical elements of a local environment" (Davison-Hunt 2000). It helps one to understand the relationships between biodiversity and social and cultural systems (Gerique 2006).

1.5 Research Purpose, Objectives and Hypothesis

The research goal of this dissertation was to explore a participatory and inclusive approach to mine closure and reclamation of lands disturbed by oil sands activities in the Fort McKay Traditional Territory (FMTT) to support the renewal of cultural landscapes capable of supporting Fort McKay's traditional uses.

The research objectives of this dissertation were to:

1. Develop a code of conduct to guide effective intercultural research and practice;
2. Develop tools for co-reclamation that support intercultural understanding and the participation of Fort McKay in reclamation and closure planning decision-making;
3. Evaluate traditional use planning in mine closure and reclamation plans to understand if cultural landscapes and relationships are being renewed;
4. Develop an effective co-reclamation framework to support ethical reclamation and closure practices for (i) the oil sands industry with a legal obligation for and commitments to responsible closure; and (ii) Fort McKay who have rights to care for and use their traditional lands.

The research hypothesis was that collaborative development of reclamation and closure processes and tools to support fair decision-making between Fort McKay and an oil sands company will lead to improved mutual understanding, trust, relationships, and landscape outcomes.

1.6 Methodological Lens

In keeping with ethical Indigenous research principles (FNIGC 2014; Smith 2012; Wilson 2008), this project was conceived, developed, and implemented collaboratively with Fort McKay. Developing positive relationship is a foundational element of Indigenous research (Lavallée 2009). Consequently, this work began with the (re)building of relationships between Fort McKay, academic researchers and an oil sands company, collectively referred to as "co-researchers". The aspirational concept for this collaborative reclamation study was shared on March 28, 2018 by a company employee and an academic with pre-existing relationships to a Fort McKay land user and knowledge holder as follows, "*we're seeking your guidance on who you think from McKay should attend the initial meeting and what cultural or ceremonial activities we should include. If you recall, we do not have any pre-conceived ideas of where or what type of reclamation project we should pursue. We're hoping the Elders and yourself can assist us with co-creating the project*." The Fort McKay co-researcher's response was, "*Looking forward to co-creating the project and assisting and providing Traditional Knowledge to bring back our traditional territory to a healthy productive ecosystem (or at least give it our best shot).*" This affirming response from a respected land user, and, later, Fort McKay Chief and Council supported formalization of this budding research collaboration. Contributory funding, Indigenous Knowledge and research ownership and aims and direction of the research process were negotiated with participating entities – the Universities of Calgary and Waterloo, Fort McKay and an oil sands company – through a Research Collaborative Agreement to ensure shared expectations about participatory research and Fort McKay's voice in decision-making throughout the project.

Understanding and selection of a suitable research methodology was completed *a priori* because the philosophical assumptions around it inform the research project design and influence outcomes. The Two-Roads Approach was selected as the methodology since this ethnoecological framework was developed to support the inclusion of Indigenous Peoples and their IK and perspectives into oil sands reclamation planning alongside western science and Fort McKay and the oil sands company were involved in its co-creation (Two Roads Research Team 2011, 2012). The Two-Roads Approach framework guided co-researchers actions during knowledge gathering to support plural ways of being and knowing that includes multiple cultural themes, worldviews, ideologies and mindsets (Two Roads Research Team 2011, 2012). A Two-Roads Approach supports the recognition of communities and companies as local experts with valuable knowledges to be the architects, not objects, of the research design, practice, and analysis (Simmons et al. 2012; Smith 2012; Wilson 2008). Thus, all co-researchers in the project were invited to co-create reclamation project design, methodology, activities, and evaluation while elevating Fort McKay's typically underrepresented and under resourced voice through use of Dënesuliné (herein referred to as Dene) and Cree cultural approaches and shared decision-making.

Using an ethnoecological lens supported the resourcing and emphasis on the Fort McKay road whereby mine closure and reclamation processes can be explored and developed based on Fort McKay's understanding of their traditional lands, waters, and aspects from their placed-based knowledge system. This overarching strategy also supported co-researchers to share the best of both Indigenous and scientific knowledge systems at bridges or spaces for co-design of this intercultural research project (Lertzman 2010; Simmons et al. 2012) including supporting the scientific self-determination of Fort McKay to develop their own ways of working on research questions (Two Roads Research Team 2011, 2012).

Decolonizing and Indigenous research (Smith 2012; Wilson 2008) theories underpin this dissertation because they collectively emphasize the importance of including the impacted Indigenous communities and place-based knowledge system to explore phenomenon of interest. Knowledge creation relies on relationships with Elders, land users, and other traditional knowledge holders who have or are developing insights (Moore 2017; Smith 2012). Indigenous cosmology, worldview, systems of knowledge, and beliefs are components of the research (Wilson 2008). This type of research acknowledges Indigenous Peoples' special and unique rights as the original inhabitants of the lands and supports their ability to exercise self-determination (Joseph and Joseph 2019; Sarkki et al. 2020; Smith 2012) and to take part in land management as self-governing Nations (UN 2007). In the case of mine closure and reclamation research, decolonizing and Indigenous research explores the research questions, values, needs, rights, and perspectives of Fort McKay and the elements of importance to them for the renewal of their oil sands industry-degraded homelands and their community.

1.7 Project Changes and Implications for the Dissertation

In 2021, part-way through the Co-Reclamation Project, the oil sands company terminated their participation. Chapters 3 and 4 of this dissertation were complete or nearly complete at the time. Without the oil sands partner, their funding, and access to oil sand industry degraded-lands, and in lieu of co-reclaiming land as planned, Fort McKay and University co-researchers developed new research tasks that enabled continued exploration of Fort McKay's reclamation interests while enabling graduate students to complete their education. One new task for this dissertation became a systematic review of current oil sands mine closure and reclamation plans to understand current traditional land use planning methods, results, gaps, drivers, and opportunities (see Chapter 5). Consequently, in some data chapters (i.e., chapters 3 and 4) this dissertation explored the possibility for meaningful collaboration in oil sands mine closure and reclamation, intercultural knowledge exchange, enhanced understanding, and trust- and relationship-building between Fort McKay and an oil sands company. When that was no longer feasible, the other data chapters (i.e. chapters 2 and 5), which were completed after the oil sands company terminated their participation, focused on the exploration of how to heal the land, apply reclamation as an

act of reconciliation, and have Fort McKay's participation in the mine closure and reclamation process using their unique IK and approaches. The approach supported advancement of the Two-Roads Approach (Two Roads Research Team 2011, 2012). Albeit, there were limitations to fully achieving the latter. Chapters 2 and 5 lacked the resources to examine reclamation from the perspectives of all the original Fort McKay co-researchers, especially the community knowledge holders and land users, and at each step in the research process, with the exception of the final verification and validation workshop. It was also hindered by the inability to meet safely in person with all Fort McKay co-researchers between April 2020 and June 2022 due to the COVID-19 pandemic. For more details on research limitations and implications see sections 2.5 and 5.3.7.

1.8 Research Significance

- First to apply the Two-Roads Approach, an ethnoecological framework and strategy, to reclamation of oil sands industry-degraded lands;
- Demonstrated that a rigorous interpretive process, which involved coding of the data, was capable of supporting Indigenous community leadership and the identification and prioritization of key issues, concepts, and solutions from their oral narratives;
- Demonstrated how a reclamation research project can support an ethical and equitable space for Fort McKay to work with an oil sands company to renewal their degraded homelands;
- Advanced development of intercultural processes and tools which support the meaningful participation of Fort McKay in oil sands mine closure and reclamation;
- Supplied a case study that assists with understanding and planning for reclamation of cultural landscapes as mitigation to the oil sands mine impacts to Fort McKay's homelands;
- Contributed applied knowledge towards the decolonizing and Indigenous research theories; and
- Contributed to reconciliation between Indigenous and non-indigenous Peoples by evaluating approaches with the potential to support and strengthen intercultural communication, understanding, engagement, and, ultimately, relationships.

1.9 Overview of Thesis Layout

This study is comprised of six chapters. Chapter one (this section) presents foundational context, concepts, and terminology, research aspirations and strategy, relevant theories, and the significance of this dissertation. Chapters two to five are the research chapters. Chapter two reviews and tests theoretical concepts for an intercultural mine closure and reclamation framework (Figure 2-3), which is later optimized using study results and the principles of adaptive management and social learning (Figure 2-6).

Figure 2-3 A preview of the Initial Conceptual Framework found in chapter 2. It is a conceptualization of a collaborative framework for mine closure and reclamation between Fort McKay and oil sands company. It begins with establishment of a diverse team, collaboration principles, and inclusion of rights holders in mine closure vision and objective setting. Next, a mine degraded area to reclaim is co-selected followed by co-design of a reclamation plan, co-execution of the plan, and co-monitoring of the co-reclaimed Indigenous traditional territory. Adaptive management supports continuous improvement of future iterations of the co-reclamation approach.

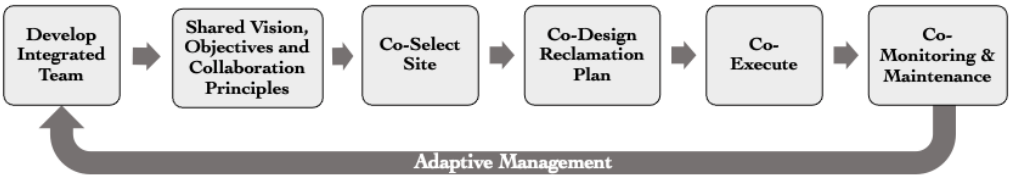
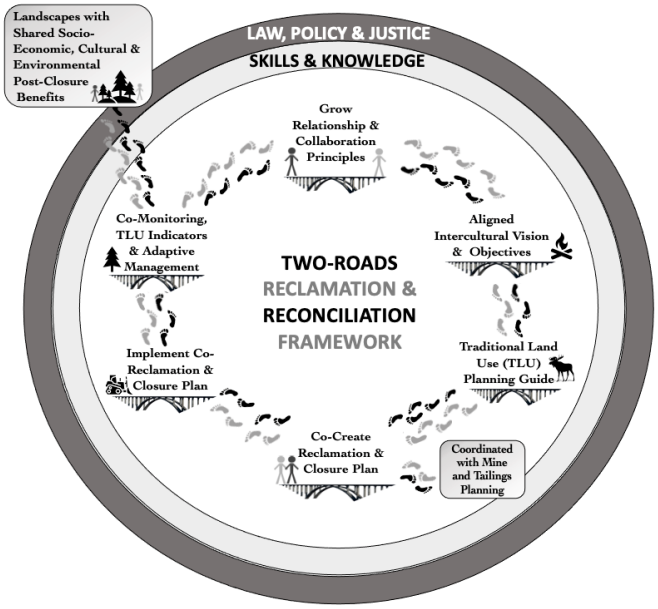


Figure 2-6 A preview of the Two-Roads Reclamation & Reconciliation Framework found in chapter 2. It is a collaborative framework for mine closure and reclamation between an Indigenous Nation and oil sands companies which was optimized and partially validated using the test results from the Co-Reclamation Project.



Chapter three presents an indigenized code of conduct, called “The Cycle of Respect” (Figure 2-3), with a set of principles to aid oil sands operators and Government agencies with ethical intercultural dialogue and meaningful engagement with Fort McKay on mine closure and reclamation of their traditional territory. Chapter four investigates the use of traditional Indigenous cultural activities for their effectiveness in empowering intercultural dialogue and guiding creation of a shared post-closure vision and site selection criteria between a First Nation and an oil sands company. Chapter five explores consultation, engagement and mine closure good practices and scrutinizes traditional land use planning in

mine closure and reclamation at seven oil sands projects operating on the Fort McKay's homelands. The sixth is the concluding chapter which summarizes and reflects on the overall study, imparts overall recommendations for future work and application of outcomes in mine closure and reclamation, and recaps the new knowledge contributed by this doctoral dissertation.

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CHAPTER TWO

GESTURING TOWARDS THE RENEWAL OF INDIGENOUS CULTURAL LANDSCAPES USING CRITICAL PARTICIPATORY ACTION RESEARCH AND A TWO-ROADS RECONCILIATION & RECLAMATION FRAMEWORK

Title: Gesturing Towards the Renewal of Indigenous Cultural Landscapes using Critical Participatory Action Research and a Two-Roads Reclamation and Reconciliation Framework

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2.0 Abstract

This article reviews the theoretical concepts for an intercultural mine closure and reclamation framework co-created by academic researchers and the Fort McKay First Nation research team which consisted of community staff, a technical advisor and community researchers who are rights holders hosting oil sands mining on their traditional territory. It used critical participatory action research to conceive, test, and optimize a conceptual framework aimed at improving relationships, trust and landscape outcomes between an Indigenous community, and an oil sands company. The framework illuminates steps forward in problem solving towards cultural landscapes capable of support traditional uses, reconciliation, and a just and equitable closure landscape with mutual benefits for all.

Keywords (4 to 6): Co-Reclamation and mine closure; Two-Roads Reconciliation & Reclamation Framework; cultural landscape; Indigenous research

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Statements and Declarations

Ethics approval: Research operated with Fort McKay First Nation and Universities of Calgary and Waterloo ethics approval and in accordance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS) and Fort McKay First Nation protocols.

2.1 Introduction

Navigating the environmental and societal challenges associated with energizing the world today poses major challenges for industry, policy makers, and civilians alike. Businesses are adapting to a transforming global energy sector reaching for climate and sustainable development goals (UN 2015a, b). Investors and consumers are increasingly prioritizing companies with ethical business practices that score highly on environmental and societal responsibility scales (GSIA 2017). External stakeholders are seeking assurances that the mineral, metal, and energy projects delivering the materials to power our lives are responsibly cleaned up after operations are complete to avoid financial and social public burdens (Beckett and Keeling 2019; Caldwell 2013; Unger et al. 2020). This requires eventual mine closure to be carefully planned for throughout the life of a project, and progressive reclamation to be executed with sufficient financing.

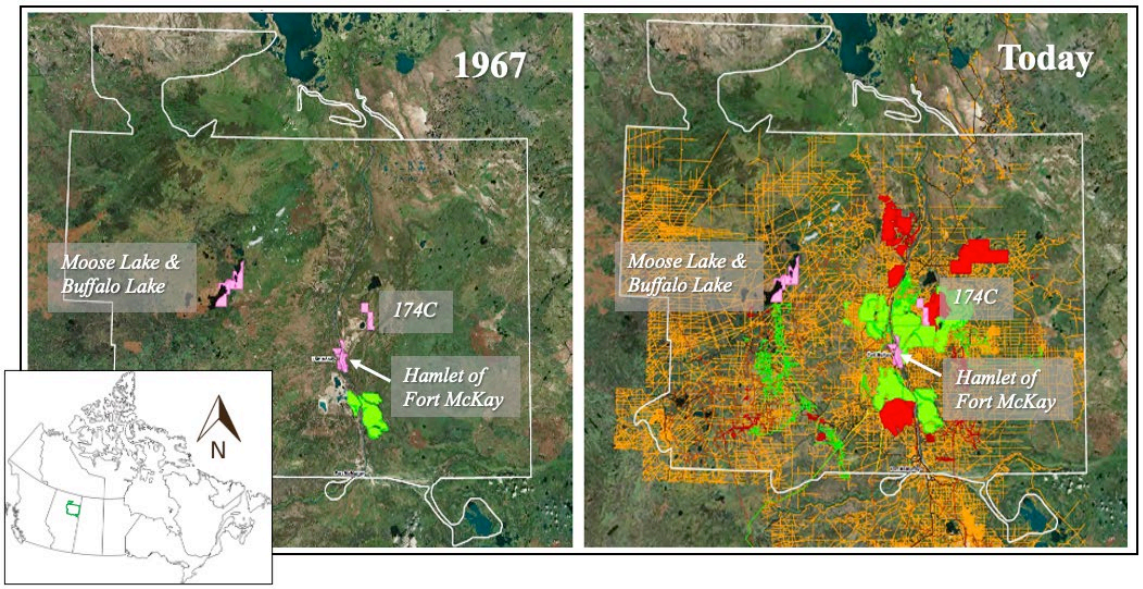
Including those most affected by resource management policy and practices, especially local communities with different worldviews, allows the best of both worlds – western sciences and Indigenous Knowledge (IK) - to contribute insights and solutions not visible to those entrenched in the prevailing paradigm or system (Gundjeihmi Aboriginal Corporation 2017; Drylie et al. 2013; Lertzman 2010; McCarthy et al. 2014). Inclusion of key stakeholders and local Indigenous communities in mine closure and reclamation planning has the potential to create an ethical space (Ermine 2007) for assumptions to be challenged in a constructive manner and mutual benefits to be found. The braiding of social, cultural, and economic values into environmental reclamation and progressive closure is now recognized as a critical and emerging aspect of mine closure that helps affected Indigenous communities plan for their post-closure landscapes needs (BTKRG 2009; Clark et al. 2022; Daly et al. 2022; Holocombe et al. 2022; ICMM 2015; ICMM 2020; LDI 2021; Sheldon et al. 2002), such as renewal of cultural landscapes to mitigate mining impacts to their homelands. Consequently, reclamation and closure principles and best practice instruments are increasingly recognizing that local communities have a right to have input to the decisions that affect them (ICMM 2019). In fact, early involvement of the local community in the planning and preparation for mine closure and the accompanying social transition can reduce negative impacts and improve the benefits and trust in landscape outcomes after mining activities are complete (Boadi et al. 2019; Christoffersen et al. 2019; Everingham et al. 2020; ICMM 2019; Maloney 2019).

2.1.1 The Story of Fort McKay First Nation and the Oil Sands Industry within their Homelands

The authors of this paper include First Nation (Cree and Dënesuliné) knowledge holders, land users, and representatives from Fort McKay First Nation, and University of Calgary and Waterloo academic researchers of mixed European heritage. Combined, we have approximately 1,000 years of career and academic experience in conservation, reclamation and mine closure, and the life-long lived experience of

land-users and knowledge holders whose traditional territory has been affected by the oil sands industry. Fort McKay First Nation has nearly 900 band members of which about 500 live in the Hamlet of Fort McKay on the shores of the Athabasca River in Northeast Alberta, Canada which is also known as Treaty 8 Territory (Figure 2-1). They have lived in this region since time immemorial and have always lived at the site of Fort McKay as part of their seasonal traditional activities (Fort McKay First Nation 1994). They also have reserve lands at Moose Lake, Buffalo Lake and an area called Fort McKay 174C. Historically and today, Fort McKay First Nation practice traditional activities, including hunting of large and small game, fishing, trapping furbearers, harvesting waterfowl eggs, plants and medicines, ceremonies and keeping their spiritual connection to their traditional territory. Fort McKay First Nation's relationship to their homelands and traditional practices are constitutionally affirmed and legally protected in Canada (Constitution Act s35 1982) and recognized internationally (UN 2007). However, with the Athabasca Oil Sands found within their homelands, Cree and Dene band and community members are faced with ongoing industrial impacts, both positive and negative, from oil sands activities which began in the mid-1960s (Figure 2-1).

Figure 2-1 (Left) A birds-eye view of the oil sands industrial footprint within the Fort McKay Traditional Territory (FMTT) (white line) in 1967, the year oil sands activities started, and (right) present day. Pink are Fort McKay First Nation reserve lands, green are active oil sands projects, red are proposed or approved but not yet operating projects and orange is primarily oil and gas exploration footprint. (Map Credit: Fort McKay First Nation).



Fort McKay First Nation (herein referred to as Fort McKay) is committed to building a strong community that embraces change while keeping their rich history and cultural traditions (Fort McKay First Nation 2022). They have a long-established record of working collaboratively with the many oil sands companies in their traditional territory, such as through joint ventures. Simultaneously, Fort McKay works

to preserve members' ability to exercise their inherent, Aboriginal, Treaty and land use rights (herein collectively referred to as "rights") to practice their ways of life. For instance, from 2001-2015 Fort McKay took part in Cumulative Environmental Management Association (CEMA), a multistakeholder organization with a mandate to make recommendations to the provincial government to manage the cumulative effects of regional development on air, land, water and biodiversity in their homelands. Section 2.1.2 introduces the Biodiversity Traditional Knowledge Study, an important precursor to the current study.

2.1.2 The Biodiversity Traditional Knowledge Study and A Two-Roads Approach

Fort McKay community members, other Indigenous communities, oil sands operators and the Alberta Government participated in a CEMA project called the Biodiversity Traditional Knowledge (TK) Study. The aim was to gain an understanding of what biodiversity means to local Indigenous community members and to provide recommendations to inform guidelines used by industry and governments for the establishment and monitoring of biodiversity on reclaimed landscapes (BTKRG 2009).

The study was designed to be aligned with Article 8(j) of the Convention on Biodiversity (CBD) which recognizes the dependency of Indigenous communities on biological diversity, their unique role in conserving life of Earth, (United Nations 1992), the need to enhance the capacity of Indigenous communities to be effectively and ethically involved in decision-making related to Article 8(j) (Secretariat of the Convention on Biological Diversity 2011). Article 8(j) defined the responsibilities of participating countries, like Canada, with respect to Indigenous knowledge and practices. These are to "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices" (UN 1992, p. 6). The Canadian Biodiversity Strategy was developed to meet the obligations of the CBD at a national level (Minister of Supply and Service Canada 1995). It recognizes that the conservation of biodiversity and sustainable use of biological resources are essential to Canada's Indigenous communities. Sixteen years after the CBD was established, in 2008, the Biodiversity TK Study became the second study to work with Indigenous communities to understand the role of IK in guiding biodiversity aims within the context of reclamation.

The Biodiversity TK study used an ethnoecological approach informed by Tim Ingold (2000) and Allice Legat (2007) to understand human-environment interactions by investigating oral narratives as the vehicle for IK transmission. Ethnoecology is "the science of how people understand the relationship between humans, animals, plants and physical elements of a local environment" (Davidson-Hunt 2000). It helps one to understand the relationships between biodiversity and social and cultural systems in relation

to place (Gerique 2006). Experiencing learning through stories is a tool capable of connecting the past and present and providing tools to envision and plan for the future (BTKRG 2009). The study was framed using an Indigenous research methodology (Smith 2012) adapted to the regional context of participating Indigenous communities (BTKRG 2009; Two Roads Research Team 2011) and a modified Participatory Rural Appraisal methodology developed by Robert Chambers (1992, 1994a-b). This partnership approach was more progressive than a consultative approach (Everingham et al. 2020; Maloney 2019; Smith and TEK Standing Committee 2006) and instead supported Indigenous ownership of their IK and the research process (BTKRG 2009), including Indigenous community leadership during focus group meetings, workshops, and time on the land. The meaning of oral narratives are not always apparent to the listener, especially within intercultural spaces, until they are experienced (BTKRG 2009). For this reason, the study incorporated a rigorous interpretive process that involved coding all the data or recorded dialogue for identifying and prioritizing key issues, concepts and solutions.

The Biodiversity TK revealed a lack of meaningful participation of affected Indigenous communities in the mine closure and reclamation process by reviewing existing reclamation guidelines, including the Guidelines for Reclamation to Forest Revegetation in the Athabasca Oil Sands Region ("The Revegetation Manual")(AENV 2010) and regulations (Two Roads Approach 2011). This is despite Fort McKay's contributions to intercultural reclamation advancements (e.g., BTKRG 2009; Buffalo et al. 2011; Garibaldi Heritage and Environmental Consulting 2006; Two Roads Research Team 2011, 2012; The Community Liaison Research Team 2013) and the availability of pre-disturbance data on vegetation, wildlife, and TLUs (e.g., CNRL 2002; FMFN 1994, 1995, 2019; Mobil Oil Limited 1999; Suncor 2003). The study also defined a new methodology for IK projects in the oil sands region described as a "Two Roads to Reclamation Approach" (herein "Two-Roads Approach") and seventeen recommendations for its implementation (Two Roads Research Team 2011, p. i). The Two-Roads Approach is an ethnoecological framework for inclusion of Indigenous Peoples and their IK and perspectives into reclamation planning (Two Roads Research Team 2011, 2012). See Table 2-5 for a list of the recommendations and their current status of completion.

In 2018, Fort McKay partnered with the Universities of Calgary and Waterloo and an oil sands company to continue their quest for their unique Cree and Dene perspectives and knowledges to be represented in the reclamation of their homelands and waters. An oil sands energy company took part in the early phases of this study as part of their Journey of Reconciliation (JoR), a corporate policy focused on progressing the way employees think and act toward Indigenous Canadians across the business—including within the context of mine closure and reclamation—to build mutual trust and respect with Indigenous Peoples. Collectively, Fort McKay, university, and company participants were known as "co-

researchers." Together, they created the Co-Reclamation Project, which became the first to try to apply the Two-Roads Approach to reclamation and closure planning.

2.1.3 Theoretical Foundations and Key Definitions of the Co-Reclamation Project

"Co-reclamation" is a movement towards a participatory and inclusive mine closure and reclamation process that empowers host communities with an equitable role in mine closure and reclamation planning decision-making in recognition that they will live with the mine closure outcomes for generations. In this case study about the Co-Reclamation Project, the community of Fort McKay's interests were to explore the renewal of cultural landscapes within their oil sands-degraded homelands and to apply reclamation as an act of reconciliation.

Developing theoretically robust and applied approaches to enable landscape planning dialogue and planning across cultural paradigms can help build bridges between colonial governments, companies and Indigenous communities looking to navigate the energy transition and sustainable mine closure together. A theoretical framework structures the concepts and relationships for a given phenomenon under qualitative evaluation (Miles et al. 2020). It can be communicated using a diagram, which supports the illumination of current knowledge or system gaps and, through prototyping, can be applied to create a new or revised approach to close the gap. The framework can provide the viewer with "a sense of the story emerging from the analyses" (Garvey and Jones 2021, p. 1). At each stage of inquiry, researchers reflect on whether the study benefitted or detracted from use of the concepts and connections in the framework (Sandelowksi 1993).

The emerging framework of the Co-Reclamation Project was underpinned by decolonizing and Indigenous research theories (Smith 2012; Wilson 2008) because they emphasize the importance of including the impacted Indigenous communities, their place-based knowledge systems, and priorities in the plans for repair of their degraded homelands. Knowledge creation relies on relationships with Elders, land users, and other traditional knowledge holders who have or are developing insights (Moore 2017; Smith 2012). Indigenous cosmology, worldview, systems of knowledge, and beliefs are components of the research (Wilson 2008). This type of research acknowledges Indigenous Peoples' special and unique rights as the original inhabitants of the lands and supports their ability to exercise self-determination (Joseph and Joseph 2019; Sarkki et al. 2020; Smith 2012) and to take part in land management as self-governing Nations (UN 2007). Energy resource projects perpetuate environmental injustices when they focus solely on the priorities, perspectives, and processes of companies and federal, provincial, and territorial governments to the exclusion of the traditional territory rights holders' voices and approaches (USEPA 2021). In Decolonizing Methodologies Research and Indigenous Peoples, 2nd edition, Linda Tuhiwai Smith (2012) posits that local Indigenous approaches to research is the "modality through which

the emancipatory goal of critical theory, in a specific historical, political, and social context, is practiced" (p. 188). Critical theory is a social and political philosophy that seeks to understand and support the change of social structures which cause the oppression and domination of people (Britannica 2022). It is for these reason that an Indigenous research methodology and a participatory ethnoecological approach were applied by the Biodiversity TK Study (BTKRG 2009).

Historically and contemporarily, mining and petroleum extractive activities have degraded Indigenous lands worldwide resulting in social and environmental inequalities from the uneven distribution of benefits, the erosion of their land-dependent culture, and a lack of meaningful participation in the decisions concerning their developmental path (e.g., Beckett 2021; Conde 2017; Tsuji 2021; Urzedo et al. 2022; Wiebe 2016). Locating mine closure and reclamation within an ethnoecological framework for Fort McKay IK holders supports the resourcing and emphasis on the Fort McKay road, whereby mine closure and reclamation processes can be explored and developed based on Fort McKay's understanding of their traditional lands, waters, and aspects from their placed-based knowledge system. Introducing and evaluating new concepts and approaches to the system allows for Fort McKay and company participants to experience and learn from a new story about mine closure and reclamation.

2.1.4 Global Mine Closure, Reclamation and Reconciliation Frameworks

A review of mine closure, reclamation and reconciliation frameworks around the world was conducted to understand the current state of knowledge, including which planning structures are applied today to guide landscape planning decisions amongst communities of interest and across cultures. See Table 2-1 for details on each framework, including the name, a description, communication focus (i.e., the Five Ws), the region from which it was developed, and the authors. The mine closure and reclamation frameworks were organized into three themed categories: (1) planning for sustainable post-closure landscapes; (2) laws, regulations, and policies; and (3) stakeholder and Indigenous relations, reconciliation, Indigenous ontologies, and justice in the context of mine closure and environmental sustainability. Sustainable mine closure frameworks from the Australia, Canada, New Zealand and the United Kingdom provided roadmaps illustrating: important elements of sustainable environmental mine closure (ANZMEC and MCA 2000) and social closure planning (ICMM 2019); key mine phases and milestones; landform design steps and feedback loops (LDI 2021); and best practices that mining companies should commit to, such as creating objectives and end land use needs of importance to communities of interest (MAC 2008). However, none of these frameworks applied an ethnoecological component to include IK holders in the design and planning of these frameworks and none mentioned Indigenous rights or the United Nations Declaration on the Rights of Indigenous Peoples Act (UNDRIP)(UN 2007). Although, LDI (2021) acknowledges that "Inclusion of members of Indigenous and local communities in governance [of

Table 2-1 A list of global mine closure, reclamation, and reconciliation frameworks.

Framework Title	Description of the Framework	Communication Focus	Region	Citation
		Planning for Sustainable Post-closure Landscapes		
Elements of Closure Planning	Illustrates key elements of mine closure planning and an iterative or cyclical pathway to support regular updates of the closure plan elements as added information becomes available over the life of the mine.	What planning elements are important for social closure planning?		ICMM 2019 (Figure 2)
Mining Phases and Milestones	Five mine phases and four milestones that describe phases of the mining-cycle and project management gates requiring signoff by mine management, the regulator, Indigenous communities, and other local communities.	When does progressive reclamation, closure and aftercare occur?	British Colombia, Canada	LDI 2021
Landform Design Workflow	Based on the geotechnical observation method and with similarities to adaptive management, this framework describes the landform design process with ten simplified steps and feedback loops.	What project management tasks, structure support landform design? When – in what order do they occur?		LDI 2021
Landscape Design Checklist	A comprehensive checklist of design objectives and a framework for design and assessment of reclaimed landforms and landscapes in the Athabasca oil sands region.	What design issues must be addressed for a landscape to sustain targeted end land uses and equivalent capability?	Alberta, Canada	AER 2018 (Appendix 4), Millennium EMS Solutions Ltd 2010
Towards Sustainable Mining Mine Closure Framework	Members of the Mining Association of Canada (MAC) commit to: developing, maintaining and continually improving mine closure plans; working with communities of interest (COI) to develop the closure plan and strategies to mitigate the socio-economic impacts of mine closure; identifying and developing objectives of importance to COI' values and end land use needs; financial assurance for closure; a culture of research and innovation; and monitoring towards objectives and human health and ecological risks.	Who should take part? What type of organizational culture and planning elements support closure sustainability?	Canada	MAC 2008
Strategic Framework for Mine Closure of Sustainable Ecosystems	Structured around a set of objectives and principles grouped under six areas: stakeholder involvement, planning, financial provision, implementation, standards, and relinquishment	What elements influence sustainable closure planning?	Australia and New Zealand	ANZMEC and MCA 2000
		Laws, Policies, and Regulations		
Revegetation Planning in Context of Mine Lease and Regional Planning ("Chart 1")	A decision-flow chart recommends reclamation revegetation planning align with (A) regional objectives and documents, (B) mine operating approval conditions, and (C) the life of mine closure plan and mine reclamation plan, (D) develop stand-level revegetation design and end land uses, and (E) confirm the link between stand-level, mine lease and landscape level planning.	What governance documents drive closure planning in the Alberta oil sands, including objectives-setting, land use type, landform design, and taxa identification?	Fort McKay Traditional Territory, Northeast Alberta, Canada	Piorecky and Murphy 2016
Social Mine Closure Regulatory Framework Gap Analysis	Regulatory frameworks in three states broadly cover social aspects of mine closure, but often without explicit text in legislation or policy guidelines. This leads to government disadvantages in terms of enforceability, control and management options. For example, front-end approval processes were relied upon to mitigate the social impacts of mining and stakeholder engagement	What aspects of social planning should be supported by a governance framework? How is effective social closure planning governance set up?	New South Wales, Queensland and Western Australia, Australia	Vivoda et al. 2019
A Framework to Assess Integration in Flood Risk Management	Elements representing the capacity and realization of integration include: the integration challenge that actors' work toward; governance capacity (actor relationships and influencing mechanisms); and realization of integration through policies and interventions and knowledge.	What elements influence sustainable planning?	Anglian and Yorkshire regions, England	Cumiskey et al. 2019 (Figure 1)
Mining and Sustainable Development Policy Framework	Governments should ensure mining operations incorporate sustainable development in closure plans by requiring: legal and regulatory frameworks for closure; institutional capacity to monitor and enforce; stakeholder consultation on closure objectives and plans; financial assurance; use of external experts in high-risk elements; internationally accepted guidelines and best practices be followed; independent auditing; and a framework to incent progressive reclamation.	What objectives and processes are needed for good sustainable mining governance?	International (75 Nations)	IGF 2013
A Framework for Reclamation Certification	The goal, objectives and criteria in a framework for reclamation certification of the mineable oil sands developed by a cumulative environmental management multistakeholder committee.	What are the targets of reclamation success, certification?	Alberta, Canada	AESRD 2013 (Table 2)
		Stakeholder and Indigenous Relations, Reconciliation, Ontologies and Justice		
General Guidance for Reclamation Planning and Processes for Traditional Land Uses (TLUs) ("Chart 3")	A decision-flow chart that supplies general guidance on a collaborative process approach to forest revegetation planning, where return of TLU is the reclamation objective. It emphasizes a working group of reclamation scientists and traditional land users collaborate on the following steps: (A) gathering pre-disturbance information on the area to inform landform planning, (B) including traditional land users in the planning process, (C) general forest stand-level plan, (D) planning for access across the landscape, (E) finding opportunities to re-introduce access and land uses, (f) synthesizing lessons into process for future TLU designs.	What detailed revegetation planning step options braid multi-use planning steps and decision process for reclamation land uses, including traditional uses?	Fort McKay Traditional Territory, Northeast Alberta, Canada	Piorecky and Murphy 2016
Specific Forest Planning Approach for TLUs ("Chart 4")	A decision-flow chart provides detailed guidance on upland forest ecosystems reclamation to support TLUs, by: (1) understanding historic patterns of TLU and access to the area, (2) convening a design focus group with land users and reclamation scientists, (3) estimating expected soil conditions and an ecological forest unit type over time, (4) identifying initial understory and overstory species and densities based on TLU objectives and expected ecological conditions, (5) parallel planning for other post-closure land uses, (6) finalizing plant list, densities and planting methods, (7) confirming plan alignment with landscape level planning ("Chart 1"), (8) implementation, and (9) reintroduction of TLU and/or visits to reclaimed site.	Who should take part? What general knowledge types should be included in TLU planning? What revegetation planning step options include IK and reclamation science in a decision process for reclamation of traditional uses?	Fort McKay Traditional Territory, Northeast Alberta, Canada	Piorecky and Murphy 2016
Range of Potential Participants	Lists potential groups of participants with a stake in the social aspects of mine closure.	Who should take part?	Australia	Everingham et al. 2019 (Figure 2)
Four Purposes of Public Participation in mine closure	Assumes inclusive participation, 2-way dialogue, accountability and transparency are important for four management tasks: Know & understand; plan; implement; and monitor and evaluate.	Why have participation in social closure planning?		Everingham et al. 2019 (Figure 3)
Pathway to Deciding Participation	Decision tree to figure out the right type of participation based on business aims and stakeholder risk	Who should take part?		Everingham et al. 2019 (Figure 5)
Mine Closure Framework	Illustrates that closure and social transition planning and stakeholder engagement must be considered throughout the life of an asset and integrated into all stages of planning starting with design and exploration and mine development.	When should participation and social closure planning occur?	London, United Kingdom	ICMM 2019 (Figure 1)
Research Framework of Local Community Acceptance and Responsibility Research	Explores the interconnections between corporate social responsibility, the mining company-community relationship, trust, and perception of environmental stewardship.	What attributes affect relations, trust and acceptance?	Western, Ashanti, and Eastern regions of Ghana	Boadi et al. 2019 (Figure 1)
Indigenous Holistic Wellness and Environmental Sustainability	A conceptual framework for Indigenous wellness research and practice, with applicability to environmental sustainability, that emphasizes Indigenous social realities and resilience-building by strengthening connections to culture. The framework supports (re)connection of human relations with wildlife, space for collective knowledge sharing, intergenerational healing and reconciliation. Key concepts were: trauma-informed; strengths-based; community-specific; and spiritually-grounded.	What concepts support intercultural knowledge sharing and reconciliation between Indigenous and non-Indigenous peoples?	Saskatchewan, Canada	McGinnis et al. 2019

Thinking beyond remediation towards approaches that centre ethics, care and relationality	Applies theories of ecological restoration, environmental justice, ethics, 'matters of care' and anticolonialism as a conceptual framework to examine the restoration of cultural practices, remediation of contamination and reclamation of land, language and sacred sites at an abandoned gold mine.	What theories and approaches surface the complex interrelationships and trauma associated with degrading and reclaiming Indigenous traditional territories?	Northwest Territories, Canada	Beckett 2021

landform design] is critical" (p. 48) and ICMM (2019) promotes that "Engagement with stakeholders will take place throughout the closure planning process, with insight from that engagement used to shape key elements of the closure plan" (p. 11).

The literature also held legal, policy, and regulatory frameworks associated with mine closure and environmental risk management. IGF (2013) created a mining and sustainable development policy framework to emphasize the aims and processes needed for effective mine closure governance, such as legal and regulatory framework for closure. Cumiskey et al. (2019) developed a framework to assess that state of integration in environmental risk management across a region through policies, interventions and knowledge. One decision-flow chart used to inform reclamation planners in the oil sands industry emphasizes the governance documents that currently incent objective-setting and design decisions (Piorecky and Murphy 2016). In the same region, the provincial government released a reclamation certification framework designed to assess the success of oil sands reclaimed landscapes from a predominantly western science perspective (AESRD 2013). A gap analysis by Vivoda et al. (2019) identified that regulatory frameworks in three Australia states typically omit text from legislation or policy guidelines requiring mine companies to plan for socioeconomic and cultural closure outcomes.

There were many frameworks explaining the range of potential participants and when to involve them in mine closure planning, but few were designed to guide meaningful inclusion of Indigenous communities. Frameworks exist to guide selection of public participants in planning, inform the purposes of public participation (Everingham et al. 2019), show when participation in mine closure should occur (ICMM 2019), and support understanding the connection between the mining company-community relationship and trust in environmental stewardship (Boadi et al. 2019). Only a few frameworks co-created with Indigenous communities exist and can supply guidance on how to effectively involve Indigenous Peoples and their unique cultural paradigms and rights in landscape stewardship. Piorecky and Murphy (2016) created decision-flow charts for landscape-level design and revegetation planning towards the reclamation of traditional territories and land uses affected by oil sands activities in Alberta, Canada. Beckett (2021) developed a conceptual framework structured by Indigenous environmental justice and ethics theories to explore the historical and contemporary sidelining of affected Indigenous communities' objectives in mine closure in the Northwest Territories, Canada. Finally, an "Indigenous holistic wellness research" framework illuminated important concepts for Indigenous wellbeing and intercultural knowledge sharing during environmental sustainability research and practice (McGinnis et al. 2019). A

review of life of mine closure plans from the oil sands industry revealed that while frameworks exist to guide inclusion of local Indigenous communities in planning, they generally were not applied (see section 5.3.2). This application gap suggests that existing frameworks need modification or that a new framework map or perhaps even different tool is needed to support meaningful inclusion of the Indigenous communities in the planning decision they will live with. This study presents an emerging intercultural mine closure and reclamation framework co-created by academic researchers and an Indigenous community hosting oil sands mining on their traditional territory.

2.2 Study Goal

The Co-Reclamation Project supports a participatory and inclusive process (UN 2007) that empowers host communities with an equitable role in mine closure and reclamation planning decision-making. *The research goal was to heal land in the Fort McKay Traditional Territory hurt by oil sands using a collaborative reclamation ("co-reclamation") approach, which incorporates both scientific and Indigenous knowledges and perspectives, to support the landscapes outcomes being acceptable to both Fort McKay and an oil sands company.* One of the objectives supporting this movement and research goal was to develop co-creation tools that support intercultural communication and local community decision-making in mine closure and reclamation. This article reviews the theoretical concept for an intercultural mine closure and reclamation framework. The framework aims to bring into the light the ongoing Indigenous environmental injustice and illuminate steps forward in problem solving towards reconciliation.

2.3 A Two-Roads Approach Methodology

Understanding and selection of a suitable research methodology was completed *a priori* because the philosophical assumptions around it inform the research project design and influence outcomes. A Two-Roads Approach enthnoecological framework and methodology guided co-researchers actions during knowledge gathering to support plural ways of being and knowing that includes multiple cultural themes, worldviews, ideologies and mindsets (Two Roads Research Team 2011, 2012). This overarching strategy supported co-researchers to share the best of both Indigenous and scientific knowledge systems while co-designing this intercultural research project (Lertzman 2010; Simmons et al. 2012) including supporting the scientific self-determination of Fort McKay to develop their own ways of working on research questions (The Community Liaison Research Team 2013).

Following the Two-Roads Approach, co-researchers applied a critical participatory action research (PAR) method adapted from Mackenzie et al. (2012) to develop a conceptual framework for mine closure and reclamation of cultural landscapes in the Fort McKay homeland. An ethnoecological

approach supports the recognition of communities and companies as local experts with valuable knowledges to be the architects, not objects, of the social inquiry, research design, practice, and analysis (Torre at al. 2018; Lawson et al. 2015). Thus, co-researchers in the project were invited to co-create reclamation project design, methodology, activities, and evaluation while elevating Fort McKay's typically underrepresented voice through use of Dene and Cree cultural approaches and shared decision-making. Full implementation of the Two-Roads Approach was hindered part-way through the Co-Reclamation Project the oil sands company terminated their participation in the project. Without the oil sands partner, their funding, and access to oil sand industry degraded-lands, there were reduced opportunities to complete all planned project activities and to fully implement the Two-Roads Approach and inclusion of Fort McKay community co-researchers and their Cree and Dene knowledge systems in all steps of the research process during the second half of the project. Furthermore, the COVID-19 pandemic health and safety restrictions reduced contact with Fort McKay community co-researchers between April 2020 and June 2022. For more details on study limitations and changes see sections 2.4 and 2.5.

Table 2-2 describes how the three recurring stages of critical PAR – inquiry, action and reflection – were implemented throughout the project (Lawson et al. 2015; Mackenzie et al. 2012).

2.3.1 Inquiry Stage

In the inquiry stage, co-researchers formed a relationship-focused partnership, identified a shared problem and associated factors, and designed a new, conceptual approach to collectively address that problem.

The first action was to form relationship-oriented partnerships using local Indigenous protocols of requesting guidance from Elders, land users, and other knowledges holders and a shared research agreement (see section 2.4 for more details). Then research participants with a diversity of backgrounds, experiences and knowledge systems were sought to capture outlier input and increase the likelihood of acceptance and ownership of the process and findings (Mackenzie et al. 2012). Fort McKay identified Elder and youth community members of Cree or Dene descent, or both, with land use experiences. Comparatively, company staff with a range of corporate decision-making capabilities and experiences in sustainable mine closure and reclamation were found (Figure 2-2). Most company co-researchers identified as non-indigenous, apart from a few individuals with lower decision-making capabilities (e.g., co-op students).

The second action was to conduct a literature review on the socio-political context, best practices, and issues and opportunities around Indigenous engagement in mine closure and reclamation to find factors that impede or enhance collaboration and trust-building between communities, industry and

Table 2-2 The adaptive cycle stages in critical PAR applied during the project to support social learning about plural interests and methods for mine closure and reclamation planning (modified from Mackenzie et al. 2012).

Stage	Action	Explanation
Inquiry	1. Form relationship-oriented partnerships	Develop a Collaborative Research Agreement between the Universities and local experts, both Fort McKay and the company, and invite these knowledge holders with diverse experiences and knowledges to participle
	2. Identify issues, impediments and enhancements to collaboration and trust	Literature review – issues identification and factors that impede and enhance collaboration and trust in land stewardship
	3. Create hypothesis and theoretical concept	Develop a hypothesis and conceptual framework to improve relationships, outcomes and trust in mine closure between Fort McKay and industry using the review findings
Action	4. Conduct research	Test the theoretical underpinnings of each element and phase of the conceptual framework
	i. Relationship-building, collaboration principles	Design experiential activities to support relationship (re)building and identify safe and inclusive ways of working together
	ii. Co-Visioning, objectives	Create a shared aspiration for mine closure vision and site-specific objectives
	iii. Co-Select Site	Select a degraded area to reclaim together
	iv. Co-Design Plan	Design a reclamation and closure plan using plural perspectives, knowledges
	v. Co-Execute Plan	Active participation in the plan's execution – e.g., landform contouring, soil placement, revegetation, etc.
	vi. Co-Monitoring and maintenance	Co-create and implement a monitoring plan that includes TLU and ecological indictors and methods of data collection, analysis and reporting
Reflection	5. Data Analysis and Framework Optimization	Summarize results from the testing of each element within the theoretical conceptual framework. Optimize the framework based on the results.
	6. Validation and verification of draft findings	Present draft results to co-researchers for their input into the analysis and discussion and verification and validation of their data in reporting or publications
	7. Review process	Interviews and/or surveys to gather perspectives from applications of the research approach and products
	8. Implement recommendations	Disseminate research outcomes to participants, other operators, regulatory bodies and others
Inquiry	9. Identify emerging issues and needs	Reflection on each action allowed for areas of future application and/or investigation to be found

Figure 2-2 An illustration of criteria used to find potential oil sands company participants in the research project.

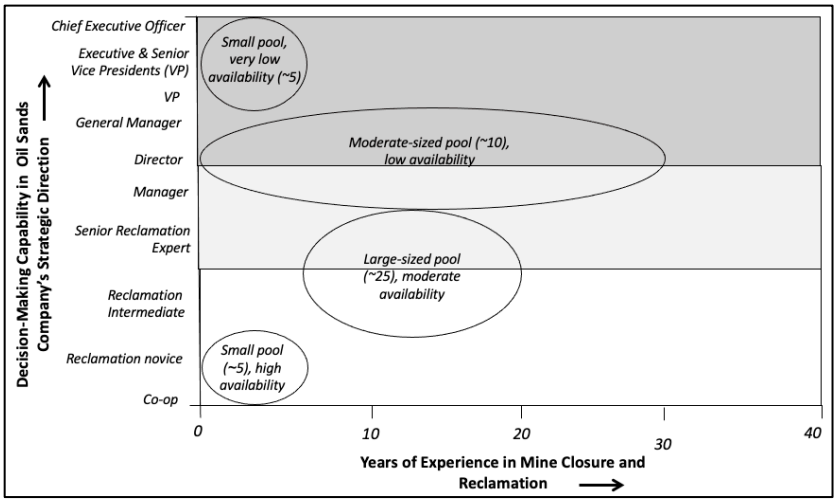


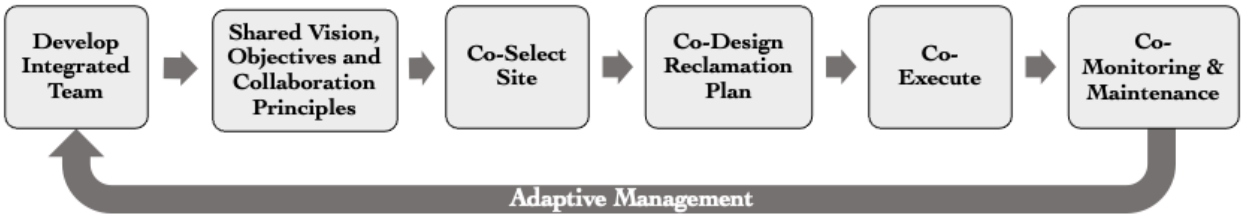
Table 2-3 A mine closure intercultural collaboration literature review examined the socio-political context, best practices, and issues and opportunities around Indigenous engagement in mine closure and reclamation.

Findings	Description	Conceptual Framework Outcome	Citation
Key Socio-Political Issues Identified	Generally, affected Indigenous communities' were mistrustful of the environmental consequences of the oil sands industry, including the mine closure planning process and outcomes. Landscape changes to their traditional territories affects their sense of place and sustainability of their language, TLU rights, IK, and culture.	•Develop a diverse research team •Co-creation - apply a collaborative research approach to understand and address gaps	Jones and MacLean 2013; L'Hommecourt et al. 2022; Joly 2017; Natcher et al. 2020; Westman and Joly 2019
	Local Indigenous communities' aspiration for more participation in the mine closure, reclamation and monitoring process.		Baker 2021; Buffalo 2011; Dubé et al. 2015. L'Hommecourt et al. 2022; Two Roads Research Team 2011, 2012;
	International and national calls to action for truth and reconciliation between Indigenous and non-indigenous peoples and other entities, including corporate Canada		TRCC 2015a, b; UN 2007
	An aspiration from the Canadian energy industry to earn trust in energy development, including in mine closure through the incorporation of IK		e.g., CNRL 2022; Cenovus 2022; YWE 2019; Suncor 2021
	A growing societal expectation for an improved ethical performance from natural resource industries, such as effective mine closure planning to avoid any public burden, and engagement with Indigenous peoples in closure.		ICMM 2015, 2019; Hiyate 2018; Lertzman and Vredenburg 2005
	Provincial and national policy and regulations exist to protect and mitigate effects on the environment and Aboriginal, treaty and land use rights from energy projects. However, Fort McKay do not feel their traditional use needs, inputs and rights are adequately incorporated in historic and contemporary closure practices, plans and outcomes. This suggests a gap exists in Canada's policy framework.		*Constitution Act*, 1982, s 35; GOA 2013; GOC 2021; L'Hommecourt et al. 2022
Global Mine Closure and Reclamation Planning Best Practices	Optimal mine closure planning is integrated through all mine project stages, including exploration and mine development, to achieve closure objectives and relinquishment. Closure planning phases generally include: objective setting, design, construction, monitoring and success indicators, relinquishment, and adaptive management.	•Objective setting •Co-design reclamation plan •Co-execute •Co-monitoring and maintenance •Adaptive management link between monitoring and maintenance and future co-reclamation activities	ICMM 2019; Wylynko and Hrynyshyn 2014
	Closure planning is cyclic as information relevant to closure is updated and gathered		Hiyate 2018
	Planning for Social Closure - Over the last 20 years the mining industry, both nationally and internationally, has begun to recognize the benefits of planning for the economic, social and cultural aspects of closure early in a mine's lifecycle, and not only the environmental aspects.	Vision and objective setting should include sustainable environmental, social, culture and/or economic targets	Aheto-Tsegah 2019; Beckett and Keeling 2019; Edwards 2019; EMRGOY 2006; Hiyate 2018; January 2019; South Africa 1998; Rabbi et al. 2015
	Understanding and incorporation of key stakeholder and Indigenous communities' values into closure planning through development of a shared closure vision, objectives, end land use targets and metrics of success.	•Shared vision, objectives •Co-monitoring	ICMM 2019; Svobodova 2019
Relevant closure planning and intercultural collaboration tools	There is little known about mechanisms or processes and limited tools available to address the social aspects of mine closure planning, especially that support Indigenous approaches and self-determination.	•One co-reclamation project objective focused on tool and framework creation to support intercultural closure collaboration	Bainton & Holcombe 2018; Edwards 2019; ICMM 2019; Morrison-Saunders 2019
	Oil sands industry, government, and Indigenous communities co-created IK research guidelines and a reclamation collaboration methodology (i.e., "Two Roads Approach") to support Indigenous participation and input into reclamation and closure planning and effectiveness monitoring to assess performance. There has been limited or no uptake of this work into oil sands mine closure research and planning.	•The Two-Roads Approach was selected as the collaborative reclamation methodology for the research project design	Simmons et al. 2012; Two Roads Research Team 2011, 2012; Gann et al. 2019
Indigenous Research Ethics and Social Justice	It is ethical to develop a research program in collaboration with and not for the Indigenous community. Research objectives must support their self-determination by focusing on the community's needs and priorities.	•Develop a diverse research team •Co-creation - apply a collaborative research approach •Develop foundational intercultural collaboration principles	Ermine 2007; FNIGC 2014; Moore 2017; Smith 2012; Wong et al. 2019; UN 2007
	Local cultural protocols, values and behaviour are an integral part of Indigenous research methodology. They generally emphasize respectful relationship (re)building between participants and all relations. Hence, research should start with learning the community's cultural protocols and implementing relationship building activities to establish credibility amongst participants before formal research activities and knowledge sharing.		Cardinal 2018; Simmons et al. 2012; Moore 2017; Porsanger 2004; Smith 2012; Wilson 2008
Relevant Theories	Decolonizing and Indigenous research theories - emphasize the importance of including the impacted Indigenous communities, their place-based knowledge systems, and priorities in the plans for repair of their degraded landscapes homelands. Knowledge creation relies on relationships with Elders, land users, and other traditional knowledge holders who have or are developing insights.	•Develop a diverse research team that includes the participation of Fort McKay knowledge holders and land users •Co-creation - apply a collaborative research approach that prioritizes Fort McKay's research questions, knowledge system, and ways of working	Joseph and Joseph 2019; Moore 2017; Smith 2012; Simmons et al. 2012; Wilson 2008
	Ethnoecology – understanding the Fort McKay road whereby mine closure and reclamation processes can be explored and developed based on Fort McKay's understanding of their traditional lands, waters, and aspects from their placed-based knowledge system		Castellano 1986; Chambers 1992, 1994a-b; Davison-Hunt 2000, Gerique 2006; Kirk et al. 2009; O'Flaherty and Davidson-Hunt 2008; Ingold (2000); Legat (2007); The Community Liaison Research Team 2013; BTKRG 2009; Simmons et al. 2012; Smith 2012; Two Roads Research Team 2011; Two Roads Research Team 2012; United Nations 1992
	Environmental justice theory – all people have equal access to a healthy, safe and sustainable environment and protection from harm.	•Develop a diverse research team •Co-creation - apply a collaborative research approach	Beckett and Keeling 2021; USEPA 2021
	Social-ecological systems theory – ecological and social systems are dynamic, complex, and their interconnectedness regulate the flow and availability of natural, social, economic and cultural resources	•Vision and objective setting should include sustainable socioeconomic, cultural and environmental targets	Berkes and Folk 1998; Cuerrier et al. 2015; Kimmerer 2013; Redman et al. 2004; Winter et al. 2020

government in reclamation. The review spanned March 2018 to August 2019 and included documents produced by CEMA with the participation of Fort McKay community members, oil sands operators and the Alberta government (Simmons et al. 2012, Two Roads Research Team 2011, 2012). See Table 2-3 for the key findings of the mine closure intercultural collaboration literature review and their references. Briefly, findings across the socio-political literature were that: society expects mine closure to avoid any public burden; international and national efforts are underway to support truth and reconciliation with Indigenous Peoples, including within Canadian corporations; the Canadian energy industry aspires to earn trust in energy development and mine closure; local Indigenous communities, including Fort McKay, are generally mistrustful of oil sands mine closure processes and outcomes; and a policy gap excludes Fort McKay's meaningful participation in mine closure. Additionally, the review found the following mine closure best practices: integration of closure throughout a mine's lifecycle; adaptive management; planning for social, economic, cultural, and environmental post-closure outcomes; and incorporation of stakeholder and Indigenous values into a shared closure vision, objectives, end land use targets and success metrics. Finally, the literature review emphasized the following research standards, theories, and state of mine closure knowledge: different approaches exist to natural resource and landscape planning (i.e., western science and regulatory-driven versus Indigenous methods and governance); ethical Indigenous research supports self-determination of Indigenous communities; globally, few social closure processes and tools exist, especially those that support Indigenous approaches; one collaborative and inclusive reclamation methodology exists (i.e., Two-Roads Approach), but has not yet been applied by the oil sands industry; and relevant theories emphasize that it is unjust to expose marginalized communities to harms from resource extraction, fair treatment and meaningful participation in decision-making can resolve conflict and build trust, and planning should consider the complex interconnections between humans and nature.

Third, a hypothesis and an Initial Conceptual Framework (Figure 2-4) were developed using the findings that emerged from the literature review (Table 2-3). The hypothesis for the Co-Reclamation Project was that meaningful collaboration on the reclamation of oil sand mine degraded Fort McKay homeland will lead to improved mutual understanding, trust, relationships and landscape outcomes for Fort McKay and an oil sands company. The framework was composed of a sequence of reclamation and closure planning phases starting with (a) development of an integrated team and followed by (b) co-creation a shared vision, objectives and collaboration principles, (c) co-selection of a site to reclaim, (d) co-design of a reclamation plan, (e) co-execution of the plan, (f) co-monitoring and maintenance of the reclaimed landscape, and, finally (g) adaptive management using lessons learned and monitoring data to optimize the next co-reclaimed parcels of land. The Initial Conceptual Framework informed the design and aim of each of the research project workshops between 2019 and 2022.

Figure 2-3 Conceptualization of a collaborative framework, called the Initial Conceptual Framework, for mine closure and reclamation between an Indigenous community and oil sands company. It begins with establishment of a diverse team, collaboration principles, and inclusion of Indigenous communities in mine closure vision and objective setting. Next, a mine degraded area to reclaim is co-selected followed by co-design of a reclamation plan, co-execution of the plan, and co-monitoring of the co-reclaimed Indigenous traditional territory. Adaptive management supports continuous improvement of future iterations of the co-reclamation approach.



2.3.2 Action Stage

In the action phase, co-researchers execute or test the planned and structured intervention (Clark 1972), which for this study was the initial conceptual framework. So, the fourth action was to conduct the research. More specifically, the theoretical underpinnings of each element and phase within the Initial Conceptual Framework were evaluated throughout many research meetings to see if they supported improved relationships, outcomes and trust in mine closure between Fort McKay and the company. In total, up to twelve First Nation, ten company, and six university co-researchers gathered in August 27-29, 2019, November 13-14, 2019, February 6-7, 2020, and February 18-20, 2020. A subset of the co-researchers, Fort McKay staff and technical advisory and University co-researchers and occasionally one community co-researcher, gathered by video conference calls in April 21 2020, June 8 2020, July 22 2020, August 5, September 18 2020, October 16 2020, November 8 2020, March 30 2021, May 2022, and July 6, 2022 when community knowledge holders were unavailable due to a lack of funding, COVID-19 health & safety measures and technology limitations. Research meeting activities and dialogue were captured using photography, video and audio recordings and written meeting notes, which included project decisions and action items. All data will be formatted according to the Fort McKay community archive standards and will be provided to Fort McKay at the end of this study. Video and audio recordings were transcribed using Microsoft Teams. The research action phase was designed into the following six parts:

i. Relationship Building and Collaboration Principles

The research phase started with relationship-focused activities, a foundational element of Indigenous research (Lavallée 2009), designed to get to know one another and Fort McKay's protocols, support mutual learning in land stewardship, and set up respectful ways of working together.

On a foggy morning on August 27, 2019, ten Fort McKay, ten company and four university co-researchers flew in to a remote part of the FMTT called Moose Lake (Figure 2-1). Moose Lake is the last intact part of the FMTT and a cultural keystone place (Cuerrier et al. 2015) that is critical to the identity and well-being of Fort McKay. The aim of this gathering was to get to know one another in a relaxed setting and to experience TLUs in the natural boreal forest ecosystem. No formal research activities were organized, except for reviewing Fort McKay and University ethics standards and informed consent. Co-researchers organically learned about one another and the Fort McKay culture by experiencing one or more of the following: cooking and eating traditional meals together; group walks; gathering around a bonfire; storytelling; shared lodgings; playing games; and TLU activities, such as berry picking, boating, fishing, and transfer of IK about culturally significant plants and medicines (Figure 2-4). On the third day, co-researchers visited one of the company's nearby oil sands projects to tour reclaimed lands and to continue mutual learning (Figure 2-5). This was supported through an exchange of mine closure and reclamation knowledge, practices, challenges, and regulations while viewing reclaimed landforms of different ages, and with different substrate, soil capping, vegetation and wildlife habitat strategies.

Figure 2-4 Co-Researchers experiencing TLUs, such as fishing, berry picking, traditional food preparation, at Moose Lake in the FMTT, Northeast Alberta, Canada.

Figure 2-5 Co-Researchers touring reclaimed upland forests at an oil sands mine in the FMTT, Northeast Alberta, Canada.

In November 2019, Fort McKay offered simplified versions of their protocols for university and company co-researchers to engage in during each subsequent research meeting. For example, a land acknowledgement followed by an opening circle helped to connect the research team to one another and the FMTT. Additionally, they learned how to respectfully request guidance from a Fort McKay co-researcher. For more details see Daly et al. 2022 or section 4.2.2.

Also in November 2019, a code of conduct was developed to guide effective, intercultural dialogue and action on oil sands mine closure and reclamation throughout the project. Co-Researchers selected and modified a method outlined by Holmes et al. (2016), where PAR and narrative inquiry were used to create an Indigenized visitor code of conduct for sustainable tourism in the Lutsel K'e Dene homeland, Canada. Co-researchers shared memorable experiences with teachable moments from past oil sands consultation and engagement meetings within a group talking circle. Next, co-researchers were divided into two, smaller talking circles to name principles for effective intercultural collaboration based on the shared stories. The recommended principles from the micro stories plus additional principles derived from the results of a baseline project survey (Figure 3-2) were woven together and transcribed onto a medicine wheel using Cree, Dene and English languages. A systematic analysis of the transcribed data was analyzed for themes by the academic co-researchers. The major themes that arose from the transcript aligned with those identified by all co-researchers and included in the draft code of conduct, so no additional themes were added as a result of the thematic analysis. In hindsight, a full application of the Two-Roads Approach would involve all co-researchers, not just academic co-researchers, in the transcript analysis for any missed themes. The draft code of conduct was reviewed by all co-researchers within a talking circle to verify that micro stories within and across co-researchers' teachable stories were effectively braided into a coherent whole that kept the integrity of Fort McKay, company, and university perspectives. This important verification and validation step led to consensus on the following new additions: 3 new principles (i.e., acknowledge loss and grief; reconciliation; and trust), and Cree and Dene languages. The revised version was approved by the Fort McKay and company co-researchers, with a caveat that Cree and Dene language would continue to be added to the project code of conduct. The

project code of conduct was named “The Cycle of Respect” by Elder Scotty Stewart and applied to support all subsequent researcher meetings. For complete details, see chapter 4.

ii. A Shared Vision and Objectives

Fort McKay uses talking circles to discuss and understand today’s collective challenges and to come to a community consensus that emphasizes a sustainable future for the next generations while keeping connections to the past. Talking circles were used to empower intercultural dialogue and guide creation of an aligned post-closure vision, a best practice (ICMM 2019), between a Fort McKay and an oil sands company during February 2021. For complete details see Daly et al. (2022) or Chapter 4.

Briefly, two talking circle subgroups were formed with six Fort McKay co-researchers, one university notetaker and one university facilitator. Fort McKay co-researchers were asked by the facilitator to convey big picture aspirations and values that described successful implementation of mine reclamation and closure of their traditional territory from their perspective. This included describing what they want to see, hear and experience on reclaimed lands in the future. Dialogue amongst co-researchers was captured in detailed notes and as key points written on flip chart paper and verified by talking circle subgroup participants. Afterwards, results were shared between both talking circle subgroups to support a collective understanding of ideas, to refine ideas into themes and to take steps towards a community perspective. University co-researchers found and translated themes from the dialogue into a draft version of the Fort McKay project and mine closure vision that was later validated by Fort McKay co-researchers. Next, a talking circle with all Fort McKay, company and university co-researchers was convened. Three Fort McKay co-researchers communicated Fort McKay’s vision and while the other co-researchers listened. Next, a company co-researcher communicated the company’s vision of success for the project.

The project planned to use the talking circle method to support the creation of broad landscape-level objectives for mine closure and reclamation that encompass Fort McKay’s cultural sustainability lens, TLU needs, and rights. Validation of this action and, in general, creation of broad landscape-level objectives for TLU remains a gap because the research agreement and funding were ended before this task could be completed (see below for more details).

iii. Co-Selection of a Site to Reclaim

Historically and contemporarily, Fort McKay is not involved in the mine closure and reclamation planning decision for their oil sands industry-degraded traditional territory. Yet, ethical research standards and principles (Ermine 2007; FNIGC 2018) and the critical PAR method requires local experts, especially marginalized Indigenous communities, to take part throughout all project design and execution phases, including selection of an oil sands degraded parcel of land to co-reclaim for this study. During a

November 2019 project meeting and within a group talking circle, company co-researchers recommended a few parcels of disturbed land they had previously identified for consideration by the other co-researchers. Community co-researchers expressed the disconnect between company co-researchers making a project decision within a collaborative research project without their meaningful participation. In response, all co-researchers agreed that Fort McKay's criteria for site selection were to be developed and included in the next project decision. Like the co-visioning action approach (see above), Fort McKay co-researchers were asked by a university facilitator to describe the features their community should consider when picking a parcel of disturbed land to co-reclaim with the company. Next, during a group talking circle in February 2020, Fort McKay and company co-researchers shared their recommended site selection criteria (Table 3-4). For complete details see Daly et al. (2022).

iv. Co-Design a Co-Reclamation Plan

The project planned to co-create a mine closure and reclamation plan for an oil sands degraded parcel of land they co-selected and then to have the landscape recreated together. This action was never undertaken, nor validated. See below for more details.

v. Co-Design and Co-Execute a Reclamation Plan

The project planned implement landscape recreation using the co-created co-reclamation plan to guide landscape recreated together. This action was never undertaken, nor validated. See below for more details.

vi. Co-Monitoring and Maintenance

The project planned to co-create a monitoring plan that included both environmental science and IK and plural perspectives. As a first step, the study developed a summary and synthesis of the current state of knowledge on community-led monitoring to support the design of an environmental guardian program to evaluate re-establishment of TLU capability on reclaimed oil sands footprints within the FMTT. While this work was completed (Davies Post forthcoming) a co-created monitoring plan was not undertaken, nor validated.

2.3.3 Reflection Stage

Outcomes from the research activities in the Action Stage were presented to co-researchers as part of the Reflection Stage. The fifth action entailed review and summarization of the results from the testing of each element within the theoretical conceptual framework and identification of modifications to optimize the framework based on results (Table 2-4). The analysis was executed by the university co-

researchers with limited input from a subset of Fort McKay co-researchers (staff, technical advisory and one community member and knowledge holder). Sixth was the sharing of draft results during a July 6, 2022 workshop at the Fort McKay band office for co-researchers' consideration and input into the analysis and discussion and overall approval. Verification and validation of data, such as IK and co-researchers' quotes or other personal information, prior to publication is an important aspect of ethical and accurate Indigenous research (Simmons et al. 2012).

For the seventh action, a close out survey was conducted to gather Fort McKay co-researchers perspectives on the research approach, outcomes, remaining knowledge and research gaps and potential next steps. For a list of the survey questions, detailed methods and results see Davies Post (forthcoming).

The eighth action was the dissemination of the research results from this study in the form of published papers and theses with research participants, oil sands companies, government bodies, and other relevant parties. The intent was for these various parties to implement the framework, associated methods, and recommendations towards a more just and equitable closure landscape with mutual benefits for all. For this to be achieved, new policy and law, such as new EPEA operating approval conditions requiring the framework's application, must be created since study results demonstrated that oil sands companies can choose when and when not to include Fort McKay in their mine closure and reclamation processes (see Table 2-4 and 2.4.2).

2.4 Results and Discussion

A summary of the outcomes of the research action phase are outline in Table 2-4. The table presents the key results for each of the six research parts, modifications made to the Initial Conceptual Framework as a response to the results, and the validation status of the framework (i.e., fully validated, partially validated or not validated at this time).

Fort McKay, company and university co-researchers took part in design, testing, and validation of approximately half of the planned research actions. Part way through the project, in July 2021, the company made a business decision to terminate the Collaborative Research Agreement and to no longer take part in the Co-Reclamation Project which they communicated was, at least in part, due to economic impacts from the COVID-19 pandemic. Consequently, a systematic review of oil sands mine closure plans was undertaken by the university co-researchers and a subset of Fort McKay co-researchers (staff, technical advisory and, occasionally, one community co-researcher) to understand the current state of knowledge on TLU planning in oil sands mine closure and reclamation. This original activity was a priority for Fort McKay and ensured doctoral research requirements could be achieved in lieu of testing the ability of Fort McKay and a company to co-design and co-execute a reclamation plan together. Outcomes from the fully or partially validated research actions (Table 2-4) and the systematic review of

TLU planning in mine closure plans (Chapter 5) were used to refine the conceptual framework gesturing towards collaborative mine closure action between Fort McKay and industry (Figure 2-6). The optimized framework was termed the "Two-Roads Reclamation & Reconciliation Framework" (herein the "framework" or TRRF).

In addition to the recommended TRRF, six new recommendations emerged from the results of research action phase (Table 2-5) and are described throughout sections 2.4.1-2.4.5. These emergent recommendations were compared to seventeen recommendations previously made by Fort McKay and the other multistakeholder participants in 2011 through the Biodiversity TK Study in support of Indigenous communities with an interest to reclaim homeland and land-based culture affected by the oil sands industrial activities (Two Roads Research Team 2011). See Table 2-5 for a description of each of the seventeen CEMA Biodiversity TK Study recommendations and an update on their current status.

Figure 2-6 The Two-Roads Reclamation & Reconciliation Framework – An optimized conceptualization of a collaborative approach for mine closure and reclamation between an Indigenous community and oil sands companies.

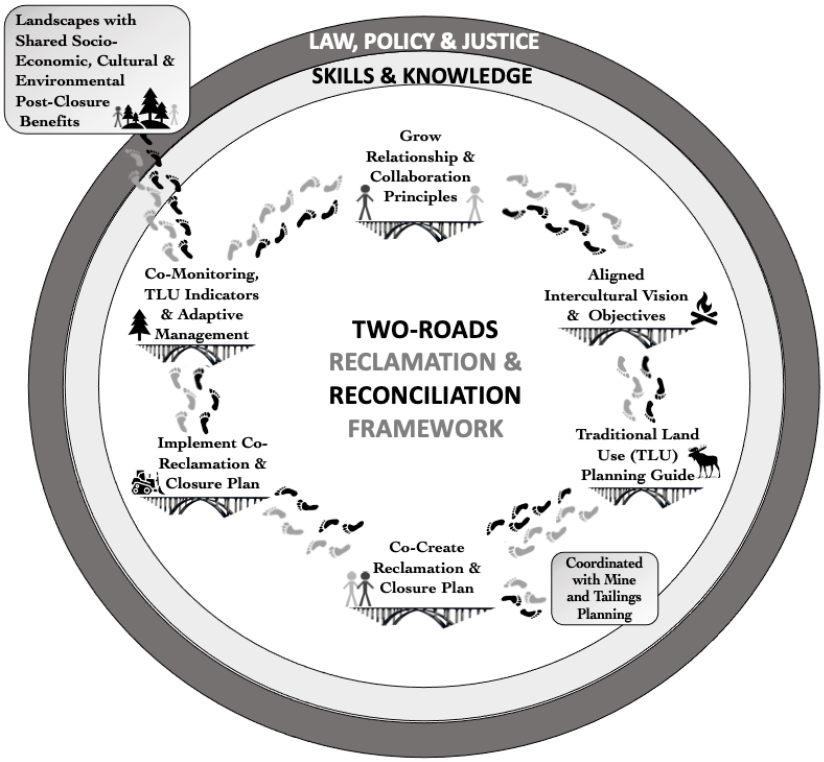


Table 2-4 A summary of the key results from the testing of each element within the theoretical conceptual framework

Research Action	Key Results	Explanation	Framework Modifications based on Results	Theoretical Framework Status
a. Relationship Building	• Achieved shared project decision • Inclusive experience led to enhanced Fort McKay-industry relationship, initially, and improved understanding of Fort McKay's TLU • Engaged Fort McKay, company and university co-researchers • Some company co-researcher turnover	• A Fort McKay-industry-university decision was made to focus on relationship-building activities first • Experiential learning of TLUs and application of traditional Indigenous decision-making processes for group dialogue and knowledge exchange created a different, more inclusive experience for Fort McKay. It resulted in the enthusiastic participation of Fort McKay co-researchers, in particular, and gestured towards improved partnerships and relations	•Addition of the word "relationship" to emphasize its significance for creating a foundation to understand our interconnectedness and from which mutually beneficial partnerships and landscape outcomes can grow •Addition of a Two-Roads Approach illustration to emphasize inclusion and the best of both worlds	Fully Validated
Collaboration Principles	• Achieved shared project decision • Co-created the Cycle of Respect • Co-created project motto • Continued company co-researcher turnover • Divergent perspectives on project success begin to emerge	• A Fort McKay-industry decision was made to identify project ground rules for effective intercultural engagement • A code of conduct with thirteen guiding principles emerged from truth telling, active listening, mutual learning and retelling of old oil sands engagement stories to support respectful intercultural reclamation planning • A new Fort McKay-industry narrative or project motto emerged: Te mamano aski ki kakio asiniwak / ɂeła ɂeghdalaída niha tuha / working together for the betterment of our people and the land • Company co-researchers expressed a desire to select a small site and advance reclamation planning together • Fort McKay co-researchers communicated (i) the grief and loss they experience as a result of the social and environment impacts from oil sands industrial activities, (ii) their lack of trust in the current, non-inclusive system; and (iii) their desire to approach reclamation planning from their perspective of an interconnected landscape.	•This bridge was separated from goal-setting because the principles created a foundation for collaboration •Added "Skills and Knowledge" to support training that leads to an understanding that (a) success differs between community (strengthening relationships, healing takes time) and company (efficiently achieve project milestones); (b) continuity in participation is essential when the aim is to foster trust-based relationships and mutual benefits in closure outcome	Fully Validated
b. Co-Visioning	• Achieved shared project decision • Parallel vision • Continued company co-researcher turnover • Divergent perspectives on project success and process emerged • Highly engaged Fort McKay and university co-researchers	• In the spirit of a Two-Roads Approach, a Fort McKay-industry decision was made to keep parallel project and closure visions • When the pandemic inhibited in-person access to Fort McKay and oil sands sites, co-researchers proposed new or refined ideas for the project. Fort McKay reflected on research results to date and proposed new or refined ideas. The company determined which recommendations would be advanced or not. • The company communicated the project management process they use to evaluate results from research and development projects to determine if the innovation becomes a standard practice or process in the company or not. • Fort McKay co-researchers expressed frustration at the company's increased control over the research project, which minimized their ability to examine research questions of interest to them and using their own ways	•Changed from "shared" to "aligned" closure vision acknowledging some Indigenous communities may choose to have a culturally distinct and parallel closure vision to a mine company •Added "Skills and Knowledge" to support training that leads to an understanding that (a) continuity in participation is essential when the aim is to foster trust-based relationships and mutual benefits in closure outcome, (b) engagement with Indigenous communities requires trauma-informed training to minimize harm and experts capable of facilitating the process required to both acknowledge the trauma and move to planning and action space, and (c) including Indigenous communities and their rights and values in closure planning is a best practice.	Fully Validated
Objectives	• Divergent perspectives on project success • The company ended their participation in the project before broad, landscape-level objectives for TLU were created • Oil sands closure plan gap analysis of TLU	• The company ended the Collaborative Research Agreement and funding before this action could be completed • A systematic review of closure plans found that broad landscape-level objectives for TLU remain a gap (Chapter 5)	•No changes	Not Yet Validated
c. Co-Select Site	• Achieved shared project decision • Co-created criteria to guide site selection • The company stopped participating before a site was found • Lack of company participation and highly engaged Fort McKay and university co-researchers	• The company and Fort McKay supplied criteria to guide choice of an area to co-reclaim • The pandemic inhibited a tour of company sites in 2020 to use the criteria to complete site choice • The company stopped participating before site selection was completed • By the time the project examined co-selection of a site, all but one of the original company co-researchers participating in the project had changed due to job attrition or opting out of participation because an inclusive approach to Indigenous engagement in reclamation and closure challenged their technocratic norm	•Not included in the final framework •Added "Skills and Knowledge" to communicate the importance of (a) prioritizing continuity in participation when the aim is to foster trust-based relationships and mutual benefits in closure outcomes	Partially Validated
d. Co-Design Plan	• Achieved shared project decision • Mine closure plan gap analysis • Land was no longer available for co-design after the company stopped taking part in 2021	• A Fort McKay-industry-university decision was made at the start of the project to co-create a reclamation plan • The gap analysis found that current closure plans and approaches do not adequately understand, nor mitigate TLU impacts and rights. The drivers were regulatory policy, directives, approval requirements and western-science focused guidance documents that excluded TLU completely or lacked sufficient design direction. • The company ended their participation mid-project before this action could be completed	•A new bridge, "TLU Planning Tools", was created to close a TLU planning gap •Added "Law, Policy and Justice" and "Skills and Knowledge" to incent and support effective TLU planning and enforcement	Not Yet Validated
e. Co-Execute Plan	• Land was no longer available for co-reclamation after the company stopped taking part in 2021	• The company stopped taking part before this action could be completed	•No substantial changes	Not Yet Validated
f. Co-Monitoring and Maintenance	• Achieved shared project decision • Identified Indigenous-led monitoring best practices • Mine closure plan gap analysis • Land was no longer available for co-monitoring after the company stopped taking part in 2021	• A Fort McKay-industry-university decision was made to focus understanding collaborative and Indigenous-led frameworks and best practices for monitoring • Best practices for Indigenous-led monitoring and guardian program design and execution were found • A gap exists in the reclamation certification framework whereby TLU measures of success were never completed • The ended their participation mid-project before this action could be completed	•Added "TLU indicators" to ensure culturally relevant success metrics evaluate reclaimed landscapes against the aligned closure vision and objectives •Added that created landscapes should result in "shared socio-economic, cultural and environmental post-closure outcomes"	Partially Validated

Table 2-5 A comparison of recommendations from the Biodiversity TK Study (n=17) derived from the Two Roads Research Team (2011) report and the Co-Reclamation Project (n=6) based on study results. Also, an update is provided the state of completion of the Biodiversity TK Study recommendations.

CEMA Biodiversity TK Study Recommendations	The Rationale for each CEMA Biodiversity TK Study Recommendation	Status of Completion	Co-Reclamation Project Recommendations	The Rationale for each Co-Reclamation Project Recommendation
1.0 TK Biodiversity/Co-Reclamation Study Follow-up				
1.1 "Complete a third phase of the Biodiversity TK Study which would involve a regional workshop to review and validate study results and recommendations for action" (Two Roads Research Team 2011, Table 1).	A regional workshop was held in November 2010 to test and further develop the Two Roads Approach with representatives from 4 Indigenous communities and organizations and two non-Indigenous specialists with IK research. It was followed by a debriefing and analyzing meeting (Two Roads Research Team 2011).	Complete	We recommend that Fort McKay and a company partner to co-design landscape-level objectives for TLU, a co-reclamation and closure plan, and to implement the plan.	Further explore and define the co-reclamation approaching by testing, optimizing, and/or validating the final bridges in the optimized framework.
1.2 "Establish a specific decision-flow structure for the TK approach within the CEMA Revegetation Manual" (Two Roads Research Team 2011, Table 1).	A decision-flow chart was created to provide detailed guidance on planning for upland forest ecosystem reclamation capable of supporting TLUs (see "Chart 1" in Piorecky and Murphy 2016 for complete details). It called for planners to, for example, understand historic patterns of TLU and access to the area, convene a design focus group with land users and reclamation scientists, etc. However, to the best of our knowledge, it remains unused by industry planners since it was not cited as a tool to applied in the development of recent mine closure plans (see chapter 5 for more details).	Some Action, Remains Incomplete		
1.3 "Research the "hard" applications of TK within the reclamation monitoring and certification process." (Two Roads Research Team 2011, Table 1).	"Aboriginal peoples are both aspects of and long-term monitors of biodiversity (United Nations 1992, Article 8[j])…Bridging the "two roads" of biodiversity monitoring in a certification context represents a significant interpretive challenge" (Two Roads Research Team 2011, Table 1). Qualitative IK needs to somehow inform development of hard indicators and quantitative thresholds for reclamation certification. The next steps involves considering how IK concepts can be addressed in the context of an existing framework for oil sand mine reclamation certification (AESRD 2012) (ibid.). A workplan for addressing recommendations 1.3 and 1.4 was scoped with local Indigenous community researchers through a workshop in October 2013 (The Community Liaison Research Team 2013). CEMA did not prioritize funding to advance the workplan before it ceased to function in 2015. No similar forum with representatives from local Indigenous communities, industry, and government exists to advance this work.	Incomplete		
1.4 "Develop TK procedures, benchmarks and timelines for certification of reclamation projects; this may include curricula and certification in TK experience and literacy." (Two Roads Research Team 2011, Table 1).	While Indigenous Peoples "recognize that replication of natural conditions will not possible in reclamation areas for the foreseeable future", there was commitment from study participants to "identifying reasonable targets consistent with TK values. Targets should be based in part on an understanding of best practices for recognizing and accommodating right, especially with respect to harvesting. Aboriginal participation in the reclamation processes will enhance awareness of targets and expectations that they will be achieved" (Two Roads Research Team 2011, Table 1). While a workplan was developed to address recommendation 1.4 (The Community Liaison Research Team 2013) and a draft Request For Proposal was generated in 2014-2015, CEMA did not prioritize funding to advance the RFP. Then the organization ceased to function in 2015. No other forum has since advanced closing this gap.	Incomplete		
1.5 "Support aboriginal research on TK approaches to understanding and monitoring landscapes, parallel to and intersecting with development of science-based guidelines for landscape-level reclamation." (Two Roads Research Team 2011, Table 1).	IK perspectives often exceed the boundaries developed by western scientists, including the ecological forest and wetland classification units, or ecosites and site types, applied by industry and government to reclamation revegetation design (Two Roads Research Team 2011). Time spent by Indigenous community members in a reclaimed landscape across seasons and over years would allow for: a trajectory of cultural-ecological landscape reclamation to emerge; a community vision for reclamation and their evolving needs and practices to emerge; and new approaches to reclamation to achieve this vision (ibid.).	Incomplete		
1.6 "Develop and accommodate a full understanding of the implications of Article 8(j) of the Convention on Biodiversity for the oil sands region." (Two Roads Research Team 2011, Table 1).	"The knowledge and land-based practices of aboriginal peoples is not mentioned in the science-based "Biodviersity Review" at CEMA that inform reclamation revegetation practice (e.g., Kirk et. al 2009), even though Article 8(j) of the United Nations Convention on Biodiversity identifies a responsibility to do just that (Two Roads Research Team 2011).	Incomplete		
2.0 TK Strategy and Capacity-Building				
2.1 "Conduct a TK State of Knowledge report for the oil sands region – including detailed state of knowledge about plants." (Two Roads Research Team 2011, Table 1).	While the oil sands industry has funded development of propagation and establishment information for approximately 100 forest understory and aquatic plants (Smreciu et al. 2013), there was no participation by Indigenous communities. So, a parallel investigation and summary of the IK state of knowledge on Indigenous language plant names and plant uses specific to the oil sands region has not been undertaken, but would enhance future iterations of the CEMA Revegetation Manual and ultimately closure outcomes (Two Roads Research Team 2011). An oil sands company funded development of an ethnobotancial book called Maskihkiwahtikwa ochi Fort McKay (Cree) / Jie Dechen ti nadye ha (Dene) / Plants of the First McKay First Nation (FMFN 2019) with information on 23 traditional use plant taxa. It was not designed in a format to inform reclamation revegetation planning. There is no ongoing work or funding for a parallel state of knowledge report.	Incomplete		
2.2 "Support the TEK Advisory Committee and Aboriginal Round Table to play a stronger coordinated role in identifying TK project needs and priorities for informing guidelines development." (Two Roads Research Team 2011, Table 1).	Most working groups at CEMA were science-based and did not regularly prioritize and conduct IK studies to equitably inform reclamation guideline development. However, a few CEMA committees were capable of supporting parallel IK work towards reclamation planning and guidelines and the application of a Two-Roads Approach in the CEMA processes (Two Roads Research Team 2011). Yet, the multistakeholder group was closed in 2015 and no similar group with equitable and fair representation of affected stakeholders and local Indigenous communities exists to advance this recommendation.	Incomplete	Establish a multistakeholder mine closure and reclamation forum to support knowledge braiding at key bridges.	The multistakeholder group CEMA was closed in 2015 and no similar group with equitable and fair representation of affected local Indigenous communities exists. A new multistakeholder mine closure and reclamation forum is needed to support intercultural dialogue and the braiding of IK into mine closure and reclamation guidance documents and plans at key bridges.
2.3 "Develop a long-term training program for a team of community researchers." (Two Roads Research Team 2011, Table 1).	There are few, if any new examples, of community researchers having the opportunities for systematic, long-term research training to support Indigenous community capacity for participatory approaches to IK research and monitoring in oil sands mine closure and reclamation. This is in contrast to the numerous NSERC Chairs in the oil sands region supporting science-based research and training to university students as future professionals. The exceptions are the Biodiversity TK Study itself (BTKRG 2009; Two Roads Research Team 2011, 2012; The Community Liaison Research Team 2013), and the Co-Reclamation Project before its 5-year agreement project was terminated.	Incomplete	Establish a NSERC or SSHRC Research Chair on Indigenous participation in oil sands closure and reclamation.	Long-term funding and IK research expertise is required to support an Indigenous road to reclamation and closure research.
2.4 "Incorporate TK baseline studies and aboriginal participation in closure planning	Reclaiming homeland and heritage is dependent on working with Indigenous communities and gathering of baseline information (e.g., placenames, land uses, ecology) for planning reclamation from an IK perspective before development commences ("principle of early work") ((Two Roads Research Team 2011). "This vision is based on concepts that place	Incomplete		

(principle of "early work")." (Two Roads Research Team 2011, Table 1).	communities and ecosites should provide for the diversity required to renew traditional harvesting practices for future generations; that landscape level diversity and integrity should be achieved; that trajectories should lead to renewal of traditional land use practices, and strengthening of social, cultural, spiritual integrity and economic sustainability; that maintenance of protected areas and vitality of traditional on-the-land programs in the present are essential to the success of reclamation programs in the future" (Two Roads Research Team 2011, Table 1). While there are numerous TK studies with baseline information, this information is routinely omitted from closure plans (see chapter 5). There are no examples of Indigenous-led monitoring programs in oil sands reclamation.			
2.5 "Develop parallel aboriginal processes, methodologies and protocols for research and monitoring, drawing from the discipline of Native Studies as well as local community experience and guidelines." (Two Roads Research Team 2011, Table 1).	Indigenous methods are different from scientific methods, so Indigenous methods need to be validated and supported as a separate road to closure research and planning (Two Roads Research Team 2011).	Some Action, Remains Incomplete	Industry to use local Indigenous methods for (i) dialogue and (ii) creation of an aligned mine closure vision with local Indigenous communities.	Using traditional Indigenous decision-making processes, the Co-Reclamation Project modified (Holmes et al. 2016) and validated a method that developed an indigenized code of conduct for intercultural dialogue on reclamation (Chapter 3). Two other cultural activities were evaluated and validated as appropriate indigenous methods for the creation of a parallel or aligned post-closure vision (Chapter 4).
2.6 "Conduct a review of CEMA's TEK Guidelines with participation of the Biodiversity IK research team, based on a literature review as well as recent experiences in TK research and monitoring in the oil sands region." (Two Roads Research Team 2011, Table 1).	The 2006 edition of the CEMA TEK Research Guidelines provided general guidance on IK studies, but did not include the most current innovations in collaborative research of that era (Smith and TEK 2006). In response, the guideline was revised to include relevant IK research and monitoring approaches and results, including the Two-Roads Approach (Two Roads Research Team 2011). See Simmons et al. 2012 for more details.	Complete		
3.0 Indigenous Engagement and Participation				
3.1 "Develop guidelines for aboriginal engagement and participation in reclamation processes." (Two Roads Research Team 2011, Table 1).	Support is needed to create the general conditions for meaningful engagement and participation in mine closure and reclamation processes. The proposed engagement and participation guidelines will expand on how the "Two-Roads Approach can support engagement aboriginal engagement by facilitating structured dialogue and understanding between aboriginal people and scientists [and planners]" (Two Roads Research Team 2011, Table 1). This task requires "full engagement of the aboriginal communities; otherwise, such projects will be incompletely implemented and validated" (Two Roads Research Team 2011, Table 1).	Some Action, Remains Incomplete	For industry and government to (i) apply the principles of the Cycle of Respect during consultation and engagement with Fort McKay on mine closure and reclamation, and (ii) use the Fort McKay Mine Closure Vision to guide project-level closure and reclamation planning.	Fort McKay co-created intercultural principles for working on reclamation together (see Figure 3-3) and a Fort McKay closure vision (Table 4-3; Daly et al. 2022). They provide guidance on how to engage with them on reclamation and closure and how to include their special interests and values in landscape-level planning.
3.2 "Develop clarity about the special nature of aboriginal interests in reclamation based on rights and homeland values, including intangible (cultural and spiritual) and tangible (economic and ecological) values and the aboriginal role in sustainable land stewardship." (Two Roads Research Team 2011, Table 1).	Homeland values differ from commercial, recreation or natural values since they address the essence of rights (i.e., Aboriginal and Treaty). Consequently, it is imperative that affected Indigenous communities be involved in defining appropriate land-use objectives and not be conflated with natural and conservation values (Two Roads Research Team 2011).	Incomplete		A systematic review of recent oil sands mine closure plans revealed that oil sands mine companies sporadically engage affected Indigenous communities in mine closure and target TLU as an end land use for substantial portions of the reclaimed landscape. However, these plans contain limited or no evidence that local Indigenous communities' questions, concerns, values and IK were adequately captured or informed closure decisions. See chapter 5 for complete details.
			Training modules are needed to help industry and government develop competencies for ethical engagement with affected Indigenous communities.	Training modules should include: (i) differences in worldviews and how they contribute to different perspectives in defining success in engagement and mine closure (renewing relationships, healing vs. milestones achieved on schedule and within budget); (ii) an exploration of long-term participation and its relationship to trust-based relationships and mutual benefits; (iii) trauma-informed engagement to minimizes harm to marginalized communities; and (iv) Indigenous community engagement best practices and the values and rights of communities.
4.0 Communication and Education				
4.1 "Develop a popular reference book on ethnobotany of the oil sands region." (Two Roads Research Team 2011, Table 1).	Creation of a "popular reference book [or field guide] on ethnobotany of the oil sands region for use by communities would be an excellent tool to promote meaningful aboriginal participation in revegetation planning and monitoring, and to raise public awareness of aboriginal participation in revegetation efforts" (Two Roads Research Team 2011).	Incomplete		
4.2 "Provide specialized professional supports to the Aboriginal Round Table for development of a framework and strategy for communicating science-based and IK biodiversity reclamation research and monitoring information in Indigenous communities." (Two Roads Research Team 2011, Table 1).	"Greater dialogue can ensure the two methods (science-based and TK) are complementary and in alignment." (Two Roads Research Team 2011, Table 1). Specialized professionals can support training and capacity-building in Indigenous communities. In particular, "a framework and strategy for communicating science-based and TK biodiversity reclamation research and monitoring information in aboriginal communities should be developed" (Two Roads Research Team 2011, Table 1). The multistakeholder group was closed in 2015 and no similar group with equitable and fair representation of affected stakeholders and local Indigenous communities exists to advance this recommendation.	Incomplete		
4.3 "Publish the Biodiversity IK Study report edited with aboriginal communities as the primary audience." (Two Roads Research Team 2011, Table 1).	Elders emphasized the importance of returning the results "to the communities in a format that can be used for awareness-building and educational tool…Publication is a way of demonstrating the value of the TK process and can be used as a tool for communities to monitor how study results are applied" (Two Roads Research Team 2011, Table 1). It was recommended that volume II of the Two Roads Research Team (2011) be published as a book. A plain language summary was provided to the participating communities, but funding was not provided for this recommendation, so work was not published.	Incomplete		Publications co-created with Fort McKay co-researchers inform recommended participation processes in mine closure and reclamation (e.g., Daly et al. 2022; L'Hommecourt et al. 2022).

2.4.1 Design Inspiration for the Two-Roads Reclamation and Reconciliation Framework

The TRRF illuminates six key bridges or phases for distinct cultures walking their own paths to meet at to share knowledges and co-create reclamation and closure plans that enable present and future generations of Fort McKay to stay connected to their ancestors through reclaiming cultural landscape features. The framework is meant to be used in combination with the Cycle of Respect, whereby this code of conduct's principles guide participants actions when they meet at each of these framework's recommended bridges. The bridges are described as follows:

1. **Grow Relationships and Reclamation Collaboration Principles** - before energy project approval and throughout project operations and closure (e.g., Cycle of Respect);
2. **An Aligned Intercultural Closure Vision and Objectives** – a project-level intercultural guiding light and landform-specific objectives for planning and design decisions, respectively;
3. **Traditional Land Use Planning Guide** – Fort McKay-led or co-created planning guide to communicate key TLU reclamation and closure needs and planning methods from their worldview;
4. **Co-Create a Reclamation and Closure Plan** – This plan is developed with (not for) Fort McKay in combination with an aligned closure vision and TLU planning tools;
5. **Implementation** – The degraded landscape is co-reclaimed (i.e., land recontoured; soils, plants, wildlife habitat and Fort McKay access is re-established) using the Co-Reclamation and Closure Plan; and
6. **Co-Monitoring, TLU Indicators and Adaptive Management** – Develop and apply an Indigenous-led or guardian program, which steward landscapes and cultures, using TLU indicators and methods (Davies Post et al. 2022; Chapter 5) to evaluate reclaimed lands in parallel with western environmental science approaches. Braid lessons from the two roads into adaptive management and the design process for future TLU design. Maintenance and/or adaptive management should be applied when the landform does not meet the target objectives.

The TRRF's design was inspired by the Two-Roads Approach (Two-Roads Research Team 2011, 2012), which co-researchers experienced throughout the project, and the lessons about trails shared by project co-researchers. Jean L'Hommecourt described her experience in co-creating the Two-Roads Approach and how it was designed to prioritize IK and perspectives alongside scientific ones during mine closure planning and problem solving:

> *We were sitting together as a group in CEMA that included representatives from five First Nations in the region. The Two-Roads Approach is something we came up with while talking about how to bring forward our concerns and issues and how to deal with them in a manner that was respectful of our Indigenous views and inputs. We have a different set of values than the mainstream or settler society as far as land connections and a connection to Mother Earth. We*

walk different paths. A lot of times we get pushed into a separate way of thinking that's not ours. In order to keep our values, we want to walk a separate road. We walk together and bring our values and ideas together at certain points along our separate routes. We try to coordinate those points by building bridges and coming to some kind of understanding while working alongside each other.

A Two-Roads Approach was experienced by co-researchers when, for example, they exchanged knowledges on the land at Moose Lake and during a reclamation tour and, later, took part in the intercultural co-creation of the Cycle of Respect. An Elder and Fort McKay co-researcher and the late Dr. David Lertzman also talked about the importance of trails. The Elder described the relevance of Fort McKay's ancestral trails that span across the FMTT while offering sacred Cree teachings on sweetgrass.

Sweetgrass - a kindness medicine with a sweet aroma…[and] 21 strands to make a braid…The first 7 strands represent those 7 generations behind us: our parent, grandparents [etc.]…who we are and what we are is because of them. They've brushed and made the trails we have been walking up until now. " David reflected on breaking new trail in deep snow: *"…breaking trail under these conditions is pretty tough going. It's harder. Takes longer. And going up hills is more like swift hopping really…so it's a tough journey, but it's a good journey because I know that the harder it is for me to break trail the more someone else after me is going to appreciate it.*

Below we explore the translation of study results (Table 2-5) into an optimized framework using the principles of adaptive management and social learning. The insights are organized into the following topics: trust grows from relationship-focused participation; gestures towards braiding and the renewal of Indigenous cultural landscapes; TLU planning system gaps; and governance towards reconciliation and a just society.

2.4.2 Trust Grows from Relationship-Focused Participation

Application of traditional Fort McKay venues, activities and decision-making processes for group dialogue and knowledge exchange created a different, more inclusive experience for the Fort McKay co-researchers that gestured towards improved partnerships and relations with company co-researchers on land stewardship. While reflecting on past consultation and engagements sessions through storytelling, Fort McKay co-researchers expressed fatigue with past approaches, feeling unheard and uneasy, and not seeing enough actioning of their needs and IK. This was communicated with sentiments such as: "*no one listens to community input*", "*not enthusiastic about repetitive tours*", and so they "*feel tired and worn out from giving so much and then the information given to companies just sits on the shelf or goes in the bin".* After experiencing TLUs and unscheduled free time together at Moose Lake, in contrast to time-constrained and agenda-driven company meetings, a Fort McKay co-researcher communicated that it put

them more "*at ease*" and recommended a similar approach at future research and engagement sessions. Jimmy et al. (2019) concur that organizations should be "collaboratively developing plans for meetings that include flexibility and adaptability to ensure respectful inclusion of IK holders and a different view on the concepts of time and productivity" (p. 52). Within a talking circle at the end of the Moose Lake and reclamation tour events one Fort McKay co-researchers expressed hope and satisfaction with the start of the project and the university and company co-researchers using sentiments like they "*look forward to working together over the next five years on this project.*" Another said he "*considered everyone his friend*" and a third indicated they were satisfied a Two-Roads Approach to "*reclaiming homelands was finally happening and their efforts at CEMA* [in creating the Approach] *weren't for nothing"* and they tearfully closed by thanking the other Fort McKay co-researchers for *"not giving up."* During the co-creation of the Cycle of Respect and co-visioning activities, Fort McKay co-researchers shared positive expressions, such as "*it feels different this time*"; "*we are all family*"; "*good vibes*" and "*It seems like everybody, all their pictures put together, it seems like they come together to make one story."* A university co-researcher reflected that the relationship outcomes of the initial study meetings were unlike any experienced before because "*respectful conversations persisted throughout the [*reclamation*] tour, especially relative to the tense industry-Indigenous community meetings I've attended over the last 20 years or so in the industry.*" These intercultural insights and indicators of improved relations exemplify the potential of the Two-Roads Approach to set up a safe and shared ethical space (Ermine 2008) for local Indigenous communities and industry to work meaningfully together on cultural reclamation.

While there were indicators of improved relations during the first parts of the study, divergent perspectives about the Co-Reclamation Project objectives and a Two-Roads Approach methodology were also surfaced part-way through the study. Fort McKay co-researchers viewed the project as a way to explore reclamation from their ways of knowing and doing. This included a desire to use an interconnected landscape perspective, the "*original land conditions*" and "*the historic information from the family"* during reclamation planning to reconnect Fort McKay to reclaimed "*family land*". Another priority for Fort McKay co-researchers was for company participants to understand the grief and loss they experience as a result of the social and environment impacts from industrial activities and their desire to approach reclamation from an interconnected landscape perspective. In contrast, company co-researchers expressed a desire to start small by reclaiming a small, 1-to-2-hectare area of disturbed land together and to meet project milestones in a timely manner (e.g., a shared vision, site identified, reclamation plan completed, co-reclaimed parcel of land achieved). These examples emphasize how different worldviews and understandings of research can contribute to different perspectives on project objectives, approaches, and measures of success. At the end of the project, Fort McKay co-researchers shared a unified voice that their trust in the company was eroded when the company made a business decision to stop taking part in

this Two-Roads Approach to reclamation study while continuing to fund western science reclamation research projects (see Davies Post forthcoming for more details). Similarly, an academic review of more than 200 documents revealed that local communities resist mining due to their lack of representation and participation in decisions that concern them (Conde 2017). Other factors were perceived environmental impacts, lack of compensation, and distrust with the company and state (ibid).

Focusing on relationship-building and intercultural ways of working together was appropriate for collaborative and Indigenous research. Cree scholar Wilson (2008) concurs that relationships must take precent to reach a higher state of awareness about what one is studying within an Indigenous paradigm. In contrast, considering time to be transactional and setting fast-paced deadlines for the renewed relationship with Indigenous Peoples and shared closure-decisions can be disruptive and diminish trust (Ali 2016). Jimmy et al. (2019) remind us that it may be only through both "long-term engagement" and "relationship building that difficult and uncomfortable, but meaningful and important conversations between Indigenous and non-Indigenous people might become possible" (p. 40). Albeit, a Two-Roads Approach requires compromise for mining companies to receive some certainty in planning process and timing for a predictable business outcome (Australian Government 2016). Consequently, the optimized framework separated the development of intercultural "collaboration principles" and "shared vision and objectives" setting into two separate and bridges (Figure 2-6), instead of the one bridge in the initial conceptual framework (Figure 2-3). Additionally, the optimized framework emphasized the importance of taking the time to commit to grow the relationship with the support of collaboration principles that guide intercultural dialogue and action (Table 2-5, Figure 2-6). This first bridge can make the latter bridges easier and more achievable, as showed by achieving several project milestones and shared decisions (see Chapter 3 and 4 or the summary in section 2.4.3). The amount of time needed during this first bridge will depend on the existing relationship between an Indigenous communities and business, and the amount of time parties choose to invest towards trust-building, mutual post-closure benefits and, ultimately, a new shared story. To support relationship-building and collaboration on mine closure and reclamation, we recommend industry and government staff develop competencies in ethical engagement with Indigenous communities through focused training modules. Training modules should cover: (i) differences in worldviews and how they contribute to different perspectives in defining success (e.g., relationships and healing vs. milestones achieved on schedule and within budget); (ii) long-term participation and its relationship to trust-based relationships and mutual project benefits; (iii) trauma-informed engagement to minimizes harm to marginalized communities; and (iv) Indigenous community engagement best practices and the values and rights of communities (Table 2-5).

2.4.3 Gestures Towards Braiding and the Renewal of Indigenous Cultural Landscapes

There were many moments where Fort McKay, university and company co-researchers showed gestures towards partnership and intercultural co-creation in mine reclamation and closure while engaged in a shared ethical space (Ermine 2007) of the Two-Roads Approach.

Experiencing a Two-Roads Approach led to new lessons about cultural reclamation and relationships. For instance, during the reclamation tour, a company co-researcher found a small area of reclaimed forest that was performing poorly, to their surprise, and needed their attention for maintenance. In contrast, a Fort McKay co-researcher identified traditional berries growing in the same reclaimed forests, also to their surprise. At Moose Lake, a company co-researcher reflected,

> *I was thinking, after talking with the community co-researchers, that we might have more in common with each other than we think (family situations, love of being outdoors, etc.). Maybe we could get to know each other's similarities before we dive into the differences between the two different scientific approaches* [to reclamation]*. Then it won't seem like we're on different sides. I don't think we actually are – we all want the same thing*.

Application of the Two-Roads Approach created space for sacred Fort McKay teachings to be shared which supplied new insights on treaty relations and cultural landscapes. For example, a Fort McKay co-researcher taught co-researchers that we are all treaty people when they opined that

> *A Two-Roads Approach goes all the way back to the Treaty signing. Our ancestors had to communicate in a way that was understood by the newcomers and come to an agreement 'for as long as the rivers flow, grass grows, and sun shines.' Those terms are a perfect example of universal understanding by everybody on Mother Earth that our identity as Indigenous Peoples is as peoples of the land.*

Another Fort McKay co-researcher said, "*The old trails have been destroyed by dams, industries. So now our ancestors are having a hard time to find us to help us heal.*" This provided the insight that reclamation of the Fort McKay homelands needs to focus on renewal of cultural elements, such as ancestral trails which connect of past, present and future generations, and not just environmental renewal. Beckett and Keeling (2019) concur that a narrow focus on the technical environmental challenges of project clean up by mine companies and government regulations omits the historic and ongoing colonial relations and injustices from mine closure and reclamation policy and planning.

Application of the Two-Roads Approach gave rise to many intercultural mine closure and reclamation decisions and tools. Fort McKay and company co-researchers achieved shared reclamation project and planning decisions (Table 2-5). For example, company, and university co-researchers and a sub-set of Fort McKay co-researchers co-designed research meeting agendas, like the relationship-building activities at Moose Lake and during co-visioning. Another example was the project decision

made by all co-researchers to "*move forward with two parallel [closure vision] statements that are aligned to maintain integrity of both Fort McKay's and [the company]'s perspectives*." They also co-created tools such as the Cycle of Respect (Chapter 3), site selection criteria, a project motto, and parallel closure visions (Daly et al. 2022) to guide respectful intercultural behaviour and action in repair of the Fort McKay homelands. The parallel Fort McKay and company visions aligned in the following ways: working together on reclamation; reciprocal learning; and improving relationships (Daly et al. 2022; Chapter 4). Thus, testing validated that the recommended best practice of establishing a shared closure vision (ICMM 2019; Svobodova 2019) was achievable between Fort McKay and company. Consequently, the second bridge in the optimized framework became an "aligned closure vision" (Table 2-5, Figure 2-6). These milestones in the Fort McKay-company relationship showed shared project control and authority and that braiding of IK and reclamation science were achievable through respectful intercultural partnerships. Consequently, its plausible that Fort McKay and industry can achieve similar milestones at the next bridges in the optimized framework (e.g., co-create objectives and a co-reclamation & closure plan, implement plan), which are currently untested and a recommendation for future research (Table 2-5, Figure 2-6). We recommend Fort McKay partner with a company to create landscape-level objectives for TLU and to co-design and implement a co-reclamation and closure plan. Additionally, we recommend long-term funding and IK research expertise be allocated to continuing a Fort McKay road to reclamation and closure research. An NSERC or SSHRC Research Chair should be dedicated to enhancing Fort McKay's (and other affected Indigenous communities') participation in oil sands closure and reclamation (Table 2-5).

2.4.4 Traditional Land Use Planning System Gaps

The re-establishment of cultural landscapes capable of supporting TLUs needs a new planning bridge. Fort McKay has a deep, multi-generational connection and responsibility to protect and conserve their homelands and culture. "When you're not using the land and the culture, you lose your language because you lose the connection. Language connects us to the land, and you can't have your language without the land" (Fort McKay co-researcher). Yet, the there is an erosion of the community's cultural due to oil sands industrial activities and processes. One Fort McKay co-researcher said, "We have really sacrificed a lot and we're still sacrificing. But the biggest sacrifice for us is our culture and our way of life in our connection to the land we're being pulled away. Further and further away. Because of non-access, because of the depletion of our of oil, boreal forest, and those are the things we depend on for our livelihood." Scholars (Cuerrier et al. 2015) and King (2013) concur that land sustains life through nourishment and wellbeing and that it holds the histories, memories, ancestors, stories, ceremonies, languages and other cultural aspects of an Indigenous community. Access to their traditional land and

renewal of degraded lands is essential to cultural sustainability through the transfer of knowledge, language and customs (Wong et al. 2020). Yet, Fort McKay co-researchers emphasized that oil sands mine companies do not meaningfully include them or their rights in planning for the renewal of cultural landscapes and TLUs. One Fort McKay co-researcher said, "It's been happening for many years, how industry rules and they are the one that hold the rights its seems to resources and do whatever they please and how they manage it with or without our help. They dance around us and go forward with projects." While oil sands companies meet with Fort McKay, Fort McKay co-researchers described how their feedback is typically dismissed, "I feel when we talk about a project, we are brought in down the road, once plans are made. May times they give us these options - 1, 2, 3 and 4. We get all 4 First Nations involved, give our concerns, comments and then it goes away. Company rebuild another new plan that is more economical, easier, efficient, and they would go with that despite our concerns."

Industry and government employees will naturally have a challenging time planning for Fort McKay's TLUs because they generally were not raised in the Fort McKay culture and do not have their local IK and worldview. This was confirmed in Chapter 5 by the systematic review of oil sands life of mine closure plans (LMCPs) which, on average, targeted low cultural diversity with just 101.6 or 28% of Fort McKay's 363 traditional use plant, mammal, fish, amphibian and fish taxa incorporated in the post-closure landscape planning (Table 5-8; Figure 5-2). The mine companies communicated in the LCMPs that provincial law (i.e., regulatory policy, directives, approval requirements) and western science-focused reclamation guidance documents and methods (e.g., AENV 2010, Beckingham and Archibald 1996, ESRD 2015, GDC 2009, Wylynko and Hrynyshyn 2014) were the primary drivers for their planning decision. White (2013) concurs that "land use that is dictated by the demands of mining companies threatens the health and wellbeing of traditional owners" (p. 56). In contrast, there are cases where mine closure plans included Indigenous voices in social transition planning, such as a community in the Township of Jabiru, Northern Territory, Australia concerned about displacement following closure of the Ranger Uranium Mine. They led an initiative that found alternate closure options and resulted in a revised closure plan for a tourism hub in the heart of a world heritage listed wetland with significant local Indigenous culture (Everingham et al. 2020; Gundjeihmi Aboriginal Corporation 2017). Application of the Two Roads in ethnoecology enables Fort McKay to apply their IK of their homelands to inform reclamation planning, in a way that reclamation practitioners are not able to. For instance, a Fort McKay co-researcher said, "we have traditional names for all the rivers and those are not [on the map] right now." We propose that novel support tools developed by or with the support of local Elders, land users, and other IK holders can guide better TLU planning outcomes. The recommendations derived from the systematic review of LMCPs in chapter 5 called for revising or creating a new reclamation guidance document designed with traditional use planning methods, reclamation certification targets, a more

comprehensive list of cultural taxa, and TLU trajectories that communicate timelines for when Fort McKay generations can sustainably practice their many traditional activities and rights again (section 5.4). Consequently, the third bridge in the optimized framework became a "Traditional Land Use Planning Guide" (Table 2-5, Figure 2-6) which we recommend for future research development and testing. However, Fort McKay and other Indigenous communities have put forward similar recommendations in the past (i.e., Recommendations no. 1.3, 1.4, 1.5, 1.6 and 3.1 in Table 2-5). Consequently, it's unlikely Fort McKay's and other local Indigenous communities' mine closure and reclamation priorities will be advance through research and planning without new governance (see next section).

2.4.5 Governance Towards Reconciliation and a Just Society

New governance is a prerequisite to addressing the impacts on rights and TLUs in mine closure and reclamation. Where governance is the "the structures, processes, rules and traditions that determine how people in societies make decisions and share power, exercise responsibility and ensure accountability" (Patterson et al. 2017 p. 3).

The current governance system does not meaningfully involve Fort McKay in mine closure and reclamation decisions which affects their ability to exercise their rights, nor does it equitably enforce laws, regulations, and policies. Fort McKay's socio-cultural relationship to their homelands and TLU practices are recognized internationally, through the UNDRIP (UN 2007), and are legally protected in Canada (Constitution Act s35 1982). Yet, the systematic review of TLU planning in LMCPs at seven oil sands projects found that most held limited or no evidence that local Indigenous communities' questions, concerns and IK were adequately captured (n=1), resulted in Indigenous-informed closure decisions (n=2) or were accommodated (n=1) (Table 5-2 and Table 5-3). Instead, companies made the decisions about mine closure and reclamation goals (i.e., achieve land certification; self-sustaining ecosystem; equivalent capability; value to stakeholders), target land uses, and reclamation design and timelines, while generally excluding the local Indigenous communities, their unique worldviews and approaches, and relevant local IK (Table 5-2 and Table 5-3). These plans were ultimately approved by the Alberta Energy Regulator and are being implemented in the reconstruction of the FMTT today even though they do not satisfactorily address rights, some TLU regulatory requirements (e.g., companies do not use a TLU decision-flow chart towards revegetation planning) and may not be capable of renewing cultural landscapes and sustaining Fort McKay's landscape-dependent culture. Comparably, a lack of action since 2011 in advancing and applying the past recommendations made by Fort McKay through the Biodiversity TK Study means only two of the seventeen recommendations were completed (see Table 2-5). TLU decision-flow chart was designed to include Indigenous peoples and their knowledges in closure planning (Piorecky and Murphy

2016). Mine operators are required by their EPEA operating approval regulations to "comply with the Guidelines for Reclamation to Forest Revegetation in the Athabasca Oil Sands Region, 2009, as amended" (e.g., AER 2014 p. 70). But this amendment to the revegetation guidelines was not referenced as being applied to plan development by any of the seven oil sands mines. A similar trend was seen across the global mining sector whereby government policy enables mining companies to make mine closure decisions to the exclusion of local Indigenous communities (Bond and Kelly 2020; Holcombe et al. 2022; Monosky and Keeling 2021; Wiebe 2016). Tsuji (2021) refers to this practice as "environmental assimilation" and defines it as "changes to the environment through development, to the extent whereby the environment can no longer support Indigenous cultural activities" (p. 1). In contrast, case studies exist where Indigenous communities-led or co-led mine closure and reclamation objective-setting, land use selection, closure risk identification and socio-cultural landscape design (Christoffersen et al. 2019; Drylie al. 2013; Everingham et al. 2020; GOC 2016; McCarthy et al. 2014). For example, the Thompson Economic Diversification Working Group (TEDWG), of which half was represented by local Indigenous residents, developed a term of reference built on traditional Indigenous ways of working and an economic diversified plan following partial closure of a nickel mine in Manitoba, Canada (Drylie et al. 2013). We recommend establishing a multistakeholder mine closure and reclamation forum that includes representative of affected local Indigenous communities to support intercultural dialogue and the braiding of IK and TLU objectives into mine closure and reclamation guidance documents and plans at key bridges (Table 2-5).

The systemic gaps are, in part, products of inadequate Alberta law, government and company policies, inadequate policy enforcement and/or skills and knowledge. "The Government of Alberta's Policy on Consultation with First Nations on Land and Natural Resource Management, 2013" (GOA 2013) necessitates to "substantially address impacts on Treaty rights and traditional uses through a meaningful consultation process" (GOA 2013, p.1). Since study results found a lack of evidence of meaningful consultation and accommodation with Indigenous rights holders in the LMCPs and reclamation is the key mitigation to TLU impacts (GOA 2013; GOC 2021), it's possible that employees of the Alberta Energy Regulator require training and partnerships with Indigenous communities to effectively review LMCPs for the rights and traditional use needs needed to enforce existing policy (GOA 2013). To close another systemic gap, international, national (GOC 2021; TRCC 2015a) and provincial (GOA 2013) human rights policies need to be translated into project operating approval regulations and directives since oil sands companies use them to develop LMCPs. Consequently, an outer circle that stands for "Law, Policy, and Justice" was added to the TRRF to emphasize that human rights laws, policies and regulations, which are aligned from the international level to the project-specific level, are essential towards actioning the meaningful inclusion of affected Indigenous communities (Figure 2-6).

This would prevent companies from opting out of meaningful engagement in mine closure and reclamation with Fort McKay, as was experienced by this study. “Skills and Knowledge” were added to an inner circle in the framework to support company and government employees in effective intercultural mine closure planning and enforcement, respectively (Figure 2-6). See section 2.4.2 for a list of recommended training modules.

We argue that without supporting governance, the TRRF, or other Indigenous-led or co-created intercultural closure and reclamation tools, will be dismissed in systemic pattern of favouring western ways of working and other business priorities. For example, the Alberta Government, oil sands companies and local Indigenous communities co-created the Two-Roads Approach to reclamation by 2012, but to our knowledge it has not yet been applied to closure and reclamation planning by any oil sands company, apart from this research study. Similarly, during the COVID-19 pandemic and economic downturn, application of this collaborative approach was abandoned part-way through the project by the partnering company for their usual western-science and regulatory-focused approach to reclamation and, presumably, other company priorities. Consequently, our hypothesis was incorrect. While there were initial indicators of meaningful collaboration on the reclamation of the Fort McKay homelands early in the project which led to improved mutual understanding, trust, and relationships for Fort McKay and an oil sands company, the increased trust was not sustained (see Davies Post forthcoming for more details). In Shifting the Burden: Corporate Indigenous Relations and How they can Go Wrong, McCarthy et al. (2022) documents systemic pattern in mine closure that arise from different worldviews and often unconscious behaviours where western corporations engage in superficial attempts at relationship-building that undermine the more difficult but fundamental solution of developing trust-based relationships with Indigenous communities. Safe attempts by the corporation to build relationships to address regulatory requirements of the projects instead cause Indigenous communities to become more frustrated, resentful and disappointed (ibid.). It must be acknowledged that while the Truth and Reconciliation Commission of Canada (TRCC 2015b) calls on all Canadians to commit to an ongoing process of reconciliation between Indigenous and non-Indigenous Canadians, “there is no formula for how to move forward together” (Jimmy et al. 2019 p. 57). Consequently, missteps, frustrations, and anxieties will inevitably arise on the journey to strengthening non-Indigenous and Indigenous engagement and relationships (ibid.) We reason that the lack of adoption or sustained adoption of an inclusive Two-Roads planning approach requires overt prompts for government and companies to avoid repeating harmful patterns which inadequately understand and address impacts to Fort McKay’s rights and traditional uses. Consequently, the optimized framework has two walking paths to explicitly illustrate the sustained inclusion of Indigenous communities and their cultural paradigms towards a just society and reconciliation (Figure 2-6). The plural cultural paths makes visible a governance structure that creates

space for affected Indigenous Peoples and their approaches at key strategic mine closure engagement and consultation bridges towards sustainable landscapes with socioeconomic, cultural and environmental post-closure benefits for multiple societies. In contrast, McCarthy et al. (2022) hypothesize that meaningful, trust-based relationships with Indigenous communities in the context of business is not achievable and the best companies can aspire to is to be honest that their purpose is to make money for their shareholders.

Critical PAR calls on the co-researchers to acknowledge the failures and successes of the project outcomes. In one way, the experiment failed in that our first attempt to develop and apply a sustainable participatory and inclusive approach to mine closure resulted in a deeply engaged and empowered First Nation and a company discontinuing their participation. On the other hand, there were several indicators of trust and partnership during the initial action stages of the research. Building on those successes and applying principles of social learning and adaptive management enabled an optimized and partially validated framework to emerge which has the potential to support effective intercultural communication and local Indigenous community decision-making in mine closure and reclamation. Garvey and Jones (2021) remind us to remain open to the possibility that our co-created framework may not be the only tool capable of supporting the desired outcomes and to be open to using a different map or to discover new themes with a different method that is not a framework at all. While reflecting on the Cycle of Respect and the underutilization of the Two-Roads Approach, a Fort McKay co-researchers said, “I don't see why they don't wanna utilize it or approve it, or you know, give it a shot. Give it a chance or something. I mean everything is worth a try. If it doesn't work then move on to the next thing, ya know.” Fort McKay should work with the Government of Alberta to develop new governance that supports trying new approaches, like the Two-Roads and this new framework. Without new law and policy, like new project-specific operating approval conditions, equity and justice in oil sands mine closure and reclamation are unlikely to be achieved.

2.5 Limitations

A limitation of the study is that the latter bridges in the optimized framework have not yet been applied and validated. Also, while this study supported the application and advancement of the Two-Roads Approach (Two Roads Research Team 2011, 2012) the study lacked the resources necessary to examine reclamation from the perspectives of all the Fort Mc Kay co-researchers, especially the community knowledge holders, at each step in the research process during the second half of the study. The exceptions are the Cycle of Respect, the first two bridges of the framework and the final verification and validation workshop. In particular, the data analysis was completed by the university co-researchers instead of with the community co-researchers and their Cree and Dene knowledge systems and

approaches. The study was also hindered by the inability to meet safely in person with all Fort McKay co-researchers between April 2020 and June 2022 due to the COVID-19 pandemic.

2.6 Conclusion

Inclusion of Indigenous communities could go a long way to restoring and maintaining the integrity of a people and their land-dependent culture. A Two-Roads Approach methodology and critical Participatory Action Research supported the centering of Indigenous concepts and worldviews alongside western ones to come to know and understand mine closure and reclamation gaps and opportunities at shared bridges. Additionally, recommendations developed more than 10 years ago by Indigenous Communities, including Fort McKay, were re-assessed to identify where these recommendations have not been addressed and how the gaps in participatory planning continue despite being clearly articulated in 2011. The result was an emergent and parallel roadmap called the Two-Roads Reclamation & Reconciliation Framework and associated methods towards a more just and equitable closure landscape with mutual benefits for all. Reflection on each research action allowed co-researchers to reach a higher state of awareness in the complexities of oil sands mine closure and to find areas for future research including creation of broad, landscape-level objectives for TLU; and validation of the remaining bridges (i.e., co-creation of a reclamation plan, execution of the plan and co-monitoring). Without new governance

2.7 References

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CHAPTER THREE

AN INDIGENIZED CODE OF CONDUCT: GUIDING RECLAMATION OF RELATIONSHIPS AND CULTURAL LANDSCAPES IN THE OIL SANDS MINE-AFFECTED FORT MCKAY TRADITIONAL TERRITORY

Title: An Indigenized Code of Conduct: Guiding Reclamation of Relationships and Cultural Landscapes in the Oil Sands Mine-Affected Fort McKay Traditional Territory

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3.0 Abstract

This paper proposes an indigenized code of conduct, called 'The Cycle of Respect', with a set of principles to guide oil sands operators and Government agencies in conducting ethical intercultural dialogue and meaningful engagement with Fort McKay First Nation on mine closure and reclamation in their traditional territory. Drawing on traditional Indigenous decision-making processes for dialogue and knowledge exchange and memorable stories from past engagement, this paper reports a shared First Nation-industry story, *te mamano aski ki kakio asiniwak* (Cree) - *ʔeła ʔeghdalaída niha tuha* (Dënesuliné) - working together for the betterment of our people and land (English); and barriers to this aspiration. The co-narrative envisions respectful engagement and action towards the return of balance and healing of cultural landscapes and relations between the First Nation, industry and the land. One of the thirteen guiding principles is the 'Journey of Trust' towards relationships founded in a deeper understanding. While it will take time and key actions to nurture after marginalization, loss, and disconnection from their homelands and culture, Fort McKay retains hope for healing and reconciliation of their interconnected community, land and culture.

Keywords: indigenized code of conduct; cultural reclamation; oil sands mining; Two-Roads Approach; relations; and reconciliation

Epigraph

Some stories are meant to remain as and where they are and to work only with a very select group of people, other stories are meant to travel the world, and to transform and to be transformed by other world-entities, including the storytellers and those who receive the stories. These are the types of story you will encounter in this book.

Hospicing Modernity, Vanessa Machado de Oliveira (2021)

3.1 Introduction

Balancing the economics of mining, a reasonable standard of living, and the human rights, interests, and unique values of traditional territory-dependent Indigenous cultures presents a complex social-ecological challenge for countries around the world. These interests all converge at one point and that is at the land occupied by Indigenous communities. The land generally means different things to Indigenous and non-indigenous people. Land can be a commodity to be 'developed'. Economies, careers, livelihoods, and societies are built from natural resources extracted from the land. Simultaneously, the relationship to land can be much deeper. Land is a living entity, Mother Earth, to Indigenous Peoples (Smith 2012). They have a spiritual connection to her that is constitutionally affirmed and legally protected in Canada (Constitution Act s35 1982) and recognized internationally (UN 2007). This relationship is complex, respectful, physically-dependent on their traditional lands, and reinforced with Indigenous laws that require land stewardship, in contrast to ownership (Crowshoe and Lertzman 2020; ICT 2016; Joseph and Joseph 2019). Consequently, the land is viewed as 'homeland' (Simmons 2012) or other similar variants like 'Country' (Holcombe et al. 2022). According to Thomas King (2013, p. 217) dissonance between Indigenous and non-indigenous cultures has always centered on the land, which he described as "[t]he issue has always been land".

If a clash of worldviews and values between Indigenous and non-indigenous people has deteriorated homelands and relations between Indigenous and non-indigenous people, then meaningful intercultural collaboration holds the possibility for repair of cultural landscapes and relations. This study examined elements for effective intercultural communication on the topic of mine closure and reclamation of oil sands degraded homelands as the foundation for repaired cultural landscapes and relationships.

3.1.1 Situating the Research Team

Wilson (2008) emphasized that understanding and articulating the relationship within a research community is more important than the phenomena when working with Indigenous Peoples. Research participants in this study included knowledge holders, land users, and representatives from Fort McKay First Nation, technical and managerial employees of a multinational energy and oil sands corporation (herein referred to as the "company"), and academic researchers of mixed Indigenous and European heritage. The coauthors of this article have extensive experience in career, academic and lived experience with conservation, reclamation and mine closure planning.

3.1.2 Mining, Reclamation, and Indigenous Peoples

Mine closure and reclamation science and practice has come a long way in its history yet has further to go in its journey with the Indigenous communities that host their activities. Historically, there has been a

disconnect whereby mine companies develop mine closure and reclamation plans and schedules without local stakeholders' and Indigenous rights holders' participation in the mine closure process and post-mining landscape decisions. But a promising trend for the future of mine closure and reclamation is the emergence of participatory processes for mine closure, such as participatory regreening, monitoring and evaluation of mine affected landscapes (e.g., Beckett 2022; Greater Sudbury 2022; Pareja et al. 2018; UNDP 2019), local community advisory committees (e.g., Drylie et al. 2013, GOC 2016; Centerra Gold Inc. 2020; Lloyd 2019; NSWMC 2021); impact and benefit agreements with participatory mine closure conditions (O'Faircheallaigh and Lawrence 2019); and community-led closure visioning initiatives (Parsons et al. 2013; Two Roads Research Team 2012). Likewise, reclamation and closure good practice instruments and principles are increasingly recognizing that it is just for local stakeholders and Indigenous rights holders to have input to the decisions that affect them (BTKRG 2009; ICMM 2013, 2015, 2019, 2020; LDI 2021). In fact, early involvement of the local community in the planning and preparation for mine closure and the accompanying social transition can reduce negative impacts and improve the benefits after mining activities are complete (ICMM 2019; Maloney 2019). Another critical and emerging aspect of mine closure is the braiding of socio-economic and cultural values into environmental reclamation and progressive closure so that local communities (ICMM 2019; Sheldon et al. 2002), including Indigenous Nations (BTKRG 2009; Clark et al. 2022; Daly et al. 2022; Holocombe et al. 2022; ICMM 2015; ICMM 2020; LDI 2021; Sheldon et al. 2002), make the transition to a sustainable post-mining future.

When a mine proposes to operate on the traditional territories of Indigenous Peoples, there is an added level of consideration needed to properly address their rights (ICMM 2013; ICMM 2020; MAC 2021). As previously mentioned, Indigenous Nations have a deep, multi-generational connection and responsibility to protect and conserve their homelands. Land sustains life, is part of ceremonies, holds the histories, memories, ancestors, stories and languages of an Indigenous community, and is considered home and a relative (Cuerrier et al. 2015; King 2013). Land is essential to the transfer of knowledge, language, and customs (Wong et al. 2020). Nonetheless, there is still a disconnect in global mining where governments and mine companies make decisions about mine closure and reclamation goals, target land uses, and reclamation design and timelines, while excluding the local Indigenous community, their unique worldviews and needs, and relevant local Indigenous Knowledge (IK) (BTKRG 2009; Bond and Kelly 2020; Daly 2021; Holcombe et al. 2022; Monosky and Keeling 2021; Two Roads Research Team 2011, 2012). As such, these institutions must reflect upon and address the colonial-rooted legacies that perpetuate oppression, ethical violations, and a lack of accountability to the affected rights holders who

are prevented from self-determining repair and stewardship of their homelands for their future generations (David-Chavez 2019).

Inclusion of the affected local Indigenous community has the potential to lead to improved mutual understanding, relationships and sustainable socioeconomic, cultural and environmental benefits for all. However, cultural differences between nations, regions, and ethnic groups can lead to communication problems in achieving business goals (Gut et al. 2017). For instance, while co-creating a risk assessment for the Giant Mine closure plan in the Northwest Territories, Canada, local Dene and Métis community members disagreed with separating the impacts into environment, health, safety, and traditional land use because from their holistic Indigenous lenses these elements are intertwined (Christoffersen et al. 2019).

Culture is "the set of knowledge, values, emotional heritage, behavior and artifacts which a social group share, and which enable them to functionally adapt to their surroundings" (Aneas 2003, p 120). It affects the way individuals interact, construct and understand their environment (Aneas and Paz Sandín 2009). Intercultural communication is a scientific field of study concerned with the interactions between people from distinct cultures (Croucher and Kelly 2019), while cross-cultural communication involves comparing interactions among people of the same culture to those from a different culture (Croucher 2016). Intercultural communication and meaningful engagement with affected Indigenous communities by mine companies and governments should be undertaken with an ethical commitment to understand and include the cultural perspectives of the participants. Consequently, this paper proposes that a suitable starting point for intercultural engagement and consultation is the establishment of a code of conduct to guide intercultural communication and mutual understanding throughout key steps of the mine closure and reclamation planning process.

3.1.3 What is a Code of Conduct?

The diversity of value systems in a multicultural society makes it challenging to achieve a consensus on morals and ethics (Rezaee 2001). Still, it is possible to achieve a consensus on ethical principles to guide practices. Principles are a “general belief that you have about the way you should behave, which influences your behaviour” (Collins 2022). They can form rules or a code of conduct that can be applied to reasoning and action at a personal and group level. Examples of applications of these codes of conduct include a practical tool to guide: the minimum national standards for ethical trade of Indigenous art in Australia (Pham and Janke 2009); the honorable behaviour of employees at public corporations and transformation of organizational cultures (Erwin 2011); and conduct and work of restoration society members (Society for Ecological Restoration 2022). However, there lacks a focused code to govern

respectful and responsible restoration and reclamation partnerships and conduct with Indigenous Peoples (Robinson et al. 2021; Society for Ecological Restoration 2022).

3.1.4 Fort McKay First Nation, Homelands, and Oil Sands Reclamation and Closure

Fort McKay First Nation has nearly 900 band members of which about 500 live in the Hamlet of Fort McKay on the shores of the Athabasca River in Northeast Alberta, Canada which is also known as Treaty 8 Territory (Figure 3-1). Fort McKay boasts a longstanding history dating back to 1820 when the Hudson Bay Company built a trading post near the site of the Fort McKay reserve. With the Athabasca Oil Sands found within their homelands, Cree and Dënesuliné (herein referred to as Dene) band and community members are faced with ongoing industrial impacts, both positive and negative, from oil sands activities which began in the mid-1960s.

The First Nation has a long-established record of working collaboratively with the many oil sands companies in their traditional territory, such as through joint ventures. Simultaneously, Fort McKay First Nation works to preserve members' ability to exercise their Indigenous and Treaty Rights to practice traditional land uses as they have done since time immemorial. For instance, Fort McKay First Nation (herein referred to as Fort McKay) has long taken part in the advancement of mine closure and reclamation knowledge in their homelands through consultation and engagement, community-led and collaboration research projects, and multistakeholder committees.

From 2001-2015, Fort McKay participated in the Reclamation Working Group of the Cumulative Environmental Management Association (CEMA), a multistakeholder group with a mandate to make recommendations to the provincial government to manage the cumulative effects of regional development on air, land, water and biodiversity within the Athabasca Oil Sands Region boundary, which is located within the Fort McKay homelands. Using a participatory action research (PAR) approach, Fort McKay community members, other Indigenous communities, oil sands operators – including the company – and the Alberta Government took part in a CEMA project called the Biodiversity Traditional Knowledge Study. This study generated a 'Two-Roads Approach', an ethnoecological framework for inclusion of Indigenous Peoples and their IK and perspectives into reclamation planning (Two Roads Research Team 2011, 2012).

3.1.5 Situating Historical and Contemporary Relationships

Acknowledgement of the historical context of extractive geographies and how it affects actions and relations with Indigenous communities today is important towards addressing social and environmental

injustices (Beckett and Keeling 2019; Beckett 2021). The relationship between Fort McKay and the company has existed since the company began operations in the Fort McKay Traditional Territory over a half century ago. The relationship has the potential to both support and hinder the self-determination of Fort McKay. For example, the choice to invest in the company's East Tank Farm Development supports Fort McKay's economic independence. Conversely, the company's sizeable industrial footprint (34, 993 ha) and limited reclamation progress (8%), in combination with the collective oil sands industry footprint (Figure 3-1), disconnects community members from their homelands and land-based culture. This contrasts with the Treaty 8 agreement between the Government of Canada and 39 First Nations that guarantees signatories can practice traditional activities on the Crown or public lands (Baker 2020; Treaty 8 First Nations of Alberta 2022). Furthermore, it is Fort McKay's perspective, that historic and current oil sands reclamation and closure regulations and practices do not adequately understand, nor address Fort McKay's culture, way of life and holistic land use needs despite their contributions to intercultural reclamation advancements (e.g., Buffalo et al. 2011; Two Roads Research Team 2011, 2012; The Community Liaison Research Team 2013).

The company started engaging with Fort McKay before it was required by regulations and, in recent years, created a corporate policy to support reconciliation. The company's Journey of Reconciliation focuses on progressing the way employees think and act toward Indigenous Canadians across the business—including within the context of mine closure and reclamation—to build mutual trust and respect with Indigenous Peoples. The Journey of Reconciliation emphasizes valuing Indigenous worldviews; partnering with Indigenous businesses and communities; strengthening Indigenous workforce and inclusion; and partnering with Indigenous youth.

3.1.6 A Review of Co-Learning Research Frameworks and Strategies

Goodchild (2021, p 81) said that "a journey to the nexus of Indigenous wisdom and Western thought begins with an important realization, that both are *equal but differentiated*". Differences in ontology, pedagogy, epistemology and axiology between Indigenous Nations and the dominant society can contribute to blind spots, misunderstandings, and conflict (Bishop 1998; Wilson 2008; Smith 2012). This section has a review of research frameworks and strategies with the potential to support multiple ways of knowing and mutual learning.

The 'Two-Roads Approach', 'Two-Eye Seeing' and 'braiding' support the sharing of the best of both Indigenous and non-Indigenous knowledge systems. The 'Two-Roads Approach' is an intercultural ethnoecological framework that creates space for plural ways of knowing, including supporting Indigenous

people to develop their own ways of working on research questions (Two Roads Research Team 2011; The Community Liaison Research Team 2013). 'Two-Eye Seeing' aims to see information from one eye with the strengths of the Indigenous way of knowing and to see from the other eye with the strengths of the dominant way of knowing, and to use both eyes together, thereby incorporating the benefits from both into research outcomes (Bartlett et al. 2012). Braiding involves co-creation of knowledge by interweaving Indigenous and non-indigenous peoples' understandings, perspectives, and orientations into something new, while not erasing differences, conflict, paradoxes and contradictions (Jimmy et al. 2019).

PAR is an applied research approach where researchers partner with non-academic participants to co-generate new understandings that lead to social action (Whyte 1991). People from the organization or community under study take part because they have contextual knowledge to contribute as well as and have a stake in the research outcomes (Mackenzie et al. 2012). PAR is considered a complementary framework to the Indigenous research paradigm and recommended by the Ownership, Control, Access, and Possession (OCAP™) standards for ethical Indigenous research (FNIGC 2014). Thus, it is widely combined with Indigenous research (e.g., Drawson et al. 2017; McCarthy et al. 2014, Two Roads Research Team 2012; Smith 2012; Wilson 2008).

Finally, narrative inquiry or storytelling is the gathering and sharing of knowledge or data orally through story-based and intercultural learning approaches (Bell, 2002). Storytelling is of profound importance to many Indigenous Nations (Drawson et al 2017; Wilson 2008). It involves the sharing of IK from generation to generation through oral stories designed to teach cultural beliefs, values, protocols and ways of life (Clandinin 2006; Simmons 2012). A storytelling approach is befitting the mutual learning within the space of land stewardship because stories are a universal language (Haven, 2007) and they support relationships, connectedness (Moore 2017), and equality between research participants as they uncover knowledge (Dyll-Myklebust 2014).

3.2 Study Goal

In 2018, Fort McKay partnered with the Universities of Calgary and Waterloo and the company to continue the journey to have their unique Cree and Dene perspectives and knowledges understood and represented in the reclamation of their traditional lands through this study, known as the Co-Reclamation Project. The aim of this paper, which is also a doctoral dissertation objective, was to obtain consensus on principles for a code of conduct to guide effective, intercultural dialogue on oil sands mine closure and reclamation planning.

3.3 Methodology

A Two-Roads Approach was selected as the overarching strategy and framework to design this inter-cultural study, co-gather data and co-develop new knowledge. In keeping with ethical Indigenous research principles (FNIGC 2014; Wilson 2008), this study was conceived, developed, and implemented collaboratively with Fort McKay communities members, community staff and a technical representative, the company, and academics from the Universities of Calgary and Waterloo, collectively referred to as co-researchers. This study became the first to try to apply the Two-Roads reclamation and closure planning approach and methodology.

3.3.1 Fort McKay First Nation Protocols and Relations

Fort McKay offered simplified versions of their protocols for university and company co-researchers to engage in during each research meeting. For example, a land acknowledgement followed by an opening circle helped to connect the research team to one another and the Fort McKay Traditional Territory. For more detail see Daly et al. (2022) or section 4.2.2.

3.3.2 Baseline Survey and Foundational Relationship (Re)Building at Moose Lake

Developing a positive relationship is fundamental to engaging in Indigenous research (Lavallée 2009). Consequently, this collaborative reclamation study began by gathering in a relaxed setting to experience traditional land uses in the natural boreal forest ecosystem. On August 27, 2019 10 Fort McKay, 10 company and 4 university co-researchers flew into a remote cultural keystone place (Cuerrier et al. 2015) known as Moose Lake (Figure 3-1). On the third day, co-researchers visited one of the company's oil sands projects to see reclaimed lands and to learn about mine closure and reclamation knowledge, practices, and regulations.

A baseline survey (n=14) was conducted at the project start while at Moose Lake to show co-researchers' intercultural training needs, the status of the First Nation-company relationship, and to explore collaboration values and barriers to improved collaboration and relationships on mine closure and reclamation (Davies Post 2022).

3.3.3 Code of Conduct Method

Wilson (2008, p. 111) says that there are "a million different methods you can use", each with its own unique "medicine". Following the Two-Roads Approach, a method was sought for co-gathering data in an intercultural and inclusive manner with the potential to yield rich discussion between co-researchers and cultural paradigms. Co-researchers selected and modified a method outlined by Holmes et al. 2016, where

PAR and narrative inquiry were used to create an Indigenized visitor code of conduct for sustainable tourism in the Lutsel K'e Dene homeland, Canada.

First Nation (n=10), company (n=8), and university (n=3) co-researchers gathered at the Fort McKay Youth Centre on November 13–14, 2019, February 6–7, 2020, and February 18-20, 2020. During the pandemic, a subset of co-researchers, those with the technological access and capabilities, gathered dozens of times virtually between March 2020 and April 2022 to co-write this manuscript. With a talking circle, co-researchers were asked to share a memorable experience with a teachable moment from past oil sands consultation and engagement meetings. An eagle feather was introduced to the circle by Caitlyn Howard, a company co-op student of Métis heritage. Caitlyn described that she "was gifted this feather when I graduated from the Southern Alberta Institute of Technology in 2015. And it symbolizes my journey in post-secondary and my job and my career. It also symbolizes me reclaiming my culture and my heritage because a lot of it has been lost over the years through intergenerational trauma." One-by-one, each co-researcher (n=21) shared their stories while they held the eagle feather. Dialogue was captured with audio recordings and written meeting notes. Also, a synthesis of stories was captured with key points written on flip chart paper for the group to reflect upon.

Next, co-researchers were divided into two, smaller talking circles. Within these sub-circles, co-researchers examined the results from one of the baseline survey questions, which asked survey participants to name 3-5 key values associated with effective collaborative work practices and reconciliation that should be a part of the Co-Reclamation Project. Next, sub-circle participants were asked to identify principles for effective intercultural collaboration by reflecting on (i) the teachable moments from the collective stories; and (ii) survey value responses. Group discussions named many potential principles for the project code of conduct. Dialogue was captured with audio recordings and written meeting notes and recommended principles were written on flip chart paper. Afterwards, recommended principles were shared between both talking sub-circles to support a collective understanding of ideas for principles, to refine ideas and to take steps towards a collective Fort McKay, company and university perspective on expected project behaviours and actions. University co-researchers reviewed and refined these recommended principles and micro stories as a group and transcribed them onto a single medicine wheel using the English language. This draft code of conduct served as an initial guidepost.

A transcript produced from audio recordings and meeting notes guided a systematic analysis of themes across the data to verify that no principles were missed during group selection for the draft code of

conduct. A qualitative data analysis approach, called thematic analysis, systematically identified and reported patterned themes or concepts across the data using six phases developed by Braun and Clark 2006. See table 4-2 for details. The major themes that arose from the transcript aligned with those included in the draft code of conduct. No additional themes were added as a result of the thematic analysis. The draft code of conduct was reviewed by all co-researchers within a talking circle to verify that micro stories within and across co-researchers' teachable stories were effectively braided into a coherent whole that kept the integrity of Fort McKay, company, and university perspectives. This important verification and validation step led to consensus on the following new additions: 3 new principles (i.e., acknowledge loss and grief; reconciliation; and trust), and Cree and Dene languages. The revised version was approved by the Fort McKay and company co-researchers, with a caveat that Cree and Dene language would continue to be added to the project code of conduct.

3.4 Results and Discussion

Of the company (n=9) and Fort McKay (n=5) co-researchers surveyed, sixty-four values were identified as important for effective intercultural collaboration. The most often named were respect for each other and land; openness; listening; using a Two-Roads Approach or including multiple knowledge systems; learning; honesty; trust; and time and patience (Figure 3-2).

3.4.1 Te Mamano Aski Ki Kakio Asiniwak (Cree) / ʔeła ʔeghdalaída Niha Tuha (Dene) / Working Together for the Betterment of our People and the Land (English)

> "*There have been industrial impacts and it's an overwhelming task, but we have to because it's here with us and it's urgent and it needs us. That's why I did the closure vision painting the way I did because it requires us to come together to do it.*" – Dr. David Lertzman

This section describes a co-narrative between Fort McKay, the company and university co-researchers that was interwoven using their memorable personal stories and associated lessons gleaned from past Indigenous engagement and consultation meetings. The threads selected to be a part of this shared story were derived from the most common themes across the personal stories and dialogue. The most common themes were: expressions of a positive experience (n = 199[1]); listening in support of mutual learning (n =

[1] Note: Group laughter was challenging to quantify accurately. The following estimation assumptions were applied: when group laughter was captured on the audio recording it was assumed to be one episode (episode = 1), no matter

54); stewardship of sustainable lands and cultures (n = 44); and inclusion (n = 39). Theme identification was supported using the frequency a theme was named in the transcript (i.e., n = x) and with direct excepts from the co-researchers stories and dialogue. Also, direct excerpts show the intercultural voices and perspectives within the space of mine closure and reclamation planning.

This co-narrative can be summarized as the movement towards the following Cree language phrase – "*te mamano aski ki kakio asiniwak"* - which was identified as the Co-Reclamation Project motto by the late Elder Clara Mercer. This roughly translates to *ʔeła ʔeghdalaída niha tuha* in the Dene language and "working together for the betterment of our people and the land*"* in the English language.

Drawing on traditional Indigenous decision-making processes for group dialogue and knowledge exchange - storytelling and talking circles - created a different, more inclusive reclamation and closure planning experience and opportunity for the community, company and university participants, gestured towards improved relations. The experience was communicated by co-researchers as: "I think just having that inclusiveness with industry and community is only going to make things work better for us in the long run"; "I think there is opportunity to do it right and have knowledgeable people that are respectful of other peoples' knowledge to combine all those knowledges together to create something for all"; and Fort McKay would want to participate in this project because they have "an opportunity to provide input and create a process that gives them a different experience, achieving reclamation outcomes that give them more." Some Fort McKay co-researchers described this collaboration style as, "Like a family we may not always get along, but we still care for one another and want to work together and get along like today" and "Everyone needs to help each other; we were all family."

The outcomes of this inclusive experience were many expressions of positivity. This included the most common theme across the transcript, an abundance of group laughter amongst co-researchers and sentiments of hope and gratitude. For instance: "I was really thrilled [to be invited to this reclamation project] because it really means something to me" (company co-researcher); "I'm grateful to be here. Be a part of these efforts, whatever I can bring" (university co-researcher); and "I think that mindset [of gratitude] will help all the creative, smart people – geology, hydrogeology, geotechnical - use our smarts as a way to say thank you" (company co-researcher). A common expression by all co-researchers was "thank you for sharing" and "thank you for listening". Laughter, an indicator of relationship well-being

how long the episode, and that all participants laughed (e.g., participants = 21 in large talking circle); Total laughter estimate = (group episodes x participants)^n + (individual episodes)^n = y

(Kurtz and Algoe 2015), suggests indigenized and inclusive planning methods can support improved relations. Laughter within Indigenous communities is an everyday communication skill for supporting connections, community harmony (Garrett et al. 2016; Leddy 2018) and transforming pain into healing (Copage 2019) since it aids in the release of tensions and endorphins (Savage et al. 2017).

The second most common teachable moment theme was an attitude of humble and active listening in support of mutual learning. For example, “Listen actively with all your senses, and don’t judge” (Fort McKay co-researcher); “Just to listen better, ask better questions, and to work together better than we have done in the past” (Fort McKay co-researcher); and “I think there has to be space for hearing” (company co-researcher). Collaborative learning within the space of oil sands mine closure and reclamation emphasized to need to focus us on: (1) stewardship of sustainable lands and cultures; and (2) the inclusion of the past, present, and future into the design decisions and plans. Combined, this concept is about active listening and what Mi’kmaw Elder Alberta Marshall calls “deep learning”, or learning “from” observations and experiences with relations and “the other”, in contrast to surface learning “about” a phenomenon (cited in Moore, 2017, p. 108). Together, active listening and deep learning help us to understand past experiences and present knowledges so they can inform sustainable mine closure and reclamation plans for future generations. See below for more on inclusion.

The call to the company to plan for sustainable economies, landscapes, and cultures was referenced many times by Fort McKay co-researchers through terms like “traditional ways of living”, “bush life”, “traditional knowledge”, “traditional teachings” or other similar variants. The traditional land use activities included: “hunt ducks, moose”; “set a net”; “trapping”; “drink the water”; “pick berries”; “consume berries, medicines”; “survive in the bush”; “moose hides to make garments and moccasins for her financial stability, to put clothes and food in our bodies” and “medicine to help us grow”.

3.4.2 Barriers

Effective communication needs to understand and address both personal and contextual barriers (Gut et al. 2017; Vila 2005). The personal stories highlighted historic and contemporary barriers that are potential impediments to “working together for the betterment of our people and the land”. The most frequent barriers were discomfort and avoidance of difficult conversations (n = 66); reconciliation (n = 34), different perspectives on time and processes (n = 20); and mistrust (11). For a discussion on trust and reconciliation see these principles in the Winter section (below).

Dialogue on the past land conditions and the probable future for reclaimed landscapes can be challenging for Fort McKay and the company and oil sands industry to navigate. Storytelling brought up memories of "tough discussions", "hard questions", "anger that's bottled up", "stolen land" and constructive feedback, such as some reclaimed lands "really doesn't look good." These formidable exchanges arise because of the context of working between two cultures in historical dissonance (Machado de Oliveira 2021), that are being challenged to face the focal point of the relationship's damage – the land. Non-indigenous Canadians may not be aware of the deep historical roots of the ongoing issues stemming from settler colonialism and how many industrial activities, including non-inclusive mine closure and reclamation, undermine Indigenous Peoples' rights to the conservation, protection and connection to their traditional lands (UN 2007). This context often leads to positive framings, denialism, misrepresentation, and focusing only on the socioeconomic benefits of resource extraction to absolve industry and government, justify ongoing colonial practices, and protect the status quo (Justice and Carleton 2021). For example, one company co-researcher asked that open dialogue on reclamation be limited to *"*keep moving things forward and not personal." But Fort McKay's historic and ongoing attrition and disconnection from their ancestral lands due to mining and responsibility to future generations is personal to them. Respectful dialogue on mine closure and reclamation of Fort McKay's traditional territory must refrain from the mind trap that Indigenous peoples should "Ignore the past. Play in the present" and move forward (King, 2013, p 166).

Working together on closure and reclamation planning must involve different comprehensions and applications of time and process. Reference to time by Fort McKay focused on relationships and responsibilities to past and future generations. For instance, Fort McKay co-researchers said: "Years ago, they used to protect the land too"; "I am very fortunate for the teachings my grandparents have left"; "grandkids and great grandkids", "the responsibility to uphold...to pass on to your kids and grandkids"; and awareness that "it's not going to be over night, but I think what we are doing here, I think we are on the right step." In contrast, company co-researchers referenced advanced planning and budgeting for reclamation and closure and expressed an urgency to meet company and regulatory planning milestones. They used phrases such as "if we…can't get out until spring than there is an eight-month delay"; "we have to budget for the work, plan for the people running the equipment, order the trees"; "a five-year project"; and "I'm still budgeting within a system that is built like that…it won't be as fluid as you want". One company co-researcher acknowledged the dissonance between Fort McKay and company temporal and planning perspectives by saying "people want innovation on a schedule, but we can't have that. Same with a relationship on a schedule. It must take time."

Indigenous Peoples view time as interconnected to natural cycles, especially the seasons, due to their subsistence-oriented lifestyles (ICT 2021; Janca and Bullen 2003) and are long-term and relationship-focused, especially on the future generations of their community (Ali 2014; Joseph and Joseph 2019). In contrast, the faster-paced industrialized dominant society view time as linearly structured (ICT 2021) and their corporations focus on short-term economic gains and reporting to shareholders and regulations (Ali 2014). If mine closure and reclamation planning continues to be driven by the timelines and specific requirements of the oil sands industry, provincial and federal governments alone (Simmons et al. 2012; Westman and Joly 2019), the quality of the reclamation will not be geared towards reclaiming cultural landscapes, renewing Fort McKay's homelands, and sustaining Fort McKay's future generations.

These barriers – contentious debate, contradictions around time, process and worldviews, and mistrust – are common mine closure engagement challenges cited in the literature (Ali 2014; Beckett 2021; Holcombe et al. 2022; O'Faircheallaigh and Lawrence 2019). Another barrier is the lack of instruction manuals and tools to explain how to execute planning for the social and cultural dimensions (Bond and Kelly 2020; Morrison-Saunders 2019; ICMM 2019; Unger et al 2019). This study's co-created code of conduct has the potential to minimize these barriers and support the movement towards industry and Fort McKay meaningfully working together on mine closure and reclamation planning.

3.4.3 Cycle of Respect

The project code of conduct (Figure 3-3) is a First Nation-industry narrative and tool that we argue is an Indigenized code of conduct capable of supporting the intercultural communication and collaboration needed to reclaim oil sands-impacted lands with the potential to be acceptable to both industry and Fort McKay. This medicine wheel is composed of emergent principles rooted in the knowledges, experiences, and languages of co-researchers. When applied, it reaffirms Fort McKay's self-determination and autonomy in governance of their homelands.

The project code of conduct was named the "Cycle of Respect" by Elder Scotty Stewart. Respect for Indigenous and non-Indigenous Peoples and their perspectives on mine closure and reclamation was demonstrated by inclusion of their recommended principles into the Cycle of Respect. This aligns with Robinson et al. (2021) who proposed that "responsible and respectful restoration will be achieved only with shared principles and an ethical code of conduct for Traditional Ecological Knowledge partnerships".

Communication is vital to social relationships (Gut, Wilczewski and Gorbaniuk 2017). Cree, Dene, and English languages were included to minimize obstacles to intercultural business communication.

Following advice from Fort McKay Elders, the principles were illustrated within a medicine wheel using the four seasons, the four directions, and Cree colours which are "yellow for the east, red for the south, blue for the west, and white for the north". The Cycle of Respect requires individuals to adopt principles one-by-one as they "walk like the sun rises and goes down – clockwise", starting with 'context' in the east or spring. The thirteen principles, which are connected and mutually reinforcing, are grouped according to the four seasons in support of learning and growing towards respectful relations (see below).

Before exploring these principles, it is important to know that the Cycle of Respect has space enough for understanding multiple cultural paradigms, perspectives. It can be difficult, perhaps overwhelming, to remain open and to listen non-judgementally when information contradicts one's worldview and identity or surfaces traumas. This is both frustrating for people who do not feel respected or heard and those who do not realize the depth and complexity of the challenge or are missing the history. The ability to embrace multiple truths while working on complex social-ecological challenges - like the nexus of mining, livelihoods, Indigenous Rights and mine closure - requires the expansion of intercultural skills and the capacity to work within these spaces (Jimmy, Andreotti and Stein, 2019; Machado De Oliveira 2021). For example, Machado De Oliveira (2021) recommends expanding one's capacity for the 4Hs, "humility, honesty, humour and hyper-self-reflexivity" (Machado De Oliveira 2021, p. 28).

3.4.3.1 Spring: *Waskawitohtamik* (Cree) / Action (English)

Spring is symbolic of new life and renewal. Like spring, the first season of the Cycle of Respect guides willing participants to move towards effective intercultural dialogue and alliance in mine closure and reclamation. Since growth can be challenging, the first steps must be guided by the following foundational principles: openness, context, and action.

Fort McKay, company, and university co-researchers recognized that an intercultural team needs to promote respect and openness to effectively work together since they were the top survey results according to 64% and 57% of the total participants, respectively (Figure 3-2). Co-researchers described openness as the opposite of "judging", an attitude of "being super open to try to think about things from a different perspective", and receptive to "other ways of knowing, such as bush life and survival". There was collective recognition that "being open to learn from one another and share our experiences will help each other to grow". For instance, one Fort McKay co-researcher described how openness has resulted in new insights and collective action, such as when "someone says "I've never thought about it that way!" And then we can all start thinking about it that way and working together and can create some great stuff." A university co-researcher agreed "that the attitude of humility and openness to learn is what renews us".

Considering Canada's position as an energy and mining leader and supporter of truth and reconciliation between Indigenous and non-indigenous Canada (TRCC 2015), the next imperative step and action towards an honourable future is to understand the context (Drawson et al 2017). Absolon and Willet (2005) argue that articulating researchers' relationship with one another, the land, language, cosmology, and socioeconomics can lead to new insights about what one is studying. Within this study, intercultural storytelling revealed that history is affecting the present. "There is a lot of life experience from community members – around 50 years of oil sands development that is impacting their participation in this project" (Fort McKay co-researcher). During the company's reclamation tour Fort McKay co-researchers often spoke about the past boreal ecosystem conditions and their traditional land use memories of the area. A Fort McKay co-researcher shared this context in the talking circle: "We weren't really talking about reclamation. We were talking about the history. Joe talked about history of Tar Island." This narrative led to a company co-researcher's insight that: "Discussions happened that weren't necessarily [directly] about reclamation, but need to be heard. Stories that need to be told. Relevant context." Another Fort McKay co-researcher concurred that reclamation of a place must be understood "from the perspective of community."

Contextual reflection is essential to "getting the story right" and contributing value to society and social transformation (Smith 2012, p 226), especially when it comes to places of cultural magnitude requiring conservation and reclamation (Cuerrier et al. 2015). This story requires awareness that Fort McKay has lived and harvested for survival in their traditional territory for generations, yet the title and rights to their homelands often goes unrecognized and ignored (Buffalo et al. 2011). Historic and contemporary policies and practices of the company, industry, and Governments of Canada and Alberta (Simmons et al. 2012; Westman and Joly 2019) have resulted in the historical and ongoing attrition and disconnection of Fort McKay from their traditional lands. Mining and reclamation without Fort McKay's meaningful participation from the beginning and today disrupts Fort McKay families, culture, well-being, and the First Nation-company relationship.

The last fundamental principle calls for waskawitohtamik (Cree) or action (English). It cannot be words alone. This aligns with fourth principle of reconciliation named by the TRCC (2015b) which emphasizes the need for "constructive action on addressing the ongoing legacies of colonialism that have had destructive impacts on Aboriginal peoples' education, cultures and languages, health, child welfare, the administration of justice, and economic opportunities and prosperity." An example of action was the co-creation and continued use of the Cycle of Respect by Fort McKay, company, and university co-researchers because they worked as Treaty peoples when they shared the responsibility to show and maintain mutually respectful relations (TRCC 2015b; L'Hommecourt et al., 2022).

Once the foundational principles have been adopted, continued growth of respectful relations is supported with other principles.

3.4.3.2 Summer: A Shared Ethical Space of Engagement

The long, warm summer days in Fort McKay are a lot like their cultural keystone species (Garibaldi and Turner 2004) the *inimena* (Cree) / *tsánlhchoth* (Dene) / blueberry (*Vaccinium myrtilloides*) – bursting with life and possibility. Expansion of one's intercultural discourse skills is possible when one embraces a shared ethical space, active listening, honesty, and transparency.

A new space is needed to reshape the rules and norms governing oil sands mine closure and reclamation decision-making. Cree scholar Willie Ermine (2007) introduced the concept for an 'ethical space' or a shared intercultural domain. An ethical space of engagement is a safe place for cultures with different worldviews to gather and understand one another better (Crowshoe and Lertzman 2019). A shared intercultural space was identified as a crucial principle for improved dialogue and collaboration in reclamation. Co-researchers discussed "coming up with a protective space", "the spirit of working together", "a place for all" and "I suggest an ethical space". Elder Reg Crowshoe (2014) explains ethics as "our basic capacity to recognize what harms, enhances the wellbeing of sentient creatures", so support of an ethical space is enhanced by looking inward to understand your own worldview and how it interacts with others (slide 3). Additionally, deployment of this concept in mine closure and reclamation planning may align and support the principles, rules, and requirements of professional conduct expected of professionals making the design and planning decisions (e.g., AAFMP 2019; APEGA n.d.; ASPB 2021)

During this study, room was made for multiple cultures, such as communication of the company's science-based worldview and corporate values during their reclamation site tour (Figure 3-4) and of Fort McKay IK, protocols, and traditional land uses at Moose Lake and during talking circles. One co-researcher articulated how ethical space is "not about entirely choosing one worldview or the other. It's about creating space for both and that immediately opened my mind, and brought relief because I could bring and value both into the project". Elder Lewis in Wilson (2008) emphasized the importance of experiencing the inclusive, participatory, and proactive environment created by a circle because it teaches individuals to become participatory and inclusive. In contrast, only experiencing the hierarchical system of dominant society teaches "reward and punishment, through severe competition, these sorts of things, then people tend to carry those traits as well" (p. 104-105).

To authentically take part in an ethical space requires active listening and honesty. These principles were identified as key collaborative elements by the baseline survey (Figure 3-2). Also, active listening to support learning was the second most common teachable moment theme (see above). Space for improved listening was honestly expressed by one company co-researcher as, “Listening is a good one. Most of us are bad at listening. I am anyways.” Another co-researcher aptly noted that listening to the question is key in these spaces saying “There is multiple ways to consider a question. There are multiple ways to answer it…My experience is that listening is the most important aspect…to the idea.” Steinhauer (2002) agrees that showing respect and considering the well-being of others involves listening intently to other’s ideas and not insisting one’s own ideas prevail. Similarly, Atkinson (2001) identified deep listening as a critical principle for Indigenous research and Moore (2017) says that we come to know one another through listening.

Making space for honest and transparent conversations to learn from is often not easy and may even seem overwhelming. Afterall, Ermine (2007) opines those intercultural interactions encompass divergent languages, knowledge systems, histories, values, priorities, and socioeconomic and political perspectives. Honesty and transparency are key criteria for how we answer questions that appear within an ethical space. For example, a company co-researcher found the challenge of receiving tough questions and not always having the right answer. One Fort McKay co-researcher replied that it’s okay to not have the answers to every question, and asked, “that they answer honestly,” Another Fort McKay co-researcher added “if its outside your expertise say so. Maybe next time we bring someone along with that title”.

Transparently sharing relevant information to a conversation supports a truthful or honest response. An example provided by a company co-researcher was clearly communicating between your opinion versus the company’s opinion. Another was that “when we talk about fifty years ago, there are decisions made at the mine that we would do differently today.”

As mentioned previously, the principles are mutually reenforcing and create relationships between the co-researchers. For instance, we now know that a person answering questions within an ethical space must be actively listening to the person posing the question to be able to answer honestly and transparently. The person posing the question in turn listens deeply and without judgement to the answer.

3.4.3.3 Fall: Two-Ways of Respect and Learning can Lead to New Insights

Fall is the season of harvesting the abundance provided by Mother Earth in preparation for the winter ahead. It is a time of taking stock of all the bounty that has been collected. In this season of the Cycle of

Respect we expand one's intercultural communication and collaboration skills with two-way learning, being correctable, and understanding.

Lessons shared during engagement stories identified that respect must be 'two-ways' or both given and received between people and the land. Phrases included "respect is a two-way street, not just between people, but also within the land" and "The Cycle of Respect, it's a two-way thing and [Fort McKay] is on the outside looking in." This two-way theme continued in the survey results when mutual learning and the best of two worlds (Lertzman 2010) – reclamation science and IK – were identified as key criteria for effective intercultural discourse and partnership by 57% of the surveyed Fort McKay and company co-researchers (Figure 3-2).

No one person has all the answers, so development of a two-way learning ethos supports a multi-cultural, multi-perspective, and multi-way-of-knowing and discovering process for all. This was articulated with statements like, "I'm still learning", and "I'm just very thankful for the opportunity to be able to learn from everyone here."

An ethical space that includes different knowledge systems enfolds participants within an in-between space of learning that is full of possibilities. This in-between place - referred to as "trickster consciousness" by Anishinaabe scholar Gerald Vizenor (cited in Blaeser, 1996, p. 162) and "in between epistemologies" by Anishinaabe scholar Melanie Goodchild (2021, p. 99) - is a unique environment for supporting intercultural dialogue, mutual learning, and co-creation. Building from Visenor's work, Moore (2012) opines that an in-between place "disrupts the opposites" and "liberates you from conventional thinking" (p. 328). Similarly, Ermine (2007) says that this venue allows participants "to step out of our allegiances, to detach from the cages of our mental worlds and assume a position where human-to-human dialogue can occur" (p. 202).

The principle of 'being corrected' should not be viewed as criticism, rather a gesture of faith that the person receiving the correction will be grateful for the opportunity to learn. Everyone makes mistakes. Being correctable means there is an openness within a team to name misinformation and mistakes in a respectful manner to support mutual learning. One university co-researcher described how "those mistakes are the pathway for getting things better and people taking the time to correct me is a sign of kindness, caring and love. Being willing to be corrected shows I'm ready and willing to learn". A company co-researcher agreed with "leaving your ego at the door". The group learned that "The Elders do not go off and teach everybody what they know," so if an Elder takes the time to correct someone it

means that individual shows a readiness and willingness to learn from IK holders. With time and maturity, more knowledge is passed on to those ready and willing learners. This sentiment was articulated as, “Indigenous teaching is teaching a little bit at a time when they're ready to hang on to it.” Fort McKay demonstrated that company and university co-researchers generally showed readiness and willingness to learn when: (1) an Elder shared the sweetgrass teachings (unpublished data); (2) the Seven Sacred Laws (Figure 3-4); (3) after several days of applying the protocol incorrectly, taught them how to properly make a request with tobacco; and (4) another knowledge holder shared the Dene values (Figure 3-4).

The possibility for mutually beneficial partnerships between Fort McKay and the oil sands industry on landscape reclamation was visible in the community and corporate values and laws. Nurturing two-way respect and learning about land stewardship aligns with the Cree laws and Dene and company values since they collectively encourage curiosity, learning, and passing on teachings and wisdom (Figure 3-4). This is also the aspiration Fort McKay and the company have according to their co-narrative (Figure 3-3). Consequently, application of a two-way learning venue which promotes existing community-company values and divergent, intercultural thinking has the potential to result in new understandings and mutually beneficial mine closure and reclamation plans.

3.4.3.4 Winter: Journey of Trust, Healing, and Making Things Right

As we move into the darkest season of the year in the Fort McKay Traditional Territory, connecting with one another is vital. Winter is traditionally the time for sharing stories and passing on teachings, while the animals and plants rest beneath thick blankets of snow. In this mature season of the Cycle of Respect we journey deeper into the stories shared between co-researchers and the remaining principles needed from one another to work effectively and ethically on mine closure and reclamation. These principles include earning trust, acknowledgement of loss, and active participation in reconciliation.

Being prompted to reflect on past engagement experiences highlighted how co-researchers have shown up together in the past and what they learned from those experiences. We learned that while Fort McKay knowledge and values are often shared with the oil sands industry and Governments of Canada and Alberta, they don’t typically see themselves or their IK represented in mine closure and reclamation plans and regulations. A Fort McKay co-researcher inquired, “What about the people that belong to that area that had special places? Where is that in your reclamation?” Fort McKay co-researchers talked about the environmental effects the community experiences from oil sands activities and having no meaningful participation in the closure mitigation process. “There is 55 years of that project on Fort McKay First Nation’s traditional territory but not 55 years of involving Fort McKay First Nation in decision making or planning.” “We always hear after the fact when issues come because they’ve already been approved by

the government. So, basically, [industry] just tell us this is what they are going to do. The government approves. That's the way it's always been". "The reclamation is presented as the mitigation to minimize or mitigate potential environmental effects of the project…But from a community perspective, it's an effect they experience and then they have no input to mitigate." Part of the challenge, as described by one Fort McKay co-researcher, is that the current system is not designed to include Fort McKay's traditional land use rights and relevant boreal forest information in closure and reclamation planning decisions.

> [Fort McKay] has a different set of values than the mainstream or settler society…A lot of times we get pushed into a separate way of thinking that's not ours. To keep our values, we want to…walk together and bring our values and ideas together at certain points along our separate routes.

Indigenous Peoples in Canada have the constitutionally protected rights to maintain their identity and participate where those rights may be infringed upon (Constitution Act s35 1982). While the creation and dissemination of knowledge into closure and reclamation plans and policy to authentically represent the community of Fort McKay and their unique way of being is integral to the survival of their identify, mechanisms for incorporation remain a systemic gap.

The legacy and ongoing colonization of the Fort McKay Traditional Territory and Peoples; oil sands industrial activities within their homelands without their meaningful participation; ongoing cultural impacts and attrition of traditional lands since the 1960s; lack of cultural reclamation and closure regulations and practices; and lack of communication from the beginning have contributed to Fort McKay community members' ongoing mistrust and frustration towards the company, oil sands industry, and Governments of Canada and Alberta. Co-researchers referenced the mistrust as, "There is a lot of mistrust in the community for what the companies have done"; "You got to build trust between community and the company or companies"; "Mistrust or something is getting in the way"; and "The vision to co-reclaim together…We may want to say we don't feel like we have the time, trust or relationship is there yet". Similarly, mistrust of reclamation by Indigenous communities in Treaty 8 and elsewhere was attributed to expropriation of their homelands, exclusion through neo-colonial discourse, and divergent worldviews that create blind spots (Baker, 2020; Christoffersen et al., 2010; Joly, 2017).

The Journey of Trust was identified as an important principle in the repair of relations. Co-researchers found solutions in the form of four Journey of Trust Actions: inclusion; two-ways of learning; long-term commitment; acknowledgement of grief and loss (Table 3-1). Everingham et al. (2020) states that using a collaborative model in mine closure requires a common purpose (e.g., closure vision) and can lead to mutual benefits between local Indigenous communities and mine companies. But it requires an elevated

level of trust which involves resources and a substantial amount of time of working together and sharing of control and influence to develop (Baintombe and Holocombe, 2018; Everingham et al., 2020). Ali (2016) agrees that "investing in time [is] a corollary for trust" (p. 646). Both the physical inclusion of Fort McKay peoples and structural inclusion through a two-way learning ethos are important because industry decision-makers are predominantly comprised of non-indigenous peoples who are not intimately aware of Fort McKay's unique worldview, IK, rights, and cultural sustainability needs (Joly 2017). Work by Besley (2010) and Boadi et al. (2019) supply confidence that local communities' concerns can be reduced when they are respectfully treated, and their concerns are heard in decision-making processes. In contrast, other scholars suggest that companies that display empathy (Eisenberg and Miller 1987) and a sense of care and responsibility to reduce negative effects on the land, may increase community trust (Boadi et al. 2019).

The process of collaborating on reclamation surfaced stories about marginalization, loss of homelands and culture, and consequently expressions of grief that require acknowledgment. Fort McKay co-researchers said "We had no rights because we weren't respected" during the oil sands industrialization of their homelands without their free prior and informed consent (UN 2007). "We had clean air. We were healthy. We were able to eat berries, fish from the Athabasca River. Ducks, beavers, muskrat, moose. Today we no longer have that." Fragmentation and widespread loss of homelands (Figure 3-1), including special places that connect community members to their cultural teachings and memories of parents, grandparents and other family members, is a threat to the sustainability of their cultural identity. Fort McKay "always look to our history for our guidance and for our roots and where we come from and everything. When [a company] came here, they ripped all the lines apart. Took all our gathering places…How do you reconcile with that, the land without first acknowledging what you've done to the people and what you've taken from the people?" Loss of land contributes to "loss of our culture, languages, our identity as a people." Loss and marginalization are ongoing due to: "expansion after expansion after expansion" of multiple existing and new oil sands projects and companies; and closure and reclamation planning policy and practices excluding Fort McKay from decision-making. The shared ethical space supported Fort McKay to express the "ongoing struggles that we have living here", their grief and how "There is a lot of pain" and "it's hard to talk about. Really hard!" Reflection and understanding of Fort McKay's experiences enabled non-indigenous co-researchers to glimpse into their worldview. It supported insight and identification of the Acknowledgement of Loss as a critical principle for the oil sands company, broader industry, and Governments of Canada and Alberta to earn the mutual trust and respect in mine closure and reclamation that the First Nation and company aspire to (Figure 3-2; Company 2021).

The final and culminating principle is reconciliation. According to the Truth and Reconciliation Commission of Canada (TRCC, 2015b) reconciliation is "establishing and maintaining a mutually respectful relationship between Aboriginal and non-Aboriginal peoples in this country" (p. 118). Co-researchers recognized collaborative reclamation "as [being] something else too, like reconciliation" and that "reconciliation needs to be a part of how you do co-reclamation."

Truth telling, connection to homelands, and practicing traditional land uses were identified as other reconciliation actions that support Fort McKay's healing and wellbeing. The TRCC (2015b) named four foundational elements for advancement of reconciliation, and they align with our principles as follows: an awareness of the past (i.e., context); acknowledgement of the harm that has been inflicted (i.e., Acknowledgement of Loss); atonement for the causes; and action to change behaviour (i.e., *Waskawitohtamik* / Action and Journey of Trust Actions). So, the other Cycle of Respect principles support reconciliation too. For example, "listening is a form of reconciliation" because it supports truth telling and creates the space for loss and grief to be shared. Truth telling is an act of reconciliation (TRCC 2015b; Finegan 2018) because remembering, even of a painful past, supports healing and transformation of a community (Smith 2012). Fort McKay co-researchers emphasized the need to talk and be heard about the lack of respect from the oil sands industry and that "we're still healing along with the land". One land user said, "I need to share it so I can heal. I need land to heal!" and so will "the seven generations ahead of me." Fort McKay's homelands support their "peace", "healing", "strength", "well-being" and "identity. Smith (2012, p. 15) opines that "Connecting is related to issues of identity and place, to spiritual relationships and community well-being." So, conservation and reclamation *with* Fort McKay and returned access to their Traditional Territory can support reconciliation and sustainability of their Indigenous identity for current and future generations. This aligns with the TRCC's (2015b) eighth reconciliation principle: "Supporting Aboriginal peoples' cultural revitalization and integrating Indigenous knowledge systems, oral histories, laws, protocols, and connections to the land into the reconciliation process are essential" (p. 3). Hence, reconciliation with Fort McKay and their homelands must "go beyond conditional inclusion to fundamentally shift relationships" and, instead become a standard practice in oil sands mine closure and reclamation planning (Stein, 2020, p. 156). After all, for Canada to flourish in the twenty-first century requires participation of Canada's corporate sector to support Indigenous communities', like Fort McKay, long-term sustainable benefits (TRCC 2015a, b).

There is still a hope and commitment by Fort McKay to steward their homelands *with* the company through their co-created Cycle of Respect. "Hoping that in the future, that all this work that they're putting towards reclaiming the land will actually help our people reconcile themselves and the land and culture

and language. That's the real game at the end of the day." "Our respect now is giving back to you, to working with you - together." Let's "help each other" to achieve our shared reclamation story.

3.5 Conclusion

A new story with contemporary possibilities and an intercultural reclamation and closure planning tool appeared from truth telling, active listening, mutual learning, and retelling of old oil sands engagement stories. *Te mamano aski ki kakio asiniwak – ʔeła ʔeghdalaída niha tuha* – working together for the betterment of our people and the land. To achieve this Fort McKay-industry narrative, they must embrace the Cycle of Respect's thirteen emergent principles and four Journey of Trust Actions towards co-creation of respectful dialogue and collaboration in mine closure and reclamation of cultural landscapes.

Further work on inclusion of Cree and Dene languages into the Cycle of Respect is needed since language is critical to Fort McKay's identity and cultural sustainability. Fort McKay, industry, and Governments of Canada must practice the tool's principles to hone their skills, support healing of Fort McKay and their homelands, and take steps on the Journey of Trust, reconciliation, and a shared future.

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Tables

Table 3-1 Actions industry and Governments can implement to support a Journey of Trust in mine closure and reclamation with local Indigenous rights holders.

Action	Description
Inclusion	Meaningful inclusion of (a) the Fort McKay community in the closure and reclamation planning decision-making and (b) representation of Fort McKay's cultural identity in sustainable closure outcomes.
Two-Ways	Application of a two-way learning ethos to empower Indigenous Nations to contribute their own way
Long-term Commitment	Commitment over time showed with consistent, hard work to "make things right"
Acknowledgment of grief and loss	Loss of culture and Indigenous identity is interconnected with the loss of the land. Thus, acknowledgement of grief needs to include loss of lands and disconnection from relations, memories, language, and IK.

Figure Legends

Figure 3-1 (Left) A birds-eye view of the oil sands industrial footprint within the Fort McKay Traditional Territory (white line) in 1967, the year oil sands activities began, and (right) present day. Pink are Fort McKay First Nation reserve lands, green are active oil sands projects, red are proposed or approved but not yet operating projects and orange is primarily oil and gas exploration footprint. (Map Credit: Fort McKay First Nation)

Figure 3-2 Baseline survey of values co-researchers (n=14) described as being important for effective intercultural dialogue on mine closure and reclamation. The number in y-axis shows result frequency.

Figure 3-3 The Cycle of Respect

Figure 3-4 The diverse cultural values and laws of the Cree, Dene and company participants include: (left) The Seven Sacred Laws, (Middle) Dene Values, and (Right) the company values. The artwork backdrops are of mine closure and reclamation visions for the Fort McKay Traditional Territory created by co-researchers, including: (left) Cree Elder Clara Mercer, (middle) Dene knowledge holder and land user Gabe Desjarlais, and (right) scholar David Lertzman.

Figures

Figure 3-1

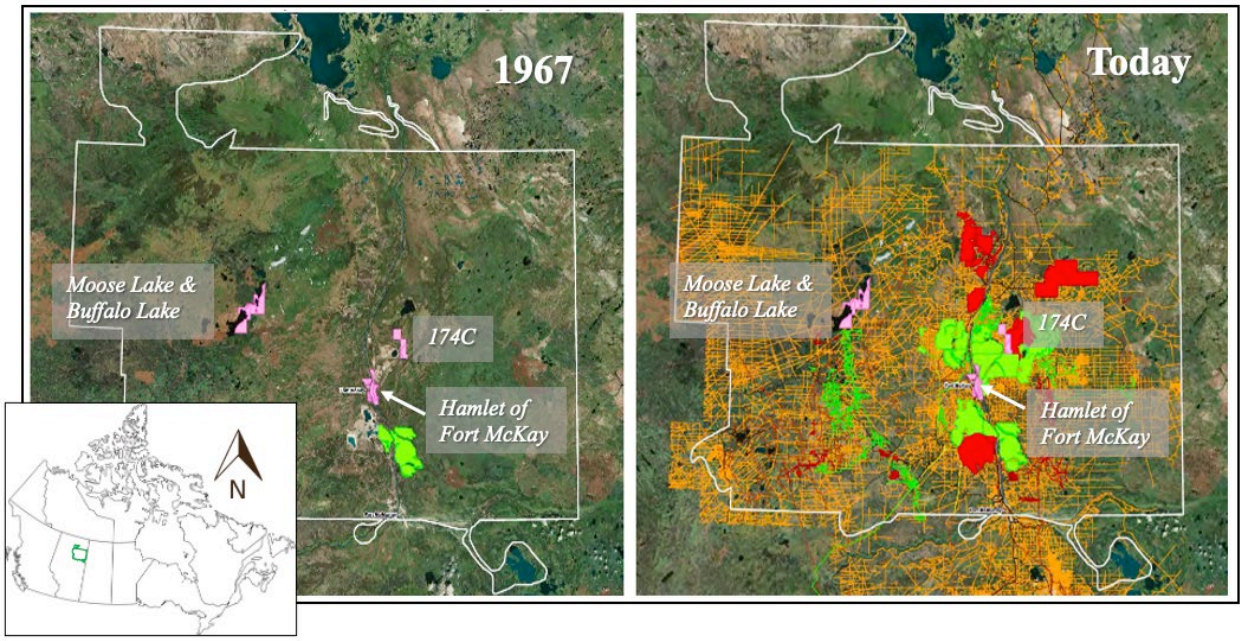

Figure 3-2

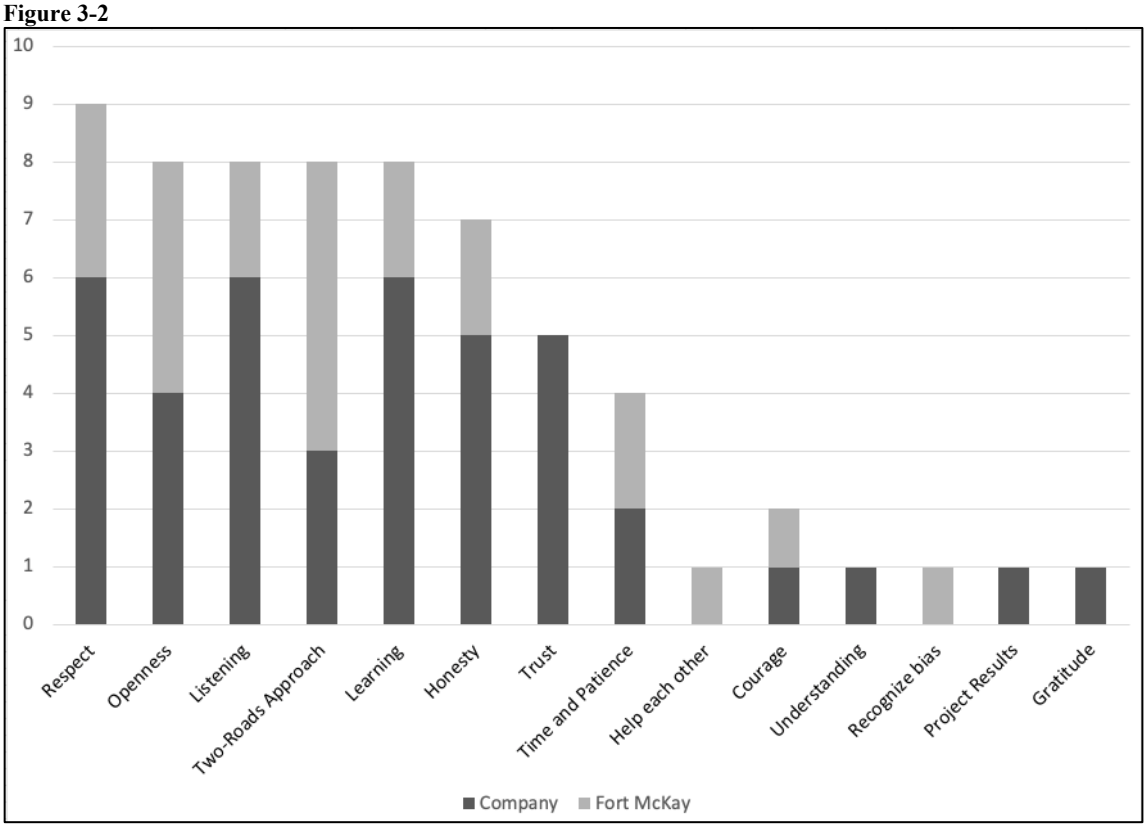

Figure 3-3

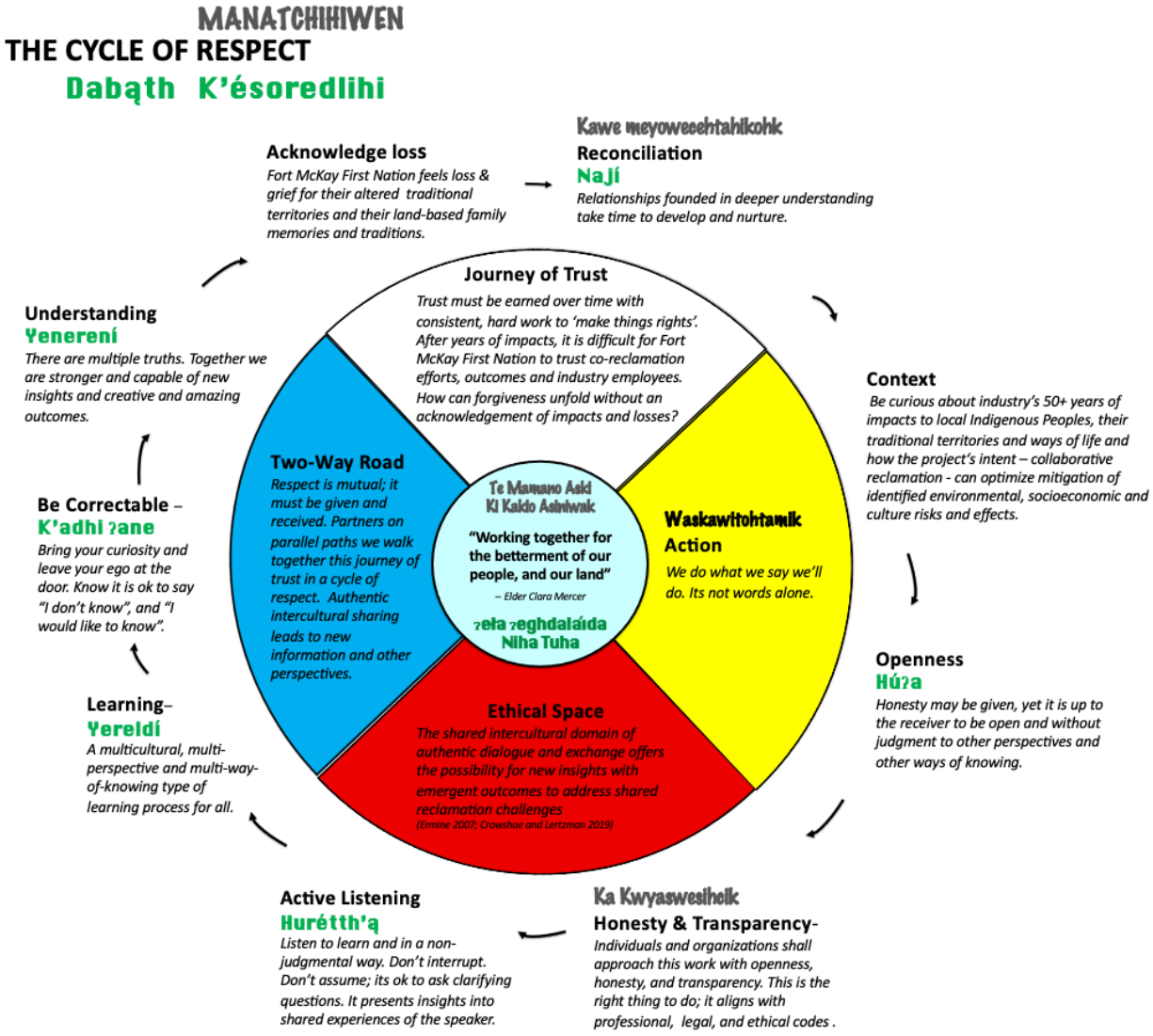
MANATCHIHIWEN
THE CYCLE OF RESPECT
Dabąth K'ésoredlihi
Acknowledge loss
Fort McKay First Nation feels loss & grief for their altered traditional territories and their land-based family memories and traditions.
Kawe meyoweeehtahikohk
Reconciliation
Nají
Relationships founded in deeper understanding take time to develop and nurture.
Journey of Trust
Trust must be earned over time with consistent, hard work to 'make things rights'. After years of impacts, it is difficult for Fort McKay First Nation to trust co-reclamation efforts, outcomes and industry employees. How can forgiveness unfold without an acknowledgement of impacts and losses?
Understanding
Yenerení
There are multiple truths. Together we are stronger and capable of new insights and creative and amazing outcomes.
Two-Way Road
Respect is mutual; it must be given and received. Partners on parallel paths we walk together this journey of trust in a cycle of respect. Authentic intercultural sharing leads to new information and other perspectives.
Te Mamano Askí
Kí Kaido Ashiwak
"Working together for the betterment of our people, and our land"
– Elder Clara Mercer
ʔeła ʔeghdalaída
Niha Tuha
Waskawitohtamik
Action
We do what we say we'll do. Its not words alone.
Context
Be curious about industry's 50+ years of impacts to local Indigenous Peoples, their traditional territories and ways of life and how the project's intent – collaborative reclamation - can optimize mitigation of identified environmental, socioeconomic and culture risks and effects.
Be Correctable –
K'adhi ʔane
Bring your curiosity and leave your ego at the door. Know it is ok to say "I don't know", and "I would like to know".
Openness
Húʔa
Honesty may be given, yet it is up to the receiver to be open and without judgment to other perspectives and other ways of knowing.
Learning–
Yereldí
A multicultural, multi-perspective and multi-way-of-knowing type of learning process for all.
Ethical Space
The shared intercultural domain of authentic dialogue and exchange offers the possibility for new insights with emergent outcomes to address shared reclamation challenges
(Ermine 2007; Crowshoe and Lertzman 2019)
Active Listening
Hurétth'ą
Listen to learn and in a non-judgmental way. Don't interrupt. Don't assume; its ok to ask clarifying questions. It presents insights into shared experiences of the speaker.
Ka Kwyaswesihcik
Honesty & Transparency-
Individuals and organizations shall approach this work with openness, honesty, and transparency. This is the right thing to do; it aligns with professional, legal, and ethical codes .

Figure 3-4


Ka sohkeyimohk
Courage
Sakihotowin
Love
Ka Kwyaswesihcik ewnink
Honesty
Iyinisewin
Wisdom
Manatchihiwen
Respect
Tapwewin
Truth
Tapahteyimisiwin
Humility/humble
ʔasíe nets'ı dé dëne ghǫłchu
Share what you have
ʔełsúhdi
Help each other
T'o lazí ʔełghąnúhtą
Love each other as much as possible
ʔałnedhe chu harelyu ʔasíe besǫ́hdí
Be respectful of elders & everything around you
Tëdhe dé huhtes-u dzídhé dé ʔeghálǫhna
Sleep at nights and work during the day
Nenádhëré huli-ų tth'i dënek'éch'auní sáną́
Be polite and don't argue with anyone
Ts'ékuáze chu Dëneyuaze chu benádhëré sudí xaʔą
Young girls and boys should behave
Respectfully
T'aghe ʔasíe k'órílya sí dëne hanultą
Pass on the teaching
T'o lazí neba hurélya xa hurúłdzáy
Be happy at all times
Company Values
Our values guide us in fulfilling our purpose and represent who we are, and who we aspire to be.
Safety above all else
Stronger together
Operational discipline
Curiosity and lifelong learning
Act with integrity

CHAPTER FOUR

GESTURING TOWARDS CO-VISIONING: A NEW APPROACH FOR INTERCULTURAL MINE RECLAMATION AND CLOSURE PLANNING

Gesturing Towards Co-Visioning: A New Approach for Intercultural Mine Reclamation and Closure Planning

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4.0 Abstract: *Mine reclamation and closure in the traditional territories of Indigenous rights holders in Alberta, Canada raises issues of environmental, social and cultural significance. We highlight insights developed collaboratively with members of a First Nation about their lived experience with the persistence of oil sands mine activities and reclaimed lands, and apply a participatory and inclusive planning approach with the potential to empower host communities with an equitable role in the planning and decision making for sustainable socioeconomic, cultural, and environmental post-closure outcomes. Two distinct cultural activities were evaluated for their effectiveness in empowering intercultural dialogue and guiding creation of a shared post-closure vision between a First Nation and an oil sands company. We share perspectives, barriers, and opportunities for intercultural understanding and participation in mine reclamation and closure decision-making to ameliorate cultural land use impacts. We show that application of inclusive cultural practices and protocols in mine reclamation and closure planning empowered intercultural dialogue; enhanced understanding across cultural paradigms; supported shared project decision-making; produced moments of overlapping reclamation stories; and resulted in a parallel project vision for guiding cultural landscape reclamation.*

Keywords: Mine closure vision, Indigenous Peoples, Cultural and landscape reclamation, Two-Roads Approach, Co-reclamation, Art, Storytelling, Talking circle

4.1 Introduction

The sustainability of a landscape and its host community post-mining depends on effective mine reclamation and closure planning. It is considered a good practice for mining companies to engage stakeholders and Indigenous Peoples to enable partnership and a shared vision and responsibilities in mine reclamation and closure planning and post-mining results (ICMM 2019; LDI 2021; MAC 2008; MAC 2021; Morgenstern 2012). For a mine to be progressively reclaimed towards a locally acceptable closure vision and final land-use, it is important to first understand the values the host community associate with post-mining landscapes (Svobdova 2019). It is of particularly importance in regions where mines overlap with sensitive cultural values and the traditional territory of Indigenous Peoples (ICMM 2020; MAC 2008; MAC 2021; Svobdova 2019).

4.1.1 Situating the Research Team

Research participants included First Nation (Cree and Dene) knowledge holders, land users and representatives from Fort McKay First Nation, technical and managerial employees of a multinational energy corporation, and academic researchers of mixed Indigenous and European heritage. We have come together over the last three years to develop a collaborative, cross-cultural approach to mine reclamation and closure planning. Combined the core research team, which are the co-authors of this paper, have over 190 years of experience in land stewardship. This includes both career and academic experience in conservation, reclamation and mine closure, and the life-long lived experience of a land-user and knowledge holder whose Traditional Territory has been affected by the oil sands industry.

Additionally, Fort McKay First Nation has thousands of years of First Nation (Cree and Dene) Knowledge passed down through the generations.

4.1.2 Social and Cultural Aspects of Mine Closure Planning

Compared with the substantial body of literature detailing the socioeconomic and environmental implications of mining, both the benefits and limitations, there are relatively few publications focused on coordinated closure of mines with key stakeholders and local Indigenous rights holders (Bainton and Holcombe 2018; Christoffersen et al. 2019; Daly 2021; Drylie et al. 2013; GOC 2016; McCarthy et al. 2014; O'Faircheallaigh and Lawrence 2019; Two Roads Research Team 2011). Historically and today, this is not a common mining practice, but is an emerging field (Daly 2021). We, the research team, argue that this is an important omission in the global mining industry, and one whose significance for Indigenous Peoples is apparent when mines come to the end of their lives. Due to the proximity to the mine operations, host communities routinely witness dramatic changes to their traditional territories, accompanied with direct and indirect environmental, health, well-being, and socio-economic effects (Joly 2017; Svobdova 2019; Westman and Joly 2019). If the Indigenous rights holder grants free prior and informed consent to a given mine project, and mine reclamation and closure practices, policy and regulations include provision to mitigate impacts to Indigenous rights, then progressive reclamation and closure of the mine sites have the potential to mitigate these effects. However, this is not currently the case in many jurisdictions. Indigenous Peoples have more to lose than any other segment of the population (O'Faircheallaigh and Lawrence 2019). Mining companies and governments can come and go, but Indigenous Peoples' history, culture, and traditions are intimately and permanently connected to their ancestral homelands (Cresswell 2004; Cuerrier et al. 2015; McCarthy et al. 2014; O'Faircheallaigh and Lawrence 2019). They will live with the socioeconomic, environmental and cultural results of mine reclamation and closure decisions for generations.

Mine closure predominately focuses on the physical and technical aspects of landscape planning, but there is growing recognition of the importance of the social aspects (Aheto-Tsegah; Bainton and Holocombe 2018; Beckett and Keeling 2018; Burns and Church 2018; Edwards 2019; Garibaldi Heritage and Environmental Consulting 2006; Government of Yukon 2006; Hiyate 2018; January and Lee 2019; Monosky and Keeling 2021; South Africa 1998; Two Roads Research Team 2012; Zobaidul Kabir et al. 2015). In the last decade, a new term called 'social closure', or similar variants, is increasingly being used to reference the social aspects of mine closure (Aheto-Tsegah 2019; Everingham et al 2020; Fleury and Parsons 2006; ICMM 2019; January and Lee 2019; Sheldon et al. 2002). The International Council on Mining and Metals (ICMM) (2019, 69) define social closure as "the planning, considerations and activities undertaken throughout the Life of Asset to develop and implement the transition of a community, including its workforce, towards closure of an operation." The social aspects of mine closure are often connected to the level of local dependency upon resource extraction, but also include the social costs land-based peoples experience with the environment changes (Baintombe and Holocombe 2018). Planning for the social aspects of closure involves addressing a variety of post-closure considerations, such as: employment opportunities; safe reuse of mine infrastructure and the recreated landscape; managing society-environment relationships; demographic changes; decline in local business; and decline in government taxes to fund local services (Bainton and Holocombe 2018; Burns and Church 2018; Heymann et al 2016). Social closure planning activities that happen concurrently with the pre-

development and operational phases of mining maximize sustainable closure outcomes. Projects that wait until project decommissioning or that started operating prior to social closure becoming an established leading approach (Table 4-1), have less opportunities and funding for sustainable social outcomes (Bainton and Holocombe 2018; January and Lee 2019). Regular and transparent engagement throughout the project lifecycle serve to validate the mine closure objectives or modify them as stakeholder and Indigenous expectations, needs and rights evolve with time (Aheto-Tsegah 2019; ICMM 2019; January and Lee 2019; Morgenstern 2012).

A global literature review by Daly (2021) found that planning for the socioeconomic and cultural elements of mine closure is considered a well-established leading principle, practice, policy, strategy and framework. See Table 4-1 for an excerpt about this leading approach for ethical engagement of stakeholders and Indigenous Peoples in the social aspects of mine reclamation and closure planning, and more broadly in sustainable energy development. A common theme was the call for extractive companies to involve key stakeholders and Indigenous groups throughout the mine closure planning process, especially in the development of a shared vision, identification of social risks and mitigation, land use options, and success criteria. Another theme was for extractive companies to respect the human rights, cultures, customs and values of host communities affected by their proposed activities. Over the past two decades the literature has continually recommended that the global mining industry include social aspects in mine closure planning (Table 4-1). Despite this, worldwide implementation of this leading approach lags the growing knowledge and public expectation for evaluating and managing the social impacts of mine closure (Daly 2021; Unger et al. 2020).

4.1.3 The Fort McKay Traditional Territory and the Oil Sands

Fort McKay First Nation has nearly 900 Cree and Dene band members of which about 500 reside in the community of Fort McKay — found approximately 60 kilometres north of Fort McMurray, Alberta on the shores of the Athabasca River. Fort McKay is a signatory to Treaty 8. The Hamlet of Fort McKay boasts a longstanding history dating back to 1820 when the Hudson Bay Company first built a trading post near the current site. Fort McKay's traditional lands, culture and way of life are significantly impacted by the oil sands industry because the Athabasca Oil Sands deposit are found within their homelands (Figure 4-1). Both historically and today, community members depend on their ability to hunt, gather, fish, nurture and work in nature to sustain their cultural heritage and survival. It is Fort McKay's perspective, that current oil sands reclamation regulations and practices do not adequately understand, or address Fort McKay's holistic land use needs and, thus, need to evolve to include Fort McKay, in the healing of their traditional lands through participatory reclamation and closure planning.

Fort McKay First Nation members, staff and technical consultants took part in the Reclamation Working Group of the Cumulative Environmental Management Association (CEMA) from its start in 2001 to 2015. The CEMA was a multi-stakeholder organization based in Fort McMurray, Alberta, that had a mandate to make recommendations to the provincial government to manage the cumulative environmental effects of regional development on air, land, water and biodiversity. From 2009 to 2013, Fort McKay Community Members, oil sands operators and the Alberta

Table 4-1 Examples of the leading approach of planning for the social aspects of mine reclamation and closure.

Category	*Description*	*Citation*
Leading practice	Unless local communities are involved proactively, they will be unable to ensure that the benefits from mining will be sustainable for future generations.	Sheldon et al. 2002
	Define a closure vision that articulates what a company wants to achieve post-closure. Involve stakeholders early so that it an become a shared vision. The aim is for them to take ownership of closure outcomes.	ICMM 2019
	Social transition planning should integrate the identification of social risks and their mitigation measures with specialists and stakeholders.	
	Incorporate Indigenous perspectives to address the socioeconomic and environmental aspects of closure.	ICMM 2015
	Incorporate Indigenous Knowledge (IK), expertise and best practices in the development, design and implementation of project-related policies, consultations, monitoring, risk assessment, and management strategies.	Maloney 2019
	Support Indigenous research on IK approaches to understanding and monitoring landscapes, parallel to and intersecting with development of science-based guidelines for landscape-level reclamation.	BTKRG 2009
Leading Principle	Respect human rights and the interests, cultures, customs, values of employees and communities affected by mine activities.	ICMM 2020
	Create a shared vision for the reclaimed land among the mine, its stakeholders and First Nations.	LDI 2021
	Acknowledge the land will revert to the local community and support their duty of stewardship.	LDI 2021
	Incorporate IK baseline studies and Indigenous participation in closure planning (principle of "early work").	BTKRG 2009
	Develop clarity about the special nature of Indigenous interests in reclamation based on Indigenous right and homeland values, including intangible (cultural and spiritual) and tangible (economic and ecological) values and the Indigenous role in sustainable land stewardship.	
	Be responsive to community priorities, needs and interests through all stages of mining exploration, development, operations and closure.	MAC 2021
Leading framework	Identify values that are important to community of interest and develop reclamation objectives that incorporate those values; evaluate a variety of potential end land uses that address the needs of users; and establish closure plans that serve post-mining use needs.	MAC 2008
	Government decision-makers will meaningfully include IK, communities and knowledge holders in assessing the extent to which reclamation has been successful. End land use goals and indicators and thresholds established prior to reclamation will be used at the beginning. Proponents will be required to meaningfully include IK and participation in environmental monitoring of closure and reclamation activities, including community-based monitoring.	CEMA 2015
Leading Policy	Guidelines in Northwest Territories and Nunavut require mines to directly involve communities in closure planning and decision-making.	GOC 2020
	Develop guidelines for Indigenous engagement and participation in reclamation processes. Develop and accommodate a full understanding of Article 8(j) of the Convention on Biodiversity for the oil sands region.	BTKRG 2009

Source: Daly 2021

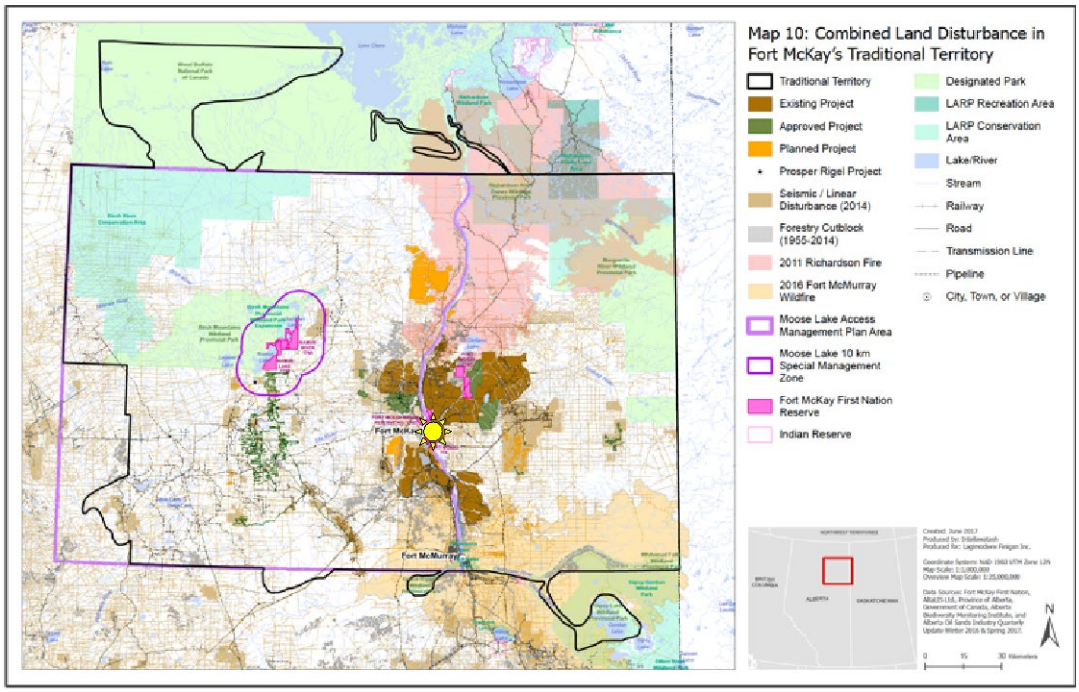

Figure 4-1 The traditional lands (black outline is an approximation), culture and way of life of this Cree and Dene First Nation in North-East Alberta, Canada are significantly impacted by the oil sands industry. The Fort McKay community (*) is surrounded by many oil sands projects. Source: Fort McKay First Nation

government took part in the Biodiversity Traditional Knowledge Study that generated recommendations to implement a 'Two-Roads Approach' to include Indigenous community members and incorporate IK into reclamation and closure planning (Two Roads Research Team 2011, 2012). Fort McKay's approach to taking part in the current study is based on this foundational work the community members did to define a 'Two-Roads Approach'.

4.1.4 Study Goal

The focus of this research is on social-ecological mine reclamation and closure planning in service of a movement towards a participatory and inclusive process. This project, called the Co-reclamation Project, supports identification of key social closure elements and active participation in social closure planning. This research paper aims to explore how Cree and Dene First Nation Peoples living near active oil sands projects and reclamation sites in Alberta, Canada perceive the sites, and if inclusive participation improves preparedness for sustainable socioeconomic, cultural and environmental closure outcomes. Two cultural activities – art and storytelling combined, and talking circles – were evaluated for their effectiveness in empowering intercultural dialogue and guiding creation of an aligned post-closure vision between a First Nation and an oil sands company.

4.2 Methodology

In keeping with ethical Indigenous research principles (FNIGC 2014; Smith 2012; Wilson 2008), this project was conceived, developed, and implemented collaboratively with Fort McKay First Nation, an oil sands energy company, and academics from the Universities of Calgary and Waterloo, collectively referred to as co-researchers.

4.2.1 Overarching Research Framework and Strategy

A 'Two Roads Approach' methodology was selected as the overarching framework and strategy for Fort McKay, company and academic co-researchers to design this cross-cultural research project, co-gather data and co-develop new knowledge because it supports knowledge co-production between cultures (Two Roads Research Team 2012). This cross-cultural framework enables sharing of the best of both Indigenous and non-Indigenous knowledge systems (Simmons et al. 2012), including supporting Indigenous Peoples to develop their own ways of working on research questions (The Community Liaison Research Team 2013; Two Roads Research Team 2011).

4.2.2 Indigenous Protocol and Collaboration Principles

First Nation, company and university co-researchers gathered at the Fort McKay Youth Centre at Fort McKay on November 13-14, 2019, February 6-7, 2020, and February 18-20, 2020. Each research meeting followed Fort McKay First Nation protocols. This included: an opening prayer from an Elder at the start of each day; distribution of tobacco to co-researchers as an invitation to active participation; and a cleansing smudge. Afterwards, a university co-researcher led an opening talking circle designed to reconnect the research team to one another and the Fort McKay Traditional Territory after their weeks or months apart. It started with a land acknowledgement. Next, an eagle feather was passed around the circle. The feather holder shared their personal reflections on the project or their readiness level for the collaborative research that day.

An appropriate starting point for Indigenous engagement in planning and design is the establishment of ethical principles that incorporate traditional Indigenous decision-making processes for dialogue and intercultural knowledge exchange to occur. Consequently, co-researchers were encouraged during each research activity to reflect upon and embody the principles within the project's code of conduct, called the 'Cycle of Respect' (Figure 4-2). The code of conduct principles were designed, as part of the Co-reclamation Project, to support effective, cross-cultural dialogue and action on mine reclamation and closure (Daly et al. 2021).

Intercultural dialogue on visions for the mine closure and reclamation of the Fort McKay Traditional Territory was supported through two cultural activities: traditional shield art and storytelling, and talking circles.

4.2.3 Traditional Shield Art and Storytelling

A Fort McKay co-researcher designed and led a reflective activity on stewardship perspectives in the context of mine reclamation and closure. Ten First Nation, nine company and three university co-researchers were divided into small, three-person groups. They were asked to share words which described their optimal vision for mine closure and reclamation of the Fort McKay Traditional Territory. Next, co-researchers painted their individual or small group vision on modern versions of Fort McKay traditional shields (Figure 4-3). The traditional shields were composed of canvas mounted on wooden frames. Once complete, co-researchers gathered in a circle to communicate their traditional shield art with one another. Individuals or small groups held their art up for fellow co-researches to view while describing the meaning behind the artistic interpretation of a mine reclamation and closure vision using story telling. Traditional shield art information was captured by photography, and audio recordings.

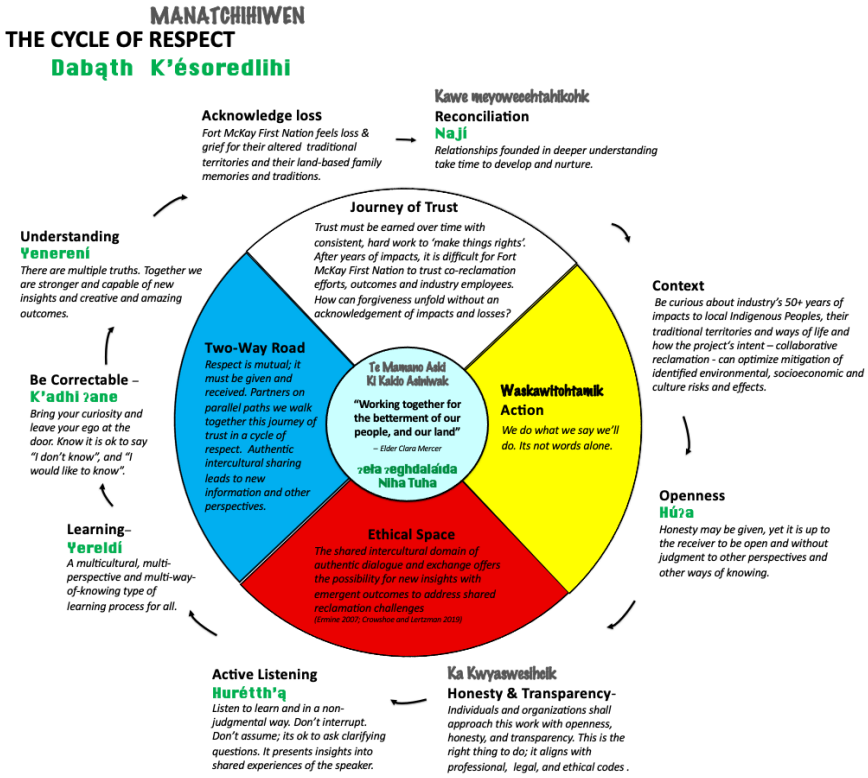

Figure 4-2 The Cycle of Respect – A tool for ethical intercultural dialogue and action in mine reclamation and closure planning Source: Daly et al. 2021

Figure 4-3 The collective visions for mine reclamation and closure of the Fort McKay Traditional Territory. Source: Daly 2019.

4.2.4 Talking Circles

Twelve Fort McKay and four university co-researchers met in advance of a full team research gathering with the company co-researchers to understand and define the First Nation's (i) criteria for guiding selection of an area to co-reclaim with the company; and (ii) vision for successful mine closure. Journals were provided to the Fort McKay co-researchers. They were encouraged to write thoughts and ideas about reclamation during and after research meetings, including from their dreams. Next, two small talking circles were formed. Each talking circle subgroup was composed of six Fort McKay co-researchers, one note taker and a facilitator. Facilitators explained to the talking circle participants that their ideas would be used to define a vision for the project and successful mine reclamation and closure. They were asked to convey big picture aspirations and values that described successful implementation of mine reclamation and closure of their traditional territory from their perspective. This included describing what they want to see, hear and experience on reclaimed lands in the future. Next, they were asked to describe the features their community should consider when picking a parcel of disturbed land to co-reclaim with the company. Dialogue was recorded in both written and typed meeting notes. Key points from the dialogue were written on flip chart paper and verified by talking circle subgroup participants. Afterwards, results were shared between both talking circle subgroups to support a collective understanding of ideas, to refine ideas into themes and to take steps towards a community perspective.

University co-researchers reviewed the results from the talking group subgroups and translated themes into draft versions of the (i) Fort McKay project and closure vision; and (ii) site selection criteria. The drafts were reviewed, modified and approved by the Fort McKay co-researchers within one talking circle as part of a validation phase.

Next, a talking circle with all co-researchers was convened. Eleven First Nation, four company and five university co-researchers took part. Three of the Fort McKay co-researchers – an Elder, a land user and knowledge holder, and a community representative – communicated Fort McKay's project and closure vision and site selection criteria while the other co-researchers listened. Next, a company co-researcher communicated the company's vision of success for the project. Dialogue was captured video recordings, and written and typed meeting notes.

4.2.5 Analysis

A qualitative data analysis approach, called thematic analysis, was undertaken to analyze the research data to systematically build an account of what was discussed, observed and recorded. Data included the traditional shield art audio recordings and the talking circle notes and recordings. A method by Braun and Clark (2006) was used to find, analyze and report themes or concepts across the data. Thematic analysis was performed through the process of coding in phases six phases outlined in Table 4-2.

Table 4-2 Phases of thematic analysis

Phase	*Description of the Process*
1. Familiarizing yourself with the data	Transcribing data, reading and re-reading the data, noting initial ideas;
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the data set, collating data relevant to each code;
3. Searching for themes	Collating codes into potential themes representing some level of patterned response in relation to the overall research questions and gathering all data relevant to each potential theme;
4. Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Source: Modified from Braun and Clarke 2006

4.3 Results and Discussion

The sharing, discussions and interactions within the traditional shield and talking circle activities resulted in new understandings and insights on the potential for a local First Nation and company to co-create a shared post-closure vision. Four major themes arose from these insights (Figure 4-4). The first and overarching theme, which the other three themes are nested within, was that mine reclamation and closure of the Fort McKay Traditional Territory is an act of reconciliation. The second theme that came out strongly across both activities were the existing barriers to local Indigenous Peoples' inclusion in mine reclamation and closure planning. The third theme centred on the moments where Fort McKay and company co-researchers showed gestures towards partnership and co-visioning in mine reclamation and closure. The fourth theme was opportunities for partnership and action.

The following sections supply a description of the four themes.

4.3.1 Reclaiming the Land is an Act of Reconciliation

The first and overarching theme was that mine reclamation and closure of the Fort McKay Traditional Territory is an act of reconciliation. It was a revelation that reclaiming the land in partnership with Fort McKay co-researchers was not just a planning exercise or the physical act of reclamation, but an act of reconciliation.

"How can people reconcile with the land? We're missing a big piece. When [the company] came here they took all this stuff away. Forty years of taking the land and destroying family land. [The Land] keeps our values as First Nations...We need you to fix all the stuff we did. We're missing a big piece here." – Fort McKay co-researcher

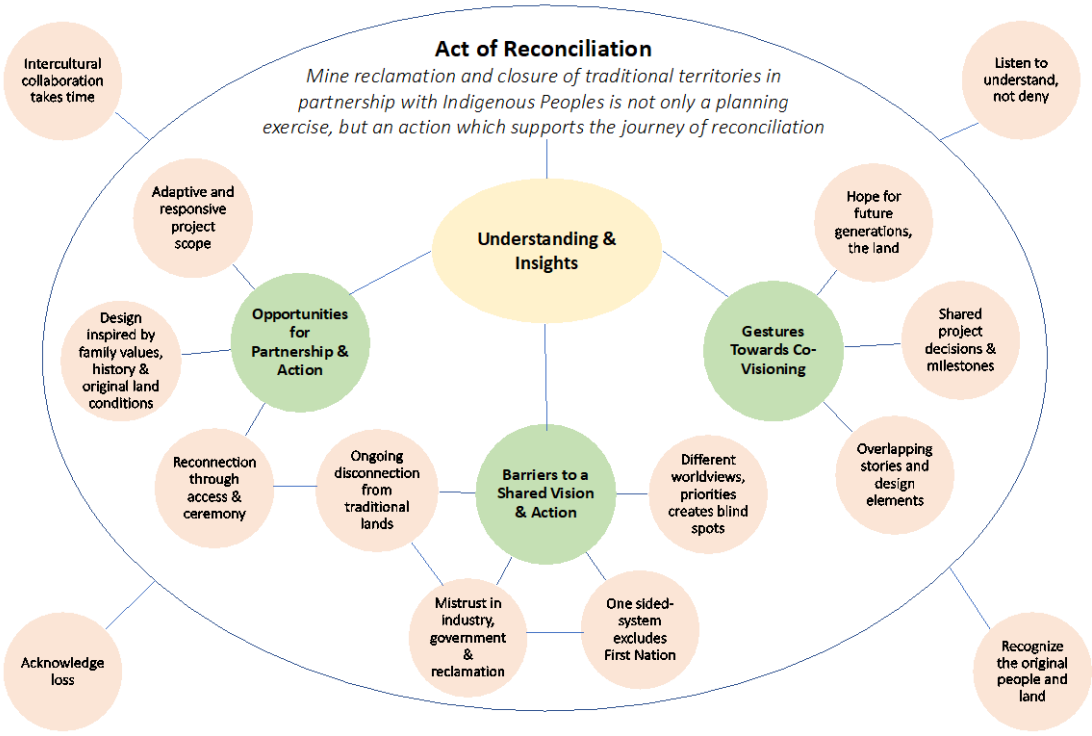

Figure 4-4 Thematic Map showing four main themes (*light green oval or dark green circles*) and sub-themes (*pink circles*), which were supported by understanding and insights derived through traditional shield art and storytelling and talking circle activities.

Table 4-3 Project and/or mine closure visions

First Nation	*Company*
Reclaiming the land is a form of reconciliation, and Fort McKay First Nation must define those targets. Part of reconciliation is to recognize the land in its original state, who are the original peoples of the land, the Impacts which have been done, and to acknowledge loss. We will achieve this through long-term commitment with proper ceremony, First Nation (Cree and Dene) languages and knowledge, and the best of reclamation science to foster mutual respect, understanding, and bring back respect to the land.	Collaboratively reclaim impacted land with Fort McKay First Nation to enhance reciprocal learning in land stewardship, relationships and trust in reclamation and closure outcomes.

In fact, reconciliation was described by one co-researcher as "*the potentially most important outcome of this work*", another as "*only part of the project, it's only a step in the continuum of the project*" and a third as "*such a huge thing and reclaiming the land is a part of that.*" Inclusive reclamation as an act of reconciliation was also emphasized in the Fort McKay vision for the project and reclamation (Table 4-3). Reclaiming land to sustain a land-based culture, as an act of reconciliation, aligns with the Truth and Reconciliation Commission of Canada (TRCC) report (2015, 10), which calls upon Canada's corporate sector to adopt a reconciliation framework and support Indigenous Peoples with "long-term sustainable benefits from economic projects." Similarly, the United Nation on the Rights of Indigenous Peoples (UNDRIP) (United Nations 2007, 10-11) affirms that Indigenous peoples have the rights to "maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories" and "to the conservation and protection of the environment and the productive capacity of their lands or territories and resources…without discrimination."

Fort McKay co-researchers described key actions, or thematic sub-themes, for contributing to reconciliation within the context of mine reclamation and closure, including: the long-term commitment to listen; recognizing Fort McKay as the original peoples of that traditional territory; recognizing the land as it was prior to mining; and acknowledgement of the ongoing losses from degradation of their traditional lands (Table 4-3). These align with some of the necessary precursors for intercultural collaboration shown by Jimmy et al. (2019), which were: a long-term commitment to work through the process, even when difficult; and development of a deep understanding of historical and system harms that are not to be avoided, dismissed or minimized. Dialogue on the repair of degraded land was a reminder of personal and cultural losses. Similarly, Beckett and Keeling (2019) shared that reclamation activities can reawaken historical wounds.

"The Truth and Reconciliation report is made, but we still have more truth telling to do. [The company] still needs to hear truth telling and what happened to the land, the feeling and belief that the land can never return to what happened before." – Fort McKay co-researcher

A sub-theme expressed across the two activities was an understanding that reconciliation should not be rushed, and meaningful collaboration in mine reclamation and closure begins with the journey of reconciliation. In other words, *"[reconciliation] has to happen before we get to the reclaiming process"* and that it *"can't be decided in a few meetings."*

4.3.2 Barriers to Shared Reclamation Vision and Action

A dominant theme throughout both activities was the barriers mine companies and governments need to overcome to realize the benefits of including local Indigenous Peoples and their social considerations in mine reclamation and closure co-visioning. The barriers were grouped into four sub-themes.

The first sub-theme expressed by Fort McKay co-researchers centered on their mistrust in government, industry and reclamation, and on the pressing difficulties they face in exercising their treaty and Indigenous rights. Especially within the talking circle, First Nation co-researchers stated disappointment, anger, and frustration toward the company,

broader industry and government for irrevocably disturbing their traditional territory – the source of their land-based culture. Several Fort McKay researchers expressed they "*won't harvest on these sites."*

"People are feeling mistrust with industry because one project after another is proposed while we're still catching up to reclaim the old ones. Fort McKay has to beat down the door of [the company] to find out what's happening in their own backyard." - Fort McKay co-researcher

A lack of confidence in the oil sands industry by local Indigenous Peoples was similarly document by Westman and Joly (2019), Natcher et al. (2020) and Joly (2017). For example, a cultural consensus analysis with Indigenous residents in the Peace and Athabasca oil sands regions found that 87% believe the oil sands has contaminated their traditional territory (Natcher et al. 2020). This negative perception of the effects of mining on lives of other Indigenous communities was cited in other regions (Aheto-Tsegah 2019; Christoffersen et al. 2019; Kepore and Imbun 2010; January 2019).

The mistrust is, in part, a consequence of the second sub-theme. That is the one-sided system driven by government policies and regulations, and oil sands industry processes and practices which has excluded both the First Nation Peoples and their perspectives, needs and values from mine reclamation and closure decision-making for more than fifty years. On Fort McKay co-researcher said, *"No one listens to community input."* Others said*,*

"[The company] and Fort McKay can talk, but government has their own criteria and companies will only follow that…why can't industry change a little bit?"

"Time and time again in meeting with industry we hear that government had approved the sites or the activity. The companies effectively just come and tell the community what they are doing without providing any opportunities for actually influencing what is being done."

Similarly, the most cited barrier to effective social closure planning in the academic literature, as determined in Daly (2021), was lack of policy and regulations (e.g., Aheto-Tsegah 2019; Edwards and Maritz 2019; Morrison-Saunders 2019; O'Faircheallaigh and Lawrence 2019). There is a need to examine global legislation and policies to understand where innovative approaches are being applied to prevent divestment strategies used to avoid satisfactory closure (Bainton and Holocombe 2018). An example of progressive mine closure legislation can be found in South Africa where mine companies must produce a social impact mitigation plan (SIMP) and a social and labour plan (SLP) to mitigate the social impact of a mine closing (Marais 2013; January and Lee 2019).

It is common for major mine reclamation and closure decisions to be made without sufficient input from key stakeholders and Indigenous Peoples. The literature suggests this may be due to, in part, a bias towards technocratically directed environmentally-focused mine closure planning practices and policies (Beckett and Keeling 2019) or the lack of instruction manuals and tools to explain how to execute planning for the social dimensions (Bond and Kelly 2020; Morrison-Saunders 2019; ICMM 2019; Unger et al 2019). In other cases, some organizations may think it necessary

for company culture and staff to exclude, ignore or downplay uncomfortable knowledge that could undermine the ability to pursue business aims (Rayner 2012). This behaviour can be racialized and the output is maintenance of social inequalities, such as ignoring Indigenous rights and the long-term impacts of ineffective mine reclamation and closure to the sustainability of Indigenous cultures (O'Faircheallaigh and Lawrence 2019). Even well-intentioned organizations and staff can incorrectly assume they will achieve ambitious standards of reclamation without meaningfully engaging with the host community, who in this project are Indigenous and Treaty Rights holders of Cree and Dene heritage and worldviews.

This leads us to the third sub-theme, that different worldviews and priorities leads to planning blind spots. While there was overlap in the ecological elements described in mine reclamation and closure vision stories (see below), there were some notable differences related to space, time, and culture. Fort McKay and university co-researchers described the potential for reclaimed land to be lived in and used by the First Nation. Examples include: "*a dwelling that they're trying to build in this space*"; "*teepee, humans…not everything that should be here is here yet*"; "*the hogan represents a permanent home*"; "*a representation for people being able to use the land*"; and "*cabins, trails, traplines is a powerful way to show that this land was used by Fort McKay before [the company]…which is potentially unknown to them.*" While the company's reclamation and closure plans reference that reclaimed lands will supply a range of end uses, including traditional use, company co-researchers dialogue during these activities lacked descriptions of people returning to reclaimed land and practicing traditional land uses again. For example, one company co-researcher said, "*I put all the components of the boreal forest we want to bring back to what they were pre-disturbance. Trees growing and birds are there; soils and a small lake.*" Additionally, there was evidence that the landscape is viewed differently. Industry co-researchers described individual, company-owned project sites (see Table 4-4) and zones within sites, such as "*littoral zone*", "*upland*", "*wetland.*" In contrast, Fort McKay co-researchers described a holistic view over space and time with terms like: "*integrated landscape*", "*can see how much has changed*", "*the need for action and reconciliation at a much larger scale*", "*[planning] for future generations" and "Fort McKay tries to be like the eagle, seeing all the development that happens across the traditional lands.*" Different perspectives and worldviews are not necessarily problematic in and of the themselves, so much as it creates an inability to understand 'the other' and to plan in an aligned manner.

The fourth and commonly expressed sub-theme is the ongoing disconnection Fort McKay co-researchers experience from their traditional territory. The reasons provided were due to the due to rapid, widespread landscape changes since the 1990s, dissatisfaction with the current state of reclamation, fences and onerous security protocols. Safety is a high priority for the company, so security and safety measures are in place to protect people from industrial activities and Fort McKay complies with these measures. Still, access and disconnection from the land remained a significant enough barrier for it to be described in the Fort McKay project and reclamation vision (Table 4-3) because of the cumulative effects of the multiple oil sands companies and projects with security measures impeding access across their Traditional Territory. One Fort McKay co-researcher said, *"people should be able to access the site to monitor. Currently you have to make appointments, which can take months. But you should be able to easily get to it."* Another described the desire to access areas of family significance: *"I used to go to my uncle's cabin. There was*

cooking, sharing stories, and kids playing by the water. [Two oil sands companies] blocked it off and now there's no access, you have to get clearance to go through there."

4.3.3 Gestures Towards Intercultural Co-Visioning

There were moments where Fort McKay and company co-researchers showed gestures towards partnership and intercultural co-visioning in mine reclamation and closure while engaged in the shared ethical space (Ermine 2007) of the cultural activities. Sub-themes included: presence of overlapping mine reclamation and closure vision stories and design elements; shared project decisions and milestones; and hope for future generations and the land.

Within the traditional shield art and story activity, co-researchers named many similar reclamation planning and design elements. An analysis revealed that most co-researchers included water, trees or forests, and the presence of wildlife in their closure vision canvas. The similarities were noted by one Fort McKay co-researcher who said:

"It seems like everybody, all their pictures put together, it seems like they come together to make one story. It makes it seem like everybody got almost the same idea, a good idea about the reclamation. It's nice to see that everybody's understanding that part of reclamation to make it look better anyway."- Fort McKay co-researcher

Aligned, intercultural mine reclamation and closure visions were demonstrated by two small teams composed of company and Fort McKay co-researchers when they created group traditional shields instead of personal art pieces. Their alignment was demonstrated with plural pronouns and personal accountability to the group vision. For example, co-researchers made statements such as, "*that's our idea for reclamation*" and group members signed their collective artwork. A company co-researcher said:

"I could hear everyone talk about trees. We heard water and trees the most. We wanted to include that, so the three of us put the tree in the center and then around the tree we each put things that reclamation meant to us."

Sharon Stein notes the importance of humility and moving away from control and authority to be a part of "a long- term, multi-layered, messy transformation" (2020, 168). During the traditional shield art and storytelling activity, jokes were made often, humility was shown, and laughter was heard. One Fort McKay co-researcher joked that they didn't include "*any animals, so there's my plant bias*", another one said "*I'll show [my grandchildren my shield], they're going to laugh*", and a third she felt "*good vibes*" in the room throughout the event. Many other co-researchers affirmed that sentiment.

The talking circle supported the development and decision on a First Nation and company vision for the Co-reclamation Project, and to some extent, mine reclamation and closure. The project decision made by all co-researchers was to "*move forward with two parallel statements that are aligned to maintain integrity of both Fort McKay's and [the company]'s perspectives.*" It was a project milestone which showed shared project control and authority. The parallel visions aligned in the following ways: working together on reclamation; reciprocal learning; and improving relationships.

The talking circle also supported development of criteria for co-selecting an area to reclaim together. Initially, company co-researchers recommended a few parcels of disturbed land for consideration by the Co-reclamation Project. These sites were found by the company's criteria, so initially lacked Fort McKay co-researchers' input. Community co-researchers expressed the disconnect between company co-researchers making a project decision within a collaborative research project. This insight and opportunity led to development of site selection criteria representative of both the First Nation and company's perspectives, another shared project decision and milestone (Table 4-4).

Table 4-4 Criteria for selecting a site to reclaim together

Criteria	*First Nation*	*Company*
Pre-site selection	Ensure robust process transparency with full data access to both pre-disturbance and current state, and site tours informed by community observation	
Site selection	1. Long-term commitment to no future disturbance of reclaimed site	1. Located on one of the operating projects
	2. Ease of access for monitoring and cultural use	2. Classified as ready-to-reclaim
	3. Enables re-establishing families' connections to the land	3. Available to reclaim within the Co-reclamation Project period (2019-2023)
	4. Proximity with connectivity to self-sustaining pre-disturbance landscape, and largest piece of land available supported by direct soil placement from nearby source	
	5. Less susceptible to toxic inputs, including a buffer	

While Fort McKay co-researchers shared a unified voice that the mine reclamation and closure planning did not meet the community's land use needs, there remained hope for improved reclamation outcomes for future generations. For example, one community member shared that she had "*lots of hopes for reclamation, for my kids to be able to enjoy the land one day, or their grandkids or just our future generations.*"

4.3.4 Opportunities for Partnership and Action

Opportunities for partnership and action between Fort McKay First Nation and the company in mine reclamation and closure was the final theme. Opportunities were Fort McKay-inspired design, planning and monitoring concepts for mine reclamation and closure of and reconnection to the Fort McKay Traditional Territory; and co-reclamation of part of the disturbed Fort McKay Traditional Territory.

The first sub-theme was for landscape design to be inspired by Fort McKay family values, family history, and the "*original land conditions.*" Mine closure with Fort McKay should incorporate the physical, psychological, symbolic and emotional aspects of the community, including reintegrating cultural landscapes to address impacts to places of cultural significance (Agyeman et al. 2009; Bainton and Holocombe 2018; Beckett and Keeling 2019; Burley et al

2007; Cuerrier et al. 2015; McCarthy et al. 2014). While the desire to reestablish the original landscape conditions was often mentioned by Fort McKay co-researchers, there was a recognition that is not possible. However, the principles of the original conditions could inform planning and design choices to create reclamation "*as similar as possible."* This concept was described by one Fort McKay co-researcher as, "*you know it won't be the exact same, but the principle should be there.*" Consequently, an understanding of the pre-mining landscape conditions, traditional land uses and family gathering areas should inspire mine reclamation and closure planning decisions and support reconnection of Fort McKay to their traditional lands and ancestors. For example, another Fort McKay co-researcher said that "*if the chosen site is within a trapline of a Fort McKay member, then the historic information from the family should be used to create the goals for what the reclamation will be. Not just what the plants look like, but what the landscape look likes.*" An opportunity and potential next step is for Fort McKay First Nation and the company to co-create a reclamation and closure plan for a disturbed parcel of land within the Fort McKay Traditional Territory. Use of the parallel project, reclamation visions; the Cycle of Respect (Figure 4-2); and the best of both worlds and knowledges (Lertzman 2010) has the potential to lead to improved mutual understanding, relationships, and socio-economic, environmental and cultural benefits.

The second sub-theme was about reconnection to the Fort McKay Traditional Territory through access and ceremony. Design ideas inspired by spatially-specific pre-disturbance conditions would allow the Fort McKay to exercise land uses in the similar areas and ways as their ancestors. Examples included reclaiming: traplines; wildlife and plant habitat; and cabins and ancestral trails to reconnect current and future generations to the land and their ancestors. A company coresearcher shared, "*trails is a really creative, really great idea. It's easy for people in the company to get behind. If the government and stakeholders could get behind that, as regional effort, it could be implemented everywhere.*" Another company researcher described *"feeling optimistic. I can't help but feel like there's so much opportunity here for creative thinking."* While oil sands projects are still active, access to reclaimed areas could be supported through community-led monitoring and optimized security and safety access protocols across the region. Additionally, inclusion of Fort McKay ceremony and protocols during mine reclamation and closure was identified as a way to return respect to the land, and improve cultural and landscape outcomes. There is a view that "*there is no spirit of life here*", but that application of "*protocol for the water, plants and animals*" may help reclamation and re-establishment of plants to potentially "*grow and be able to heal the people.*"

The final sub-theme was adaptive, responsive and aligned project scopes. Some of the Fort McKay co-researchers' expressed frustration that, historically, their ideas for reclamation were often viewed as "*out of scope*" or dismissed by the company or industry in general. Within the two cultural activities, the company both agreed with and disagreed with new reclamation research ideas, topics and perspectives shared by Fort McKay co-researchers. An example of research project agreement included: willingness to apply the co-created Cycle of Respect (Figure 4-2) as a best practice for taking part in this research; and inclusion of Fort McKay First Nation protocols. Examples perceived as out of scope for this reclamation research project by the company were: air quality; co-reclaiming a large parcel of disturbed land (with the potential to be re-disturbed); and analyzing territory-wide closure outcomes from a First Nation's (Cree and Dene) cultural perspective. Frustration from all co-researchers, including company, university and First Nation, was exasperated by a lack of understanding and alignment on the overall research project objectives part-

way through the project. The company believed the project focus was for both the First Nation and company to share and learn from one another by tangibly reclaiming a small area of disturbed land. The First Nation believed the focus was to co-design and, then co-execute the research project plan using a participatory approach, which could include co-reclaiming land and other research ideas, to share and learn from another about reclamation, closure and land stewardship. When disagreement existed, Fort McKay suggested it was not "*out of scope for a community that has to live with it every day*" and there is a need *"to merge these scopes to work together."* Mine projects that focus primarily on government and company priorities and perspectives for reclamation to the exclusion of social closure are perpetuating environmental injustices (Beckett and Keeling 2019). In contrast, inclusion of the Fort McKay First Nation, their post-closure vision (Table 4-3) and ideas shows respect for the human rights, cultures, customs and values of the affected host communities (ICMM 2020; MAC 2021; Two Roads Research Team 2012; TRCC 2015; UN 2007). Finally, there is value in taking time to: understand other perspectives and to recognize the difficulty of reconciling different perspectives; align on objectives at the start and throughout collaborative reclamation activities; and the related importance of moving at the pace of trust in these relationship and reclamation building processes.

4.4 Conclusions

This paper reflected on a Cree and Dene First Nation's perceptions of oil sands mine reclamation and closure, and the potential for a participatory approach to identify and support management of the social-environmental impacts of mine closure. Application of inclusive, cultural activities supported enhanced intercultural understandings and insights on the potential for a First Nation and an oil sands company to create a shared post-closure vision, thereby contributing closure planning methods for the social dimensions. Key insights were: mine reclamation and closure of the Fort McKay Traditional Territory with, and not for, the First Nation is an act of reconciliation; and moments of shared project decision-making and closure vision concepts were possible. Landscape planning inspired by First Nation family values, family history, and the original land conditions and tangibly co-reclaiming land together were identified as important reconciliation and reclamation opportunities for reconnection of current and future generations to their traditional lands and ancestors. Crucial barriers to mutually beneficial reclamation and relationships were different worldviews and priorities that contribute to misunderstandings and blind spots, and lack of processes which mitigate impacts to Indigenous rights. Further efforts and time are needed to support intercultural communication, understanding and planning, specifically around project objectives, time, space and traditional land use. Inclusion of other key stakeholders and local Indigenous Nations in co-visioning would improve application of the study outcomes. Considering Canada's position as an energy and mining leader, we recommend that mining and energy companies, and governments adopt inclusive, participatory reclamation and closure procedures, policy and regulations with the potential to result in sustainable socioeconomic, cultural, and environmental post-closure outcomes for the host communities.

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CHAPTER FIVE

RECLAIMING HOMELAND – AN EVAULATION OF TRADITIONAL LAND USE PLANNING IN OIL SANDS MINE CLOSURE AND RECLAMATION PLANS

Title: Reclaiming Homeland - An Evaluation of Traditional Land Use Planning in Oils Sands Mine Closure and Reclamation Plans

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5.0 Abstract

This paper presents consultation, engagement and mine closure good practices and a systematic review of traditional land use planning in mine closure and reclamation at seven oil sands mine projects operating in the traditional territory of Fort McKay First Nation, Northeast Alberta, Canada, also known as Treaty 8. The intent was to summarize the state of knowledge in oil sands mine closure consultation, engagement and traditional land use planning. Gaps and opportunities were found for addressing Indigenous rights and enhancing plant, wildlife and fish biodiversity in reclaimed landscapes to sustain a variety of traditional land uses and the interconnected community and culture of Fort McKay First Nation that depend on those sustainable traditional uses.

Keywords (up to 6): Traditional land use, mine closure, Two-Roads Approach, reclaiming homeland and cultural landscapes, oil sands, biodiversity

5.1 Introduction

Mine closure and reclamation planning has the potential to support the renewal of cultural landscapes and to re-establish traditional land use capability on reclaimed lands for affected Indigenous communities to exercise Indigenous and Treaty Rights within their traditional territories. Including those most affected in resource management policy and practices, especially local communities with a different worldview, allows the best of both worlds (Lertzman 2010) – western sciences and Indigenous Knowledge (IK) - to contribute insights not visible to those entrenched in the prevailing paradigm or system. The prevailing practice is for mine closure and reclamation plan and schedule decisions to be made by technocratic mine companies without the meaningful participation of the Indigenous rights holders' throughout the mine closure process (Beckett and Keeling 2019; O'Faircheallaigh and Lawrence 2019; Two Roads Research Team 2011, 2012). Inclusion of key stakeholders and local Indigenous communities in mine closure and reclamation planning has the potential to create an ethical space (Ermine 2007) for assumptions to be challenged in a constructive manner and mutual benefits to be identified. It necessitates the support of ethical and rigorous standards for gathering and braiding of IK from marginalized communities into mine closure and reclamation processes and decision-making to avoid harm and demonstrate respect and justice (FNIGC 2014; Simmons et al. 2012).

5.1.1 Trends and Good Practice in Mine Closure and Reclamation

Mine closure and reclamation science and practice has come a long way in its history yet has further to go in its journey with the Indigenous communities that host their activities. A promising trend for the future of mine closure and reclamation is the emergence of participatory processes for mine closure, such as participatory regreening, monitoring and evaluation of mine affected landscapes (e.g., Beckett 2022; Greater Sudbury 2022; Pareja et al. 2018; UNDP 2019), local community advisory committees (e.g., Drylie et al. 2013, GOC 2016; Centerra Gold Inc. 2020; Lloyd 2019; NSWMC 2021); impact and benefit agreements with participatory mine closure conditions (O'Faircheallaigh and Lawrence 2019); and community-led closure visioning initiatives (Daly et al. 2022; Parsons et al. 2013; Two Roads Research Team 2012). Likewise, reclamation and closure good practice instruments and principles are increasingly recognizing that it is just for local stakeholders and Indigenous rights holders to have input to the decisions that affect them (BTKRG 2009; ICMM 2013, 2015, 2019, 2020; LDI 2021). In fact, early involvement of the local community in the planning and preparation for mine closure and the accompanying social transition can reduce negative impacts and improve the benefits after mining activities are complete (ICMM 2019; Maloney 2019).

5.1.2 Indigenous and Traditional Land Use Law and Policy

While inclusion of local communities in mine closure and reclamation is a good practice, there are also legal ramifications when it comes to affected Indigenous Peoples. In Canada, the original peoples of this land are the First Nations, Inuit and Métis, who are collectively referred to as Indigenous Peoples, and, in Canadian legal terminology, Aboriginal peoples. There are many culturally and regionally distinct First Nation (i.e., 630), Inuit (i.e., 53) and Métis communities across Canada (GOC 2021b). International and Canadian law and policy grant Indigenous Peoples special protections and guides Indigenous engagement practices (Constitution Act s35 1982; Maloney et al. 2019; UN 2007). Such laws and policy affirm that Indigenous Peoples have the right to take part in decision-making about their traditional territories, natural resources and to enjoy their land-dependent cultures. For example, the Canadian Constitution Act (Constitution Act s35 1982) recognizes and affirms existing Aboriginal and Treaty rights, and the duty of the Crown to consult, accommodate, and to reasonably consider the interests of an Indigenous community when a project may infringe on their rights and title. "Engagement" is used to refer to the formal and informal activities where Indigenous Peoples, government and industry discuss issues of mutual interest (Joseph and Joseph 2017). Engagement is like consultation, with the exception that there is a legal requirement for the Crown to consult. "Meaningful consultation" is a new legal concept for which its definition has not been fully legally determined, but bare-minimum definitions have included: "meaningful and timely process of seeking, discussing, and carefully considering the views of others, in a manner that is cognizant of all parties' cultural values and, where feasible, seeking agreement" (Law Insider 2022). In the province of Alberta, policy on land and natural resource management aims to "substantially address impacts on Treaty rights and traditional uses through a meaningful consultation process" (GOA 2013, p. 1). The meaningfulness of Alberta's consultation process is severely contested by Alberta First Nations. Traditional land use (TLU) often refers to established practices by Indigenous Peoples through generations of custom, belief, knowledge, and experience that are handed down to posterity through oral and experiential means (adapted from OSMELUC 1998). In contrast, TLU sites are the geographic locations of cultural, historical and spiritual importance which may include cabins, camp sites, burial sites, areas of spiritual significance, travel routes, fishing, hunting and gathering sites and other regions of significance (Berryman et al. 2013). At the heart of many claims to self-determination is the demand that Indigenous Peoples be effectively consulted on any projects that may affect their lives to have the ability to control their lives, economy and cultural existence. Good practices which support effective consultation and engagement with Indigenous Peoples are described in Table 5-1.

5.1.3 Fort McKay First Nation and Oil Sands Mine Closure and Reclamation

The authors of this paper include First Nation (Cree and Dënesuliné) knowledge holders, land users, and representatives (community staff and a technical advisor) from Fort McKay First Nation (FMFN), and University of Calgary and Waterloo academic researchers of European heritage. FMFN has nearly 900 band members of which about 500 live in the Hamlet of Fort McKay on the shores of the Athabasca River in Northeast Alberta, Canada which is also known as Treaty 8 Territory (Figure 5-1). They have lived in this region since time immemorial and have always lived at the site of Fort McKay as part of their seasonal traditional activities (FMFN 1994). Historically and today, FMFN practice traditional activities, including hunting of large and small game, fishing, trapping furbearers, harvesting duck eggs, plants and medicines, ceremonies and keeping their spiritual connection to their traditional territory. FMFN's relationship to their homelands and TLU practices are constitutionally affirmed and legally protected in Canada as Aboriginal and Treaty rights (Constitution Act s35 1982) and recognized internationally (UN 2007). However, with the Athabasca Oil Sands found within their homelands, Cree and Dene band and community members are faced with ongoing industrial impacts, both positive and negative, from oil sands activities which began in the mid-1960s.

Fort McKay First Nation (herein referred to as Fort McKay) has a long-established record of working collaboratively with the many oil sands companies in their traditional territory, such as through joint ventures. Simultaneously, Fort McKay works to preserve members' ability to exercise their Indigenous and Treaty rights to practice TLUs. For instance, from 2001-2015 Fort McKay took part in Cumulative Environmental Management Association (CEMA), a multistakeholder organization with a mandate to make recommendations to the provincial government to manage the cumulative effects of regional development on air, land, water and biodiversity in the Regional Municipality of Wood Buffalo which overlaps portions of the Fort McKay Traditional Territory north of Fort McMurray. As CEMA members, Fort McKay community members, other local Indigenous communities, oil sands operators and the Alberta Government participated in a CEMA project called the Biodiversity Traditional Knowledge (TK) Study. The aim was to gain an understanding of what biodiversity means to local Indigenous community members and to provide recommendations to inform guidelines used by industry and governments for the establishment and monitoring of biodiversity on reclaimed landscapes (BTKRG 2009). The study was designed to be aligned with Article 8(j) of the Convention on Biodiversity (CBD) which recognizes the dependency of Indigenous communities on biological diversity, their unique role in conserving life of Earth (United Nations 1992), and the need to enhance the capacity of Indigenous communities to be effectively and ethically involved in decision-making related to Article 8(j) (Secretariat of the Convention on Biological Diversity 2011). Article 8(j) defines the responsibilities of participating countries, like Canada, with respect to Indigenous knowledge and practices. These are to "respect, preserve and maintain knowledge, innovations and

practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices" (UN 1992, p. 6). The Canadian Biodiversity Strategy was developed to meet the obligations of the CBD at a national level (Minister of Supply and Service Canada 1995). It recognizes that the conservation of biodiversity and sustainable use of biological resources are essential to Canada's Indigenous communities (ibid.).

The Biodiversity TK Study revealed a lack of meaningful participation of affected Indigenous communities in the mine closure and reclamation process by reviewing existing reclamation guidelines, including the Guidelines for Reclamation to Forest Revegetation in the Athabasca Oil Sands Region ("The Revegetation Manual")(AENV 2010) and regulations (Two Roads Research Team 2011). Consequently, a new methodology was defined for establishing a participatory planning process grounded in ethnoecology to include Indigenous Peoples and IK in reclamation planning and monitoring in the oil sands region, called a 'Two-Roads Approach', and accompanied with seventeen recommendations for its implementation (Two Roads Research Team 2011, 2012). See Table 2-5 for a list of the recommendations and their current status of completion.

Fort McKay has a deep, multi-generational connection and responsibility to protect and conserve their homelands. Fort McKay and the other Indigenous communities that participated in the Biodiversity TK Study use the term "cultural landscape" or "homelands" to communicate that, in their words, "the land is not only a source of food and survival. It is a source of heritage, cultural, spirituality, and well-being. Reclamation means bringing back to life an entire landscape that is used in complex and diverse ways. A healthy landscape is a landscape mapped by old and new placenames and stories – signs of how people are living on the land" (Two Roads Research Team 2012 p. 58). Land sustains life, is part of ceremonies, holds the histories, memories, ancestors, stories and languages of an Indigenous Nation, and is considered home and a relative (Cuerrier et al. 2015; King 2013). Land is essential to the transfer of knowledge, language and customs (Wong et al. 2020). It is Fort McKay's perspective, that historic and current oil sands closure and reclamation regulations and practices do not adequately understand, nor address these connections and responsibilities. This is despite Fort McKay's contributions to intercultural reclamation advancements (e.g., BTKRG 2009; Buffalo et al. 2011; Garibaldi Heritage and Environmental Consulting 2006; Two Roads Research Team 2011, 2012; The Community Liaison Research Team 2013) and the abundant availability of pre-disturbance data on vegetation, wildlife, and TLUs from Environmental Impact Assessment (EIA) and Traditional Land Use and Occupancy Study (TLUOS) reports (e.g., AXYS 2005; CNRL 2002; FMFN 1994; FMFN 1995; Mobil Oil Limited 1999; Shell 2011; Suncor 2003; Suncor 2007). Cumulative effects studies of the Fort McKay Traditional

Territory show that traditional use species have declined to levels below natural ranges (e.g., moose (*mooswah* (Cree), *Alces americanus*), fisher (*o cheek* (Cree), *Martes pennanti*), fish, and berries) largely due to oil sands development (Berryman et al. 2013). Timely mine closure and reclamation of the Fort McKay Traditional Territory and TLU resources is a critical action to mitigate these TLU impacts (GOA 2012). Also, creation of new or improved TLU planning tools, governance structure, decisions-making processes and other initiatives are called for to communicate, guide and incent the renewal of Fort McKay's cultural landscapes and TLU resources.

In 2018, the Co-Reclamation Project was conceived by Fort McKay, the Universities of Calgary and Waterloo, and an oil sands company and was later formalized in a Collaborative Research Agreement. The parties to this five-year research agreement acknowledge "there are significant opportunities to improve oil sands reclamation regulations and practices in the Athabasca region to better consider Indigenous Peoples' perspectives and serve their cultural needs. This collaboration reclamation ("co-reclamation") research efforts sets out to do just that" (The Parties 2019, p. 18). Aims of the Co-Reclamation Project were to "support intercultural knowledge exchange to enhance mutual understanding of oil sands reclamation, land reclamation, land use practices and community health and wellness for future generations" and "for scientific and Indigenous Knowledge, approaches and peoples to collaboratively heal a piece of the land degraded by oil sands development and return it to its original stewards through co-reclamation" (The Parties 2019, p. 18-19). The Project was framed to "support Indigenous community voice in decisions-making throughout the entire "co-reclamation research project plan" and "to build on existing knowledge produced by Indigenous-informed studies about boreal forest ecosystem function, traditional values, and reclamation recommendations from Fort McKay" (The Parties 2019, p. 19). Part-way through the Co-Reclamation Project the oil sands company terminated their participation in the project. Without the oil sands partner, their funding, and access to oil sand industry degraded-lands, and in lieu of co-reclaiming land as planned, Fort McKay and University co-researchers developed new research tasks that enabled continued exploration of Fort McKay's reclamation interests while enabling graduate students to complete their education. These tasks were focused on the exploration of how to heal the land, apply reclamation as an act of reconciliation, and have participation in the mine closure and reclamation process based on their previous work to develop the Two-Roads Approach (Two Roads Research Team 2011, 2012). One new task became a systematic review of current oil sands mine closure and reclamation plans to understand current TLU planning methods, results, gaps, drivers, and opportunities. Albeit, there were reduced opportunities for the implementation of the Two-Roads Approach and inclusion of the Fort McKay community member co-researchers in all steps of the research process due to the lack of funding to adequately resource the Fort McKay road and COVID-19 pandemic health and safety restrictions between April 2020 and June 2022. Consequently, this study analyzed the

inclusion of the Fort McKay road within publicly available mine closure and reclamation plans. The aim of this paper is to evaluate TLU and participatory planning in mine closure and reclamation plans within the Fort McKay Traditional Territory to understand how cultural landscapes and relationships are being renewed and to recommend next steps where critical gaps exist.

5.2 Materials and Methods

In keeping with ethical Indigenous research principles (FNIGC 2014; Wilson 2008), this study was conceived, developed, and implemented collaboratively with Fort McKay and academics from the Universities of Calgary and Waterloo, collectively referred to as 'co-researchers'. A method was sought for understanding patterns and gaps in TLU across mine closure plans that would yield culturally relevant and rich discussions between co-researchers. A qualitative method was adapted from Monosky and Keeling (2021), where systematic review and document analysis were applied to understand how the metal mine industry in Northern Canada was planning for post-closure Indigenous community needs. Method development occurred with a sub-set of Fort McKay and university co-researchers, specifically Fort McKay staff and a technical advisor. They designed an evaluation of how the Two-Roads Approach was used as the overarching strategy and framework in mine closure and reclamation planning. This methodology creates space for plural ways of knowing, including supporting Indigenous Peoples to develop their own ways of working on research questions (Two Roads Research Team 2011; The Community Liaison Research Team 2013). For more details see Two Roads Research Team (2011, 2012) and L'Hommecourt et al. (2022). The analysis applied the following steps: development of research questions of interest to Fort McKay; development of document search criteria and collection methods; coding text into categories aligned with the research questions, interpreting, synthesizing, and describing the information (Monosky and Keeling 2021). A total of 15 research questions were co-developed *a priori* through videoconference calls and email correspondences with a sub-set of the Fort McKay staff and a technical advisor and university co-researchers between January and March 2022 (see Table 5-2). The systematic review of the documents and data analysis was done by a university co-researcher (see section 5.3.7 for study limitations).

Documents, such as mine closure and reclamation plans and TLUOS reports, are the "physical traces" of the social environment (Webb et al. 2000) that enclose evidence of the ways individuals, groups and organizations interact and represent themselves (Coffey 2013). Mine documents were available through the Alberta Energy Regulator Integrated Application Registry and Products and Services Catalogue using keyword searches and from Fort McKay. A total of seven Life of Mine Closure Plans (LMCP or simply "closure plans") were collected. Figure 5-1 shows the location of the seven oil sands mines. Culturally significant plant (n=150), mammal (n=49), bird (n=145), amphibian (n=4) and

fish (n=15) species were obtained indirectly from Fort McKay community members, past and present, using: a TLU species list on the Fort McKay Community KnowledgeKeeper database (Fort McKay Sustainability Department [unknown date]); *Maskihkiwahtikwa ochi Fort McKay* (Cree) / *Jie Dechen ti nadye ha* (Dene) / Plants of the First McKay First Nation book (FMFN 2019); TLUOS reports from oil sands companies (e.g., CNRL 2002, Mobil Oil Limited 1999, Suncor 2007); CEMA Reports (e.g., O'Flaherty 2012), and regulatory guidance documents (Appendix E in AENV (2010)). The resulting draft TLU species list was revised and confirmed using personal communication with a Fort McKay technical advisor, one community knowledge holder and co-researcher and a youth community member and employee who coordinates Fort McKay Traditional Territory monitoring but who was not a full-time co-researcher on this project. For efficiency, only the common name of taxa are applied within text. For the associated Cree, Dene and Latin names see tables 5-4 to 5-7. Conservation status for each species was obtained from the Government of Alberta (2022b) and ABMI (2021).

Assumptions were made during the analysis when the level of detail between the closure plans and Fort McKay's cultural use information was not congruent. The LMCPs supplied plants or wildlife to the family, genus or guild level, while Fort McKay supplied information to the genus or species level. In such cases, it was assumed the oil sands mine planned to set up habitat for all the wildlife species in the identified family, genus or guild. For example, where an oil sands mine closure plan said the intention to design habitat for "waterfowl" or "ducks and geese", it was assumed that the habitat design was inclusive of all 34 species in the Anatidae family that are local to the area since many of the species have similar habitat requirements. In contrast, it was assumed only one species would be planted when an oil sands mine's planting prescription named a plant to the genus level, such as willow (*Salix sp.*), because guidelines for forest revegetation state that a limited number of characteristic understory plants (i.e., 2-7) are needed to achieve reclamation certification depending on the forest type (AENV 2010). Two closure plans provided lists of tree species in their upland forest planting prescriptions, but only a general plan that at least 2-6 shrub species would be planted. We assumed 4 shrub species would be planted on average and selected four common native shrubs from reclamation revegetation guidelines (AENV 2010).

A crucial and last step of ethical research with Indigenous Peoples is the verification and validation of draft research results by the community to ensure data is accurate and properly situated in context prior to publication (Simmons et al. 2012). This step supports an increased level of trust and confidence in the quality of the Indigenous research (*ibid*.). Opportunities for Fort McKay co-researchers to assess and contribute to the analysis and interpretation conducted by university co-researchers and overall conclusions and recommendations occurred through phone and video conference calls and emails during April through November 2022 with a sub-set of Fort McKay staff and technical advisory co-researchers and a verification and validation workshop with all Fort McKay co-researchers in Fort McKay

on July 6, 2022. Four Fort McKay co-researchers (staff and technical advisory) took part throughout the study and 9 Fort McKay co-researchers took part in the verification and validation workshop. The active participation of Fort McKay community co-researchers throughout the study was limited by the loss of committed research funds from an oil sands company to cover travel, community honorarium, multiple community workshops, time together on the land, and other research costs (see 5.1.2 above). Without resourcing for the Fort McKay road, full implementation of the Two-Roads Approach could not be achieved for this portion of the dissertation without the active participation of Fort McKay knowledge holders and land users throughout each step of the research process, including results analysis and interpretation from a Cree and Dene worldview. Other challenges included: the inability to safely meet in person between April 2020 and June 2022 due to the COVID-19 pandemic; only a sub-set of Fort McKay co-researchers being available for online meetings; online meetings not being an effective approach to Indigenous research; and western research biases that university co-researchers are learning to identify and overcome.

5.3 Results and Discussion

See Tables 5-2 for a summary of TLU research questions and responses. See Table 5-3 for a list of the Indigenous communities consulted by the LMCP and detailed responses to questions 3 (information captured during consultation), 4 (Indigenous-informed closure decisions) and 5 (TLU assessment and accommodations).

5.3.1 Trends in Consultation, Engagement and Communication of Mine Closure and Reclamation Planning

Consultation, engagement and communication about mine closure and reclamation in the oil sands industry has evolved over the last half-century. In 1967, when the oil sands operations began, community members in Fort McKay had no recourse for consultation and engagement with oil sand operators (L'Hommecourt et al. 2022). Decisions about mine closure and reclamation planning were made without input or consideration of the Cree and Dene people who have lived on and with the land since time immemorial. By the 1980s, Fort McKay community members were told that the land would be returned to pre-disturbance conditions, and the effects of the operations would be minimal (*ibid*.). Today, the reviewed LMCPs acknowledged that the landscapes will be markedly different than the original conditions. The reclaimed landscape will have more topographic relief and forests and less peatlands and biodiversity, at least initially and for some time, compared to pre-disturbance conditions. For instance, plans communicated "it is not feasible to return the land to its pre-disturbance topography", that "distribution and abundance of vegetation types will be permanently altered with the replacement of peat-

forming wetlands with upland vegetation types", the reclaimed landscape will "be similar to ecosystems found in the region, though distribution will change to account for altered landforms, slopes and aspects" and these new "ecosystems will allow for similar, but not identical, end land uses as to what existed prior to mining". However, generally, the plans "expect to provide similar levels of wildlife habitat", "geomorphic patterns (swales and ridges)", "[commercial forestry] productivity rates" and to "initiate a trajectory towards achieving similar biodiversity" compared to the pre-development conditions.

There was little evidence that consultation and engagement with local Indigenous communities in LMCPs was guided by principles and actions towards truth and reconciliation (Table 5-2, TRCC 2015a, b). There was no reference to, and little evidence of the application of the TRCC principles (2015b) or of the United Nations Declaration on the Rights of Indigenous peoples (UN 2007) in the LMCPs. One exception was the inclusion of Indigenous Peoples in two of the LMCPs through advisory committees. Additionally, acknowledgement of the loss and grief local Indigenous Peoples experience for their altered traditional territories, family memories and impacted traditions was not present in the LMCPs. While it may not be possible technically or economically to re-establish the original conditions of the Fort McKay Traditional Territory, Fort McKay co-researchers recommend that the original peoples and conditions of the land be acknowledged and that industry planners exercise openness and creativity so that reclaimed cultural landscapes are "as similar as possible". This is a reconciliation action that shows respect for Fort McKay and their relationship with the land (see Daly et al. 2022 for more details) and aligns with Canada's position on truth and reconciliation between Indigenous and non-Indigenous Canada towards an honourable future (TRCC 2015b).

LMCPs lacked a shared vision with affected Indigenous communities (Table 5-2). It is considered a good practice for mining companies to engage affected stakeholders and Indigenous Peoples to enable a shared vision and shared responsibilities in mine reclamation, closure planning, and post-mining results (ICMM 2019; LDI 2021; MAC 2008; MAC 2021; Morgenstern 2012; Sheldon et al. 2002; The Community Liaison Research Team 2013). Afterall, the land will be returned to the local communities, so it is important to support their stewardship (BTKRG 2009; Two Roads Research Team 2011, 2012). The plans all referenced mine closure and reclamation goals that consistently used the terms and phrases "self-sustaining" and either "equivalent capability" or that they will "certify reclaimed land and return it to the Crown". This language was derived from provincial law and policy. For example, the term "self-sustaining" is derived from Specified Enactment Direction 003, Direction for Conservation and Reclamation Submissions (AER 2018a). The language of "equivalent land capability" originates from the Environmental Protection and Enhancement Act (EPEA): Conservation and Reclamation Regulation (GOA 2022a). For example, the EPEA Conservation and Reclamation Regulation (GOA 2022a) defines equivalent land capability as "the ability of the land to support various land uses after conservation and

reclamation is similar to the ability that existed prior to an activity being conducted on the land, but that the individual land uses will not necessarily be identical" (p. 2-3). Two of the LMCPs referenced other stakeholders beyond the governing bodies as a part of their closure goal. For example, one plan will "provide clarity in performance expectations for [the company], the Regulator and stakeholders" and one stated the project was committed to "incorporate stakeholder advice and requests into closure planning". The language used by oil sands mine projects in their goals showed alignment with the provincial regulatory requirements and government itself for conservation and reclamation, but not so much with local Indigenous rights holders. A shared closure vision about the future of the reclaimed landscape should be developed with affected Indigenous communities so their needs and rights also inform mine closure and reclamation planning decisions. For an example, Fort McKay's closure vision see Daly et al. 2022 or chapter 4.

There was little evidence affected Indigenous communities' received funding for consultation or to conduct an independent technical review of the LMCPs to increase confidence in the proposed mine closure outcomes (Table 5-2). Independent expert review and advisory panels have been proven to increase trust in resource management and mine closure with Indigenous communities, especially when both scientific and Indigenous knowledges and methods were included (Lertzman 2010; Swanson et al. 2011). Study results found that one oil sands renewal application, which included a LMCP, supplied funding to Indigenous communities for the capacity to adequately consult on their project as part of the delegated duty of Crown Consultation. However, it did not supply funding for a third-party technical review of their LMCP but showed the intention to fund a technical review and TLU study as part of a forthcoming mine extension application. Another plan acknowledged that funding was requested from a First Nation for a technical review but did not confirm if it was granted. A third document noted that a technical review was completed during the original project application, but not on the revised LMCP. That company noted that the plan was an "EPEA amendment no consultation required", which suggests consultation and engagement on LMCPs may only occur during initial project application and at project renewal periods every 10 years or so. Third party technical reviews are a valuable tool for TLU gap and opportunity identification that may increase Indigenous communities' confidence in the closure outcomes to meet their cultural reclamation needs. Early and frequent consultation and engagement is a good practice that should start before the first closure plan development, which goes with an oil sand mine project approval application, and throughout the life of the mine when the LMCPs change. Not just at mine renewal periods (ICT 2015; Joseph and Joseph 2017; Table 5-1).

There was little evidence that TLU impacts were assessed and accommodations made in the LMCPs. While there is a legal requirement to substantially address impacts to Treaty rights and TLU from natural resource projects through meaningful consultation, TLU assessments are not the required

mechanism (GOA 2013). Still, TLU assessments may be included in the EIA process for a project to name potential impacts on community's traditional territory, culture and rights (Baker 2013). As part of the consultation process, Indigenous communities and companies often sign benefit-sharing agreements to compensate for predicted TLU impacts found by TLU assessments (Ali 2016). Analysis identified that one LMCP completed a TLU assessment and two referenced agreements with Indigenous communities, presumably to compensate for impacts to Indigenous rights and lands (Table 5-3). However, it is possible that IBAs exist between the other five mine projects and local Indigenous communities and that they weren't communicated in the plans since these agreements are commonplace in the global mining industry and their details are usually kept confidential (Lertzman 2010; O'Faircheallaigh and Lawrence 2019). IBAs are a tool capable of incentivizing cultural reclamation planning (Daly 2021; O'Faircheallaigh and Lawrence 2019). But the long-term mine closure and reclamation needs of Indigenous communities are often overlooked during fast-paced IBA negotiations aimed at mine project approval when commodity prices are high (Ali 2016; Baker 2013; O'Faircheallaigh and Lawrence 2019). Instead, IBAs focus on the mine operations phase in exchange for an Indigenous community's FPIC and limiting opposition (Ali 2016). For example, O'Faircheallaigh and Lawrence (2019) found that only 7 of the 50 Australian mine IBAs addressed closure and reclamation in a direct and substantive manner. Opportunities exists for oil sands mine companies to apply the abundance of TLU information available from the EIA process towards mine closure and reclamation planning and for new or renewed IBAs to include long-term cultural reclamation commitments.

5.3.2 Inclusion of Traditional Land Use in Life of Mine Closure Plans

The term TLU or a similar variant was used in every LMCP. Similar terms included: traditional use, traditional end land use, traditional value and importance, traditional practice, traditional purpose, cultural use, traditional plants and medicine, spiritual use, traditional hunting, and trapping. Related terms included traditional knowledge and traditional environmental knowledge. These were often applied interchangeably throughout individual documents.

All LMCPs targeted TLU as an end land use for substantial portions of the reclaimed landscape but held little guidance on TLU methods and measures of success. LMCPs stated that end land use decisions were influenced by EPEA approval conditions for individual projects, regulatory requirements, regional plans (GOA 2012), landform topography and composition, and input from Indigenous communities and stakeholders with varying, and potentially competing values. These plans noted some constraints to achieving TLU targets, which included scientific and technological limitations, natural succession, and time or unknown trajectories to TLU success. For example, two LMCPs reference the use of an incomplete hierarchical framework to guide planning for mine reclamation certification (AESRD

2013). This provincial government reclamation planning document supplies a few TLU indicators for reclamation certification: 1. “biodiversity targets that support cultural, spiritual, medicinal and ceremonial purposes” (p. 116); and 2. “traditional plant communities have been established in mine reclaimed wetlands” (p. 147). However, measures, methods and thresholds have not been developed, which may be hindering mine companies’ ability to adequately plan for the traditional uses of local Indigenous rights holders. Just one company deployed an intercultural framework and Indigenous methodology (i.e., Two-Roads Approach) to support multi-perspectives and plural knowledges in planning towards the conservation on an ecologically unique area, but not for reclamation. An opportunity exists for local IK holders, mine companies and government to co-create important and practicable TLU targets using an inclusive intercultural framework to close this reclamation certification gap.

The methods used to plan for TLU centered on vegetation planning and wildlife planning documents that held limited or no local TLU guidance. The LMCPs consistently referenced and applied regional guidance document to classify the landscape according to ecological forest and wetland units, or ecosites, and to develop associated planting prescriptions (e.g., AENV 2010, Beckingham and Archibald 1996, ESRD 2015, GDC 2009). These guidance documents name which vegetation species are right for a given ecosite but supply little or no guidance on traditionally used species which are important to the utility of a reclaimed area targeted for TLU. Where TLU tools and information exist to support planning for sustainable cultural landscapes, they were consistently underutilized or omitted completely. For instance, where traditional plant species were named by Fort McKay in the regional guidance documents according to ecosite units (i.e., AENV 2010) only a small selection of each was incorporated into LMCP planting prescriptions by the mine operators (Figure 5-2). In another example, a TLU decision-flow chart was designed to include Indigenous Peoples and their knowledges in closure planning (Piorecky and Murphy 2016). Mine operators are required by their EPEA operating approval regulations to “comply with the Guidelines for Reclamation to Forest Revegetation in the Athabasca Oil Sands Region, 2009, as amended” (e.g., AER 2014 p. 71; AER 2018b p. 80). But this amendment to the revegetation guidelines was not referenced as being applied to plan development by any of the seven oil sands mines. Overall, LMCPs assume that biodiversity will increase over time and through natural succession. Application of these predominantly western science-focused regional guidance documents and associated methods was driven by the fact mine project approvals require their use and that they were created to inform regional natural resource management and oil sands mine closure and reclamation planning. Fort McKay co-researchers feel excluded from this process. One Fort McKay co-researcher said, “[A Company] and Fort McKay can talk, but government has their own criteria and companies will only follow that…why can’t industry change a little bit?” An Elder said “it is very difficult for the community to explain why they need things to be done differently in this [reclamation] context…in the past the companies have come to

present their projects to the companies using large technical words, and their parents and grandparents have been unable to understand and were therefore unable to raise objections." A lack of TLU methods and design guidance in regional closure and reclamation planning documents needs to be addressed, consequently we recommend revising these documents and/or co-creating new TLU guidance documents with local Elders, land users, and other knowledge holders. This aligns with past recommendations made by Fort McKay through the Biodiversity TK Study to: conduct a State of IK Report; create an ethnobotany popular reference guide and a decision-making structure for an IK approach to revegetation planning; and include Indigenous Peoples and IK baseline studies in closure planning from the start of the project (see recommendations 1.2, 2.1, 2.4, and 4.1 in Table 2-5). This information was to be incorporated into the reclamation revegetation guideline and applied by industry. But a lack of action since 2011 in advancing and applying IK methods in closure planning practice means these recommendations remain incomplete (see Table 2-5).

There is a disconnect where governments and mine companies make decisions about mine closure and reclamation goals, target land uses, and reclamation design and timelines, while excluding local Indigenous communities, their unique worldviews and needs, and relevant local IK. This trend has been seen across the global mining sector (Bond and Kelly 2020; Daly 2021; Holcombe et al. 2022; Monosky and Keeling 2021). The same disconnect was clear in the LMCPs. While all the LMCPs committed to TLU as one of the post-closure outcomes and some were supported by Elder and IK knowledge holder advisory committees, most held limited or no evidence that local Indigenous communities' questions, concerns and IK were adequately captured and informed closure decisions (Tables 5-2 and 5-3). Instead, documents used vague, broad and future-focused statements about the inclusion of local Indigenous communities and incorporation of their IK to mitigate TLU impacts, such as "continued engagement with key Indigenous group", "will continue to focus on incorporating traditional knowledge", and "over time, the closure plan becomes increasingly reflective of traditional knowledge land use information". Where evidence of IK was provided, there was rarely references provided for the source of the information. For example, statements, like the following, generally did not identify which Indigenous community, community member, TLU study, or other report the IK was derived to inform plan development: "[The company] has participated in studies on rat root (a plant species highly valued by local Aboriginal people) propagation on reclaimed land" and "the species is considered to have high socio-economic and traditional value." There were a few exceptions. One company referenced the "Wetland Manual" (AENV 2008), which contains some traditional plants identified by local knowledge holders in Appendix F, and uncited traditional environmental knowledge studies as the sources of IK which informed their wetland planting prescription. Another project stated that the "closure landscape will allow for traditional practices such as hunting, trapping, fishing and berry picking to continue" and

referenced a report with wildlife and wildlife habitat information that was gathered with participation from local Indigenous Peoples (Shared Value Solutions 2015).” The amount of IK captured by mine projects could be underestimated due to the inaccessibility of internal company databases or commitments to protect IK. The following is a summary of decisions made in the LMCPs to respond to local Indigenous Peoples’ concerns and TLU rights: reuse of soil materials, research and commercial planting of some traditional shrubs and aquatic plants, such as ratroot and berry-producing plants, traditional wildlife habitat (e.g., moose, beaver, fish), fewer pit lakes, more wetlands, less time to project closure, some landforms were designed to mimic pre-disturbance topographic elements, and improved site access for trappers, other traditional land users and wildlife. The oil sands mine industry has operated for more than 55 years and the current cumulative footprint of the study mines alone is 162, 331 ha with reclamation put forward as the main mitigation to land disturbance and subsequent impacts to TLUs (GOA 2018; GOC 2021a). For many years, Fort McKay and other Indigenous communities have requested participatory reclamation planning processes and creation of TLU methods, TLU measures of success and TLU planning guidelines for mine closure (e.g., GOA 2012; Two Roads Research Team 2011, 2012, Piorecky and Murphy 2016). The lack of evidence of meaningful inclusion of affected Indigenous communities’ and their needs and IK in the examined closure plans aligns with Fort McKay co-researchers' consultation and engagement experiences and sentiments that, “no one listens to community input”, and so they “feel tired and worn out from giving so much and then the information given to companies just sits on the shelf or goes in the bin.” The Two Roads Research Team (2011) similarly captured “a certain disillusionment with the endless parade of TK studies that gather dust on shelves while science remains the principles for decision-making” (p. 34).

5.3.3 Reclaiming Homeland

Re-establishment of biodiversity across the disturbed Fort McKay Traditional Territory has the potential to renew ecological and cultural landscapes. Habitat and populations of humans and wildlife are lost or displaced during open pit mining (Venier et al. 2014). Mine closure and reclamation are key to mitigating the social and environmental effects on the interconnected Fort McKay community and the boreal forest ecosystem from oil sands mining, which includes supporting Fort McKay to live on the land again (Two Roads Research Team 2012). Reclaiming biodiversity and cultural elements in coordination with key stakeholders and local Indigenous communities are emerging fields in mine closure globally (e.g., Christoffersen et al. 2019; Daly et al. 2022; Holocombe et al. 2022; McCarthy et al. 2014). Locally, when Fort McKay is envisioning reclamation they are “thinking about the renewal of their homelands – dwelling places that are part of their spirituality, their stories, their memories, and their identity.” (Two Roads Research Team 2012, p. 58). However, planning for biodiversity was low in oil sands mine closure

since they targeted on average 101.6 or 28.0% of Fort McKay's 363 traditional use species (Tables 5-8). This is potentially an overestimate due to limited resources to meet with community members and safety restrictions during the COVID-19 pandemic. For example, while examining traditional plants at Fort McKay's Moose Lake reserve, Fort McKay co-researchers shared that each plant has cultural value. One co-researcher said, "everything has a purpose. Every plant, every tree, every medicine, like even the flowers and the berries, everything has a spirit." But this study only collected the names of 150 traditional use plants from Fort McKay knowledge holders (Table 5-4) out of more than 959 upland and wetlands plants (ABMI 2021; La Roi 1967; Johnson et al. 1995; Bartels et al. 2017) in the boreal region of Alberta. In contrast, it is likely that taxa not included in the LMCPs have returned to the landscape thus contributing to higher actual biodiversity levels compared to study estimates (see "Reclamation Recommendations and Limitations" in section 5.3.7 for details). The oil sands industry should reframe their approach to landscape recovery so it includes the best practices of participatory planning processes based on ethnoecology and sustainable development towards homeland reclamation. Afterall, Fort McKay's "future generations will need to be able to find who they are on the land. The health of the communities is connected to the health of the [reclaimed] land" (Two Roads Research Team 2012, p. 58). This recommendation aligns with past recommendations made by Fort McKay to: create a popular reference book on ethnobotany and a state of knowledge report on local Indigenous plant names and uses; develop clarity on homeland values, interests and rights in reclamation; and develop and accommodate a full understanding of Article 8(j) of the UN Convention on Biodiversity (Two Roads Research Team 2011, 2012; UN 1992). For more details see past recommendations (1.6, 2.1, 3.2 and 4.1) from Fort McKay and other Indigenous communities which was summarized Table 2-5.

5.3.4 Traditional Use Plants

While the boreal forest is home to a wide variety of upland and wetland plants that are of traditional value to Fort McKay the oil sands mine closure plans are planning for a small proportion of culturally significant plants. On average, the LMCPs included 40.9 (16 to 57) species or 27.3% of 150 traditional use forest and aquatic plants (Table 5-4). The conifer and deciduous tree species that have traditional value to Fort McKay were included in most of the project's reclamation planting prescriptions (e.g., aspen (n=7), paper birch (n=7), black spruce (n=6)). Although not all mines planned for tamarack, a dominant conifer species *(*Rowe 1972*),* and balsam fir (n=4 for both), in part, because planting prescriptions generally targeted early successional stages and three mines are not currently planning for the most common wetland types in the region, fen and bog peatlands (Table 5-4, AENV 2010, Vitt et al. 1996). Fort McKay co-researchers discussed the many reasons trees are important to them, including for "paper products", "shelter", "warmth", "they're cleansing the air for us and they're the ones that give us

life" and each has unique properties. For instance, spruce and paper birch supply different "medicines" and tamarack "gives us shelter for our sweat lodges." In contrast, some local shrubs, and few forbs, mosses, grasses, sedges, fungi, lichens and aquatic plants were included in the mine closure plans to support the return of regional biodiversity levels and traditional use needs (Table 5-4). For instance, multiple species of berry-producing plants are important to the community of Fort McKay (Baker 2021). Berry harvesting has been and continues to be an important cultural activity for the Fort McKay community. Fort McKay co-researchers described harvesting berries with their families for food and medicines, such as blueberry, cranberry, chokecherry, Kinnikinnick, pin cherry, raspberry, rose hip, saskatoon, and strawberry. One land user said, "the plants all make up the ecosystem and the different types of muskeg [mosses, peatlands] support different kinds of medicinal plants and berries. Cranberries, which is also considered a medicinal plant can be found on brown mosses." In regards to one group of berry, cranberries, mines are planning for mooseberry and bog cranberry but not small bog cranberry and high bush cranberry. Results suggest that oil sands mines are not adequately meeting Fort McKay's traditional use needs, nor government objectives requiring for "planting prescriptions…are designed to maximize the potential of each area to reach desired end land uses of wildlife, recreation, traditional hunting and trapping, and commercial forestry" (AENV 2010 p. 2) and "reclamation shall use a wide variety of native tree species and understory vegetation" (SRD 2002, p. 20).

Review of documents cited by the LMCPs for use in revegetation plan development found potential drivers for the low biodiversity targets. First, the CEMA Revegetation Manual (AENV 2010) recommends a low threshold for the number native plant species needed to achieve reclamation certification (i.e., 2 to 7) and only provided plant propagation, production and planting information for 20 native trees and shrubs with only a few aquatic plants (AENV 2010). Recent research supported by the oil sands industry has developed more information for 100 understory species and aquatic plants (Smreciu et al. 2013), but the science did not translate into reclamation planning and practice. It is recommended that the CEMA Revegetation Manual is revised in partnership with local IK holders to ensure biodiversity and the current state of reclamation science are included, especially more traditional use understory and aquatic plants. This recommendation aligns with past and outstanding recommendations made by Fort McKay to include an ethnobotany tool and more extensive information on traditional use plants in a revised version of the CEMA Revegetation Manual (Two Roads Research Team 2011, 2012; Piorecky and Murphy 2016). See 2.1 and 4.1 Table 2-5 for more information.

5.3.5 Traditional Use Wildlife and Fish

Fort McKay TLUs are dependent on many interconnected and important relationships with mammal, bird, amphibian and fish species, but oil sands mine closure and reclamation plans planned for a

small percentage of these taxa. The mosaic of wetlands and forests across the boreal ecosystem in the Fort McKay Traditional Territory support a rich, temperate zone assemblage of wildlife adapted to large areas and natural disturbances, like fire and insects (Foote 2003). Wildlife and fish habitat development and most boreal food chains are dependent on vegetation (Eaton et al. 2014). For instance, herbivores (e.g., shrews, beaver, moose, woodland caribou, and bison) and most birds need a variety of plants for survival. In turn, predators (e.g., coyotes, wolves, red fox, fisher, marten, wolverines, and raptors) are dependent on herbivores and birds (AENV 2010). Collectively, these plants and wildlife supply habitat, food, medicine, livelihood, transportation, craft resources, and other uses for the people of Fort McKay that depend on them (Fort McKay First Nation 1994). While reviewing a draft list of traditional use plants with a sub-set of Fort McKay co-researchers, one community member and co-researcher commented, "I would say all plants that the wildlife eat are important, as we harvest for subsistence." This response suggests that planning for TLUs must involve understanding and supporting the renewal of Fort McKay's relationships within their traditional territory. From this exercise we understand that the LMCPs are planning for a small component of traditional use wildlife and fish and are not relationship focused. On average, the plans held 10.6 (5 to 16) or 21.6% of the 49 mammal species (Table 5-5), 6.3 (1-8) or 33.2% of the 19 fish and amphibian species (Table 5-6), and 43.9 (28-53) species or 30.3% of 145 bird species (Table 5-7) of traditional use value to Fort McKay.

Gaps or omissions of crucial traditional use wildlife and fish taxa were found in oil sands mine closure planning. In "There is Still Survival Out There" (FMFN 1994), 67 elders and land users plotted the harvest sites of essential big game, fur bearers and fish across their traditional territory that supply fur, country food and other cultural uses. In total, sixteen fur bearers were named including: beaver, bear, coyote, fisher, fox, hare, lynx, marten, muskrat, mink, river otter, skunk, squirrel (gray, flying and red), weasel (least, short-tailed and long-tailed), wolf, and wolverine. Beaver, mink, muskrat and otter harvest sites were present in all the major lake and rivers systems across their traditional lands. Big game species were woodland caribou, moose, buffalo, deer and, historically, barren land caribou (*ibid.).* At least ten fish were identified as important to the food supply, including whitefish, jackfish, lake trout, pickerel, perch and goldeneye, grayling, brook trout, ling cod, and chub. One Elder said, "Meat of the bush is moose, beaver, rat [muskrat], bear, porcupine, mink, lynx, owl, two different kinds of caribou, duck, all kinds of fish, rabbit [hare], chicken [grouse] – three different kinds and one white bird, ptarmigan, migrating from the north" (p. 74). Examination of the LMCPs for traditional use mammals found that most oil sands mines ($n \geq 6$) were planning for beaver, black bear, Canada lynx, snowshoe hare, fisher, moose, and muskrat. Several mines ($n=4$) included river otter, a few ($n \leq 3$) included bats, squirrel, and marten, and, progressively, one mine reintroduced wood bison during the 1990s to a region where they once roamed freely. The Fort McKay Chief at that time called the return of the buffalo "a symbol of our

shared prosperity" (FMFN 1994, p. XII). In contrast, habitat design for small-bodied rodents (e.g., groundhog, mink, mouse, shrew, northern flying squirrel), bats, marten, and weasels, and some medium and large mammalian species (e.g., cougar, deer, fox, grizzly bear, wolf, and wolverine) was typically not in the LMCPs. Many of the large mammals are at risk nationally and provincially, including woodland caribou, wood bison and wolverine due to a range of anthropogenic changes (Venier et al. 2014). So, reclamation of their habitat requirements presents an opportunity for the industry to support both ecological and cultural conservation across the region. There was more variation across the mines in planning for fish forage and spawning habitat with 11 taxa named and only lake chub, longnose sucker, and northern pike being common among the plans ($n \geq 5$). Additionally, habitat planning across the mines consistently included just one of the four traditional use amphibians, the Canadian toad ($n=7$). The omission of many traditional wildlife and fish taxa highlight a lack of comprehensive planning for Fort McKay's traditional land use needs and rights and potentially key predator-prey and boreal food web interactions that may affect the sustainability of healthy and viable wildlife populations.

One key driver for the limited traditional use wildlife planning is that regional reclamation planning guidelines supply habitat design information for a finite set of priority species and guilds, and they were not all applied in the LMCPs. In total, fourteen focal taxa were identified as wildlife indicators for reclamation success because they represent communities of ecological and socioeconomic importance (Appendix D of AENV 2010). The focal taxa include or support: species at risk (i.e., Canadian toad, woodland caribou); important ecological roles (i.e. lynx/snowshoe hare, pileated woodpecker, American beaver); habitat specialists (i.e. old growth forest bird community, boreal owl, North American river otter); cultural value (i.e., American black bear); traditional and recreational hunting, fishing and trapping (i.e., moose, common muskrat, fisher/red-backed vole, ruffed grouse); and bird watching (i.e., mixed wood forest bird community). They were selected due to the impracticality of monitoring all species of wildlife in the region (ibid.), which are estimated to be at least 271 bird species (IUCN and UNEWCMC 2017; LePage 2022), five amphibians (ABMI 2021; IUCN and UNEWCMC 2017), and up to 85 mammals and 130 species of fish (CWF 2006; IUCN and UNEWCMC 2017). The LMCPs consistently ($n \geq 5$) only included nine (i.e., black bear, Canada lynx, Canadian toad, fisher, moose, muskrat, lynx/hare, ruffed grouse, and waterfowl). It is recommended that habitat for crucial traditional use wildlife and fish taxa or guilds is designed in future iterations of mine closure and reclamation plans in partnership with Fort McKay IK holders. This study recommendation partially aligns with past recommendations from a biodiversity review of Appendix D of the regional planning guidelines (AENV 2010) by the Biodiversity TK Study that have yet to be enacted (Kirk et al. 2009; Two Roads Research Team 2011). Then again, Kirk et al. 2009 found the concept of target species to contradict the principle of interconnectedness. In response, the Two Roads Research Team (2011) recommended that future work start with the

documentation of a complete range of Indigenous languages and stories about wildlife ecology, stewardship and protocols and then using that information to inform revisions, if any, to the priority species list. Also, local Indigenous communities requested for baseline mapping of Indigenous placenames, which typically contain ecological knowledge, and land uses to be applied to revegetation planning for wildlife habitat (Two Roads Research Team 2011).

5.3.6 Traditional Use Birds

Bird species are abundant in the boreal region and vary by habitat type and season with most species being migratory (McGillivray and Semenchuk 1998; Semenchuk 1992). Habitat planning across oil sands mines consistently included the same bird guilds and species, including mixed wood forest birds within the order Passeriformes (n=5), ruffed grouse (n=5), waterfowl (n=7), and pileated woodpecker (n=4). A few mines planned for old growth forest passerine birds (n=2).

Mixed wood forests are important bird habitat in the Fort McKay Traditional Territory because the mixture of different deciduous and conifer trees creates a diversity of understory light conditions and plant communities (AENV 2010), such as tall riparian shrub communities, and a species-rich habitat (NRC 2006). Some representative passerine or songbird species of mixed wood forests that have traditional value include the yellow-bellied sapsucker, black-capped chickadee, blue jay and whiskey-jack. They are present year-round, except for the yellow-bellied sapsucker (Westworth Associates 2002). Fort McKay co-researchers described the importance of songbirds and a time before industrialization when they were heard more often, especially in the spring. Today, songbird calls have been diminished and replaced by industrial sounds from the nearby mines, such as mine equipment and wildlife cannons deterring wildlife from nearby tailings ponds. One land user said, “at night we heard the booms, like a war zone, and the traffic in our homes. All the heavy hauler breaks screeching which affects us daily”. Another important forest sound comes from Canada’s largest woodpecker, the pileated woodpecker. It plays a critical ecological role in forest ecosystems by supplying large nesting cavities for other birds and mammals (Westworth Associates 2002) in old-growth deciduous and coniferous stands (NRC 2006). Other important forest dwelling birds are the ruffed grouse and spruce grouse, which are the most abundant game bird in the region and are available year-round (FMFN 1994). But all “chickens” found in the region are important to Fort McKay, including the sharp-tailed grouse, willow ptarmigan and gray partridge (Garibaldi Heritage and Environmental Consulting 2006). They are also important to wildlife predators, like owls, hawks, lynx and coyote (AENV 2010; Skatter et al. 2020).

Waterfowl are another important taxa that are common to the Fort McKay Traditional Territory since approximately half of the landscape is covered by wetlands, mostly fen and bog peatlands (Vitt et al. 1996). A variety of ducks, geese, swans, pelicans and loons supply feathers and hides for textiles and

other crafts, meat and eggs (FMFN 1994). Gull, duck and geese eggs are considered prime delicacies. For instance, a Fort McKay co-researcher shared memories of collecting duck eggs at her uncle's cabin with family members before they were displaced by one of the open pit mines. Another Fort McKay Elder cited in FMFN (1994) described hunting "ducks of all kinds, over ten different kinds" (*ibid*., p. 108).

Ten categories of birds were often mentioned for their cultural value by Fort McKay Elders, including geese, duck, loon, pelican, swan, grouse, eagle, gull, owl and crane (FMFN 1994). Most LMCPs ($n \geq 6$) were not planning for owl, eagle, pelican or crane habitat. It is recommended that habitat for owl, eagle, pelican, and cranes are included in future iterations of mine closure plans.

5.3.7 Reclamation Recommendations and Limitations

A limitation of this study was the lack of direct data analysis with Fort McKay community member co-researchers. The study would have been improved by designing a series of workshops to conduct the data analysis and results interpretation with the active participation of all Fort McKay co-researchers using culturally relevant methods. In contrast, draft results from the data analysis conducted by a university co-researcher were presented during a validation and verification workshop. Resourcing the research process continuously along the Fort McKay road was limited by a lack of funding when an oil sands funder terminated their participation in and funding of the Co-Reclamation Project. It was also hindered by the inability to meet safely in person with all Fort McKay co-researchers between April 2020 and June 2022 due to the COVID-19 pandemic and western research biases that university co-researchers are learning to identify and overcome.

Other limitations of this study and oil sands mine closure planning were the lack of resourcing to examine reclaimed lands from local Indigenous Peoples' perspectives and not connecting monitoring data results to plan assumptions and estimates. The latter has likely contributed to an underestimation of biodiversity in reclaimed landscapes today. For example, an Early Successional Wildlife Dynamics program monitored the mammals, birds and amphibians returning to oil sands reclaimed landscapes (Hawkes et al. 2013; Hawkes and Gerwing 2019). Examination of reclaimed areas ranging in age from 2 to 33 years at five oil sands mines identified that at least eighteen species of small mammals were using these renewed landscapes, including many species that were not planned for, like the least chipmunk, deer, mink, red fox, northern flying squirrel, shrew and weasel species. Over average, wildlife communities in reclaimed forests were 52% like those in mature forests at this early stage of succession suggesting some comparable ecological functionality is possible (Hawkes and Gerwing 2019). Although, it is still unclear if renewed habitats will resemble or function more similarly to the natural landscape in the future or become a novel ecosystem altogether (*ibid.*). Wetland-dependent species have also succeeded in occupying surfaced mined reclaimed landscapes, including wood frog, boreal chorus frog

and Canadian Toad (Hawkes et al. 2020) even though amphibian habitat focused solely on the Canadian Toad. While the Biodiversity TK study provided recommendations related to the inclusion of IK holders and land users in reclamation monitoring, no oil sands company has provided the opportunity for collaborative monitoring of reclaimed landscapes to date. In contrast, there are numerous western science mine closure research and monitoring projects resourced by the oil sands industry (e.g., COSIA 2021; NSERC 2012; Yelland 2012). The Early Successional Wildlife Dynamics program is one example of a monitoring project designed and executed from a western science perspective with long-term resources from the oil sands industry, but without the participation of Fort McKay or other local IK holders that are reliant on the reclaimed cultural landscapes for their TLUs.

The lack of certainty on reclamation biodiversity and cultural landscape outcomes and the timelines for Fort McKay to exercise traditional use rights on their traditional territory affects confidence in oil sands mine closure. There continues to be little understanding about the ability of reclaimed landscapes to provide wildlife habitat (Hawkes and Gerwing 2019), comparable plant communities (Dhar et al. 2018), and, consequently, Fort McKay's numerous interconnected TLUs. We know that plant composition in oil sands reclaimed sites differ from the natural region for decades, at least, but do not adequately understand the factors that influence plant community succession (Dhar et al. 2018). So, oil sands mines make planning assumptions that plant biodiversity will increase or evolve with soil handling approaches and over time in the reclaimed landscape. LMCPs used phrases like "it will take many years for mature vegetation types to develop" and "peatlands such as bogs and fens…take time to develop." The reclamation best practice of reusing native soils in landscape reconstruction supports natural regeneration of some plants from the soil seed bank (Dhar et al. 2018, Marlowe 2011) that were not necessarily included in planting prescriptions. For instance, 37 sedge species out of at least 66 native species regenerated from reused soils (Marlowe 2011). Albeit bog, fen and boreal grassland sedge species were missing (Marlowe 2011) since few peatlands have been reclaimed (Daly et al. 2012). Another general assumption was that LMCPs become more comprehensive and capable of meeting key stakeholder and Indigenous communities' expectations over time. The mines referred to this as an "adaptive management" and/or an "iterative approach" to closure planning whereby cycles of planning, implementation and monitoring, new research and technology, and ongoing stakeholder and Indigenous community input over the course of the mine life results in more robust closure and reclamation plans. These assumptions and unknowns point to a critical cultural knowledge gap, which is the lack of development trajectories for the distinct types of reclaimed ecosystems to achieve adequate biodiversity and to satisfy TLU objectives (AENV 2010). There is also a lack of guidance informed by IK holders on defining TLU targets and measures even though this recommendation was made through a multistakeholder working group in 2011 (Two Roads Research Team 2011). A work plan was developed

to close this gap but a lack of prioritized funding for the IK road has stalled its execution (The Community Liaison Research Team 2013).

Fort McKay Elders recognize that reclamation is important to ensure native plants, wildlife and fish return to their traditional lands (Garibaldi Heritage and Environmental Consulting 2007). The LMCPs and their planting prescriptions and habitat designs were designed to "meet current regulatory requirements, guidelines and the expectations of Aboriginal communities", according to one oil sands mine. However, the biodiversity results point to many closure planning gaps for key traditional use taxa and support earlier calls from local Indigenous communities and a multistakeholder group to revise revegetation guidelines, wildlife and fish indicators of reclamation success (Klein 2015). Future work should allow for IK holders to develop their own monitoring protocols to assess whether or not TLU capability is establishing. This includes giving Fort McKay IK holders the opportunity and resources to create their own monitoring programs, to collect their own data, and to define their own cultural trajectories. This aligns with past a recommendation from Fort McKay and other local Indigenous communities to develop their own IK procedures, benchmarks, and timelines for certification of reclamation projects (see recommendation 1.4 in Two Roads Research Team 2011, 2012 or Table 2-5).

5.4 Conclusions

Fort McKay seeks transparent communication and understanding on the plants, wildlife, and fish communities that will return to their renewed traditional lands and waters and the timelines for when their future generations can sustainably practice their many traditional activities and rights again. A systematic review of traditional land use planning at oil sands mine projects operating in the Fort McKay Traditional Territory found historic and current trends, gaps, drivers and opportunities in consultation, engagement and TLU approaches towards reclaiming Fort McKay homelands. Recommendations developed more than 10 years ago by Indigenous communities, including Fort McKay, were re-assessed to identify where these recommendations have not been addressed and how the gaps in participatory planning continue despite being clearly articulated in 2011.

Consultation, engagement and communication about sands mine closure and reclamation has evolved over the last half-century. The oil sands industry initially operated with no consultation, engagement, or inclusion of the affected Indigenous rights holders and communicated unrealistic closure expectations (L'Hommecourt et al. 2022). Review of LMCPs from seven oil sands mines operating in the Fort McKay Traditional Territory showed that consultation and engagement today includes affected Indigenous communities upfront, when a mine project is applying for operating approval, and during some project EPEA approval renewal reviews with the government, but not during regular closure plan updates. Development of LMCPs were driven by regulatory policy, directives, approval requirements,

and western science-focused guidance documents and methods that do not include complementary and inclusive Indigenous ways of knowing, learning and working as a good practice (ICT 2015; Two Roads Research Team 2011, 2012). Other findings were: transparent communication exists today that reclaimed lands will be markedly different than pre-disturbance but are planned to have the capability to support traditional uses; all closure plans are planning for TLU (n=7); a reclamation certification framework has traditional use indicators to assess closure outcomes, but not methods, measures and thresholds; funds were rarely provided for independent technical review (n=2); local IK holders were included through reclamation advisory committees in a few cases (n=2); and only one Indigenous advisory committee adopted a progressive intercultural framework to meaningful support plural ways of learning (n=1). While there was a notable increase in Indigenous consultation and engagement activities today compared to the 1960s and all plans are targeting traditional use, most had limited or no evidence that local Indigenous communities' questions, concerns, and IK were adequately captured (n=1), resulted in Indigenous-informed closure decisions (n=2), or were accommodated (n=1). These results were confirmed by low biodiversity quantifications of the traditional use plant, mammal, fish and amphibian, and bird taxa included in the LMCPs. On average, oil sands mine closure plans targeted 101.6 or 28.0% of Fort McKay's 363 traditional use species. Yet these plans were approved by the Alberta Energy Regulator and are being implemented in the reconstruction of the Fort McKay Traditional Territory today. These results align with Fort McKay co-researchers sentiments that they don't feel represented in LMCPs. One Fort McKay co-researcher summed up oil sands mine closure planning as, "time and time again in meetings with industry we hear that government had approved the sites or the activity. The companies effectively just come and tell the community what they are doing without providing any opportunities for influencing what is being done. The government keeps handing the companies land to mine and use."

Study results found that current mine closure and reclamation approaches do not adequately understand, nor mitigate TLU impacts and Indigenous rights. In response, we make the below recommendations to help improve Alberta's responses to mine closure and reclamation of the Fort McKay Traditional Territory degraded by oil sands mining so that future generations can exercise traditional land use rights post-closure. These opportunities align with consultation, engagement, and mine closure good practices, including: application of TLU data gathered during the EIA process to closure planning; co-creation of TLU reclamation certification targets; a shared closure vision between government, a mine operator, and the local Indigenous rights holders; new or renewed IBAs include long-term cultural reclamation commitments; monitoring of reclaimed sites using IK monitoring protocols and analysis of the monitoring data by IK holders; and revised or new guidance documents that contain detailed traditional use planning methods, TLU trajectories, reclamation certification targets, and a more comprehensive list of taxa with the support of local Elders, land users, and other IK holders (Table 4-1).

The socioeconomic and cultural sustainability of Fort McKay depends on improved reclamation of homelands.

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Tables

Table 5-1 Consultation and engagement good practices with Indigenous Peoples

Good Practice	Description	Citation
Engage early and often	Before project plan development has started and continuously throughout the life of the project to avoid infringing on constitutionally protected rights	ICT 2015; Joseph and Joseph 2017
TLU Study	Gauge the extent of past and present use of the land for traditional activities	Baker 2013
Free, Prior and Informed Consent (FPIC)	Obtain the FPIC of local Indigenous peoples before going ahead with a project and, if not achievable, reconsider the feedback and project plan	Lertzman 2017, UN 2007
Capacity funding	Supply sufficient capacity funding early in the process for meaningful community involvement	Longley et al. 2022
Be Transparent	Transparent communication is critical to supporting trust.	ICT 2015
Information sharing	Supply information in a timely manner and well before project deadlines so there is time for review	ICT 2015
Interconnection	Recognize and respect the relationship between the community and the land	ICT 2015; Joseph and Joseph 2017
Learn about the Community	Research and understand the Indigenous Nation's culture, protocols and preferences before proposing or imposing an approach to the consultation process	ICT 2015; Gamble and McQueen 2019; Longley et al. 2022
Acknowledge the past	Acknowledge the history and that the broken relationship is systemic to de-personalize the situation. Individually, be open to self-evaluation and critique and, organizationally, identify how reconciliation will be incorporated into agreements and plans	ICT 2015; Jimmy et al. 2019; Podlubny 2019
Long-term Commitment	Demonstrate a long-term commitment to your relationship with the community	Jimmy et al. 2019; ICT 2015; Gamble and McQueen 2019
IK Ownership and Control	Respect the ownership of the IK and the context it was gathered within	ICT 2015, FNIGC 2014
Record Keeping	Keep diligent records to document the information shared by Indigenous peoples, use of IK, and actions to mitigate, compensate or offset impacts to Indigenous rights	Longley et al. 2022
Seek Accommodations	When a project may adversely impact constitutional rights. Don't assume that fulfillment of legal and regulatory requirements will be sufficient for plans to proceed	Joseph and Joseph 2017
Principle of Self-Determination	An ethical approach to resource extraction includes Indigenous Peoples and their needs as determined by them when in the traditional territories of Indigenous Peoples	Jimmy et al. 2019; Lertzman 2017; UN 2007
Impacts Benefits Agreements (IBA)	A negotiated agreement between the affected Indigenous community and extractive company that names impacts and ensures the community benefits from the project	ICMM 2013; Lertzman and Vrenenburg 2005; O'Faircheallaigh and Lawrence 2019; Southcott 2018
Co-Management or Co-Design	Actively involve local Indigenous communities as partners in plans to ensure goal alignment and to address socioeconomic, environmental and cultural benefits	Gamble and McQueen 2019; Lertzman and Vrenenburg 2005; Simmons et al. 2012
Ethical space	Support a shared space for groups of people with different worldviews to engage in respectful intercultural dialogue	Crowshoe and Lertzman 2019; Ermine 2007
Expert Advisory Panels	Independent advisory panels supply advice that can lead to increased trust in project activities	Lertzman 2010; Swanson et al. 2011

Table 5-2 Traditional land use research questions and analyzed responses for the seven oil sands mines operating in that Fort McKay Traditional Territory

Research Questions	A	B	C	D	E	F	G
1. Is there evidence Indigenous Nations were consulted in closure plan development? (See Table 5-3 for a list of Nations)	Yes	Yes	Yes – mine amendment plan	No	Yes	Yes	Yes
2. Is there evidence Indigenous Nations received funding for the consultation and/or to conduct an independent technical review of the closure plan they were being consulted on?	Yes - for consultation No - for a technical review of the current LMCP	No	No	No	No	Yes – technical review of original application, but not current LMCP	No – funding requested for a technical review
3. Is there evidence Indigenous Nations' questions, concerns and IK were adequately captured during consultation on the LMCP?	Limited – see Table 5-3	Limited – see Table 5-3	Limited – see Table 5-3	No – see Table 5-3	Limited – see Table 5-3	No – see Table 5-3	Yes – see Table 5-3
4. Is there evidence Indigenous Nations' questions, concerns and IK were addressed in a manner that resulted in closure plan decisions? (See Table X for details)	Limited – see Table 5-3	Limited – see Table 5-3	Limited – see Table 5-3	No – see Table 5-3	Yes – see Table 5-3	Yes – see Table 5-3	Limited – see Table 5-3
5. Is there evidence of an analysis of impacts to TLU resulting from community concerns and compensation, offsetting, or	No – see Table 5-3	No – see Table 5-3	Limited – see Table 5-3	No – see Table 5-3	No – see Table 5-3	Yes – see Table 5-3	No – see Table 5-3

other accommodations?							
6. Is there evidence the Crown was involved in the consultation and afterwards when accommodation were discussed?	No	No	No	No	No	No	No
7. Did the closure plan explicitly mention TLU or similar variants?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8. Was TLU selected as an end land use for any reclamation landform?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. What method did the operator use to define the TLU outcome?	Ecosite classification and habitat for key wildlife	Ecosite classification and habitat for key wildlife	Ecosite classification and habitat for key wildlife	Ecosite classification and habitat for key wildlife	Ecosite classification and habitat for key wildlife	Ecosite classification and habitat for key wildlife	Ecosite classification and habitat for key wildlife
10. Does the Plan have a closure vision?	No, but the goal was for self-sustainable, equivalent capability, & consultation	No, but the goal was for certification of land, & self-sustaining	No, but the goal was for certification of land, & self-sustaining	No, but the goal was for self-sustaining, & equivalent capability	No, but the goal was for self-sustaining, & equivalent capability	No, but the goal was for self-sustaining, & equivalent capability	No, but the goal was for certification, self-sustaining, equivalent capability, & value to stakeholders
11. Was the closure vision co-created with local Indigenous Nations?	No	No	No	No	No	No	No
12. Is there evidence of an intercultural, multi-perspective and multi-way of knowing learning process?	Limited – use of Cree and Dene languages to name reclaimed lands	Limited – use of Cree language to name reclaimed lands	Yes – an Indigenous advisory committee applying a Two Roads Approach	No	No	Limited – an Indigenous advisory committee to focus on cultural land connection, more holistic planning	No
13. Is there an acknowledgement of the loss and grief local Nations feel for their altered traditional territories, and land-based memories and traditions?	Limited - acknowledged environmental, socioeconomic impacts to stakeholders	No	No	No	No	No	No
14. Is there evidence the relationship with local Indigenous	No	No	Limited – an Indigenous	No	No	Limited – advisory committee, acknowledged	No

Nations is guided by principles of truth and reconciliation (e.g., UNDRIP, TRCC)?			advisory committee			the land is "traditional territory"	
15. What traditional species were included in the LMCP?	See Tables 4-4 to 4-7 for details	See Tables 4-4 to 4-7 for details	See Tables 4-4 to 4-7 for details	See Tables 4-4 to 4-7 for details	See Tables 4-4 to 4-7 for details	See Tables 4-4 to 4-7 for details	See Tables 4-4 to 4-7 for details

Table 5-3 Oil sands mine projects and the evidence their mine closure plans held Indigenous Knowledge, and traditional land use concerns, assessment and accommodations.

Mine	Year LMCP Created	Indigenous Communities Consulted on LMCP	Evidence of Indigenous Knowledge and Concerns Captured	Evidence of Indigenous Knowledge and Concerns Addressed in LMCP	Evidence of a TLU Assessment and Accommodations
A	2016	Fort McKay First Nation, Athabasca Chipewyan First Nation, Mikisew Cree First Nation, Chipewyan Prairie Dene First Nation, Fort McMurray First Nation #468	•Several broad statements about engagement, such as an Elder committee discussed a variety of land or preservation, reclamation and related issues • Acknowledged environmental and socio-economic impacts concerns and commitment to TLUOR •2012 tour with no captured feedback •Desire to reclaim land using original landscape materials •Trapline and site access concerns	•A 2007 request for reuse of materials from original landscape was incorporated into the operating license and a follow-up tour show incorporated feedback •2009 initiative to increase traditional shrub species – pin cherry, dogwood, blueberry, fireweed, Labrador tea, dwarf birch •2008 traditional wetland plant study on rat root, but not in plans today •Trapper identification cards were created to support more efficient site access and compliance with Fort McKay Trapper Consultation Guidelines	•No TLU assessment or associated compensation, offset, or other accommodations •Agreements with Indigenous Nations noted (e.g., bilateral agreement, good neighbours agreement) but no details supplied
B	2018	Fort McKay First Nation, Mikisew Cree First Nation, Athabasca Chipewyan First Nation, Fort McMurray No. 468 First Nation	•Held many vague, broad statements with few details on Indigenous Nation's feedback, such as the "ultimate goal is to increase the use of TK in reclamation and closure of the site, to the extent practicable" and "several collaboration studies to collect and incorporate traditional knowledge" •Numerous engagement meetings and events were identified on pit lake research and monitoring but lacked evidence of captured feedback •Fen wetland built in 2013 to meet a regulatory requirement to supply information on the viability of reclaimed muskeg/peatlands •Named the importance of hunting moose for food, trapping beaver for food and medicine, and gathering vegetation, roots and berries for food, medicine and spiritual purposes •Mentioned a 2013 study on traditional wetland plant and site access for TLU	•No identified changes to pit lake or inclusion of peatlands in LMCP •Historic planting of ratroot was executed, but ratroot and the traditional wetland study plants are not in the current vegetation plan •Traditional vegetation, associated roots and berries were not in vegetation plan •Moose habitat planned with d, e, and h ecosites, and forage shrubs (saskatoon, willow and cranberry) •Beaver habitat planned with d, e and f ecosites •Vague statement that over time, where it is safe to do so, there may be an opportunity for Indigenous community members to access reclaimed land for some traditional activities, prior to certification and return of land to the Crown	•No TLU assessment or associated compensation, offset, or other accommodations noted
C	2017	Fort McKay First Nation, Mikisew Cree First Nation, Athabasca Chipewyan First Nation, Fort McMurray No. 468 First Nation	General statements of concern about impact to land disturbance and wildlife, lack of access to their traditional territory, and long time before closure is completed	•Tailings treatment, water capped pit lakes and saline basal water management closure accelerates closure timelines, but some additional land disturbance •Moose and beaver habitat in plans •General statement on actively pursuing opportunities to incorporate feedback from local Indigenous Nations to create a reclaimed landscape that can, over the long-term, support sustainable traditional use. A specific example was supporting a traditional plant workshop and resulting photobook.	•A trapper's cabin was in the planned mining area and will be removed or relocated before mining in accordance with the Fort McKay Trapper's compensation matrix •No TLU assessment was completed •No other compensation, offset, or accommodations
D	2020	No communities consulted	Indigenous groups concerns generally related to: loss of land and water for TLU activities; loss of water and land access; change in abundance, distribution and healthy of traditional use resources (e.g., wildlife, fish and vegetation); air quality; noise pollution; human health effects from emissions and contamination; the ability of the reclaimed landscape to support TLU; reclamation in a manner compatible with cultural values; socioeconomic and cultural changes from reduce ability to practice TLU activities	•The company proposed the following as mitigation: continued engagement to understand TLU; access management planning to maintain trapper access to site; avoid trapping impacts where possible; learn more about spiritual part of reclamation •Use of an iterative approach whereby feedback is documented and kept in an internal register for integration into future closure plan iterations. Over time they expect the plan to increasingly reflect IK with respect to land use •They plan to follow regulatory processes and guidelines and work with Indigenous communities to define and monitor reclamation success, such as on wildlife and biodiversity	•No TLU assessment or associated compensation, offset, or other accommodations noted
E	2019	Fort McKay First Nation, Fort McKay Metis, Athabasca Chipewyan First Nation, Mikisew Cree First Nation, Fort Chipewyan Métis, and McMurray Métis	Earlier version of the LMCP identified: concerns with copious amounts of dry landscapes; concerns with pit lakes; desire diverse mixed forest; need for moose habitat, beavers as land healers, berry patches and landscape connectivity and spiritual elements	•Current plan now contains: more wetlands; two pit lakes instead of four; continue to plant some trees and shrubs; closure drainage design supports connectivity; beaver habitat included trees and shrubs for forage •No spiritual design elements included •General statement about building trust and understanding in reclamation process through meetings and field tours over time	•No TLU assessment or associated compensation, offset, or other accommodations noted
F	2017	Fort McKay First Nation, Fort McKay Métis, Athabasca Chipewyan First Nation, Mikisew Cree First Nation	•Generic statements about the need for traditional land uses in reclamation and to leverage Indigenous expertise • Indigenous reclamation committee was formed as per regulatory requirement •Detailed items were: importance of accessing land and understanding how to reclaim muskeg/peatlands	•Many general statements about "ongoing seed collection", "regular discussions, and cultural initiatives" •Access management plan provides safe escorted access for traditional land users •Rat root was planted in a compensation lake and in current planting plan •Early engagement before compensation lake construction resulted in over-wintering habitat for fish in the design •Reorientation of ecosites and inclusion of wildlife access points mimicked pre-disturbance conditions •Use of natural landforms in the region and IK to design landforms with natural topographic appearance (e.g., plains, low hills, irregular plateaus)	•The renewal application noted that over 200 community consultation activities, a technical review, job fairs, open houses, community meetings and a TLU assessment with affected Indigenous Nations were completed during the initial project application but associated compensation, offset, or other accommodations were not noted •Agreement funding with Indigenous Nations noted
G	2016	Fort McKay First Nation, Fort McKay Métis, Athabasca Chipewyan First Nation, Mikisew Cree First Nation	Underlying themes included: allowing for beaver dams and lodges and planning for habitat enhancement in the closure landscape where they don't pose a safety risk; healthy lake ecosystem capable of fish habitat and spawning in pit lakes; riparian areas and littoral zones capable of supporting moose; wetland reclamation targets traditional use species, including plants, berries, medicines and wildlife	Changes to plans included: inclusion of beaver habitat in landscape; fish habitat in pit lakes; riparian and littoral zones designed for moose movement; and wetland reclamation targeted traditional land use vegetation (i.e., berries)	•No TLU assessment or associated compensation, offset, or other accommodations noted

Table 5-4 Cultural use plants used by the Fort McKay First Nation.

Common Name	Latin Name	Cree Name	Dene Name	Alberta Conser-vation Status	Oil Sands Mine Closure and Reclamation Plans						
					A	B	C	D	E	F	G
Alder-Leaved Buckthorn	*Rhamnus alnifolia*			Secure							
American Dragonhead	*Dracocephalum parviflorum*			Secure							
Balsam Fir	*Abies balsamea*	napakasit (Marles et al. 2000), "Ba-gosh-ees-ta" (Elder), nupukasik, pikew-ahtik, pikowāhtik, napakāsīt, nāpukītik, nāpukasī	jur-a-kee, ts'u reki	Secure	•			•	•	•	
Balsam Poplar	*Populus balsamifera*			Secure	•	•	•	•	•	•	•
Beaked Hazelnut	*Corylus cornuta*			Secure	•	•		•	•	•	•
Bishop's Cap	*Mitella nuda*			Secure							
Black Spruce	*Picea mariana*	setakwunatik, ithinā(h)tik, miniahik, setakwunatik, pekewatik, mithawapakōnuk, mistikōpiki	el (Meaning "branch")	Secure	•	•	•		•	•	•
Bladderwort	*Utricularia sp.*			Secure				•	•		•
Blue Bells	*Campanula rotundifolia*	see pee koh see wren ah gun suk		Secure				•	•		
Bluejoint	*Calamagrostis canadensis*			Secure		•		•	•	•	•
Bog Birch	*Betula glandulosa*	"ah-di-bee-moo-ah-tigwah" (Elder), waskway neepsee ah tikwa		Secure	•				•	•	•
Bog Cranberry	*Vaccinium vitis-idaea*	wee sah geem nah; pakatayeemna, weesakeemna (berry)	Na^{nt}lh'ér, Ji sutin	Secure	•	•		•	•	•	•
Bog Rosemary	*Andromeda polifolia*			Secure						•	
Bog Violet	*Viola nephrophylla*			Secure							
Bracket Fungi	*Polyporaceae spp.*			Secure							
Bracted Honeysuckle	*Lonicera involucrata*			Secure				•	•	•	•
Bristly Black Currant	*Ribes lacustre*			Secure							
Brown Mosses (Group)	*Bryum sp., Callieron sp., Campylium sp., Drepanocladus sp., Hypnum sp., Scorpidium sp., Tomentypnum sp.*			Secure					•	•	•
Bulrush (Group)	*Schoenoplectus sp., Scirpus sp.*			Secure	•	•	•	•	•	•	•
Bunchberry	*Cornus canadensis*			Secure	•						
Bur Reed	*Sparganium sp.*			Secure		•		•	•	•	•
Bush Honeysuckle	*Diervilla lonicera*			Secure							
Canada Buffaloberry, Soapberry or Snakeberry	*Shepherdia canadensis*	kinipoonatic		Secure	•	•		•	•	•	•
Canada Goldenrod	*Solidago canadensis*			Secure				•	•		
Canada Thistle	*Cirsium arvense*			Exotic							
Chokecherry	*Prunus virginiana*			Secure	•				•	•	•
Clasping-Leaved Twisted Stalk	*Streptopus amplexifolius*			Secure							
Cloudberry	*Rubus chamaemorus*	paiyakwatoomna		Secure						•	•
Club-Mosses	*Lycoperdium spp.*			Secure							
Common Blueberry	*Vaccinium mytilloides*	inimnatik (blueberry root) (Maries et al. 2000), inimena (Marles et al. 2000), inimena, enimina, īyinomin, iynimin, ithīnīmina, sīpīkōmin, eeneemeenahitik	tsánlhchoth	Secure	•			•	•	•	•
Common Cattail	*Typha latifolia*	otawuskwa, ōtawaskwa, ā(h)towusk, wahōtāhuk, pāsīhkan, teewamisatow	tlh'ogh k'a, tlh'ochok'ághe, káláchuzé, k'élachuze	Secure		•		•	•	•	•
Common Dandelion	*Taraxacum officinale*			Exotic							
Common Labrador Tea or Muskeg Tea	*Rhododendron groenlandicum*	muskekopukwa, muskekopakwa, muskakopukwu, maskīkowāpoy, maskēkopakwa, maskēkopakwatī, meskiy(h)kowpuk, mōkōpukwatikwah, mocopawkwatikwa, tīmaskīk, kākīkīpak, mukegoh pugwa	nághodi	Secure	•	•	•	•	•	•	•
Common Juniper	*Juniperus communis*	usinee wahgoop; kahkakew-mina, kahkakewatik, ahaseminanatik, kakakīnmīniatik, kākākīmīnātik, kākākīwīmināhtik, māsakiys	datsánjié	Secure							
Common Pink Wintergreen	*Pyrola asarifolia*			Secure				•	•		
Common Plantain	*Plantago major*			Exotic							
Common Scouring Rush	*Equisetum hyemale*	ahnskooskwah		Secure							
Common Tansy	*Tanacetum vulgare*			Exotic							
Common Wild Rose	*Rosa woodsii*	oh-gin-ee-ack, oo-tin-eyuk, or oh gone ma ga see (FM workshop); okīnīak or ōginīatik (Marles et al. 2000), kaminakuse, okīnīa, okwāminakwasi-āhtik, ohinīwiwapgwīnīwa, ogiminakasiatik, ōginīatik, owkiniy, owkāmnekusiy	íntsólé	Secure					•	•	•
Common Yarrow	Achillea borealis	wapunewusk, wapanowask, wapānaskiy(h)k, astēskotawān, astawēskōtawan, mistīgonīmaskigiah, miskigonimaski, oskānīmaskīgī, osgunīmasgigah, wīcipōwānīwistikwān, kāwāpistikwāīkāpawik, āmowask	t'anchay delgai	Secure				•	•		
Common Puffball	*Lycoperdon perlatum*			Secure							
Cotton Grass	*Eriophorum sp.*	ohpeewahsah		Secure	•					•	•
Cow Parsnip	*Heracleum maximum*			Secure							
Creeping Snowberry	*Symphoricarpos albus*			Secure	•						
Crowberry	*Empetrum nigrum*			Secure							
Diamond Willow, Beaked Willow	*Salix bebbiana*	neep sih		Secure		•	•	•	•	•	•
Diamond Willow Fungus	*Lenzites betulina*	neep sih wasus kwe to		Secure							
Dwarf Blueberry	*Vaccinium cespitosum*			Secure							
Dwarf Raspberry	*Rubus arcticus ssp. acaulis*	Chisoomna		Secure							
Fairybells	*Prosartes trachycarpa*			Secure							
Fireweed	*Chamerion angustifolium*	hapaskwa, askapask, athkāpask, ākāpuskwah, liy(h)kāpusk	góndhi'elé	Secure				•	•		
Flat-Topped White Aster	*Aster umbellatus*			Secure							
Fly Honeysuckle	*Lonicera villosa*			Secure							

Freckle Pelt Lichen	*Peltigera aphthosa*			Secure							
Fringed Gentian	*Gentianella macounii*			Secure							
Fringed Milkwort	*Polygaloides paucifolia*			Secure							
Frog Pelt Lichen	*Peltigera neopolydactyla*	osawaaskiya		Secure							
Green Alder	*Alnus viridis ssp crispa*	"ah toos bee" (James Grandjambe); atōspīah (Marles et al. 2000)		Secure	•			•	•	•	•
Golden Thread-Moss	*Leptobryum pyriforme*			Secure							
Hair Lichens, Old Woman's Hair, Old Man's Beard	*Usnea sp., Bryoria sp.*	Nootookoo weestahgayah, miyapakwan, mithapakonuk		Secure							
High Bush Cranberry	*Viburnum opulus*	nepiminana, nīpiminān		Secure							
Hornwort	*Ceratophyllum demersum*			Secure							
Horsetails	*Equisetum spp.*			Secure		•		•	•	•	•
Indian Paint Fungus	*Echinodontium tinctorium*			Secure							
Jack Pine	*Pinus banksiana*	oskatik, ōskāhtak	gane, gani	Secure	•	•	•	•	•	•	•
Kinnikinnick, Common Bearberry	*Arctostaphylos uva-ursi*	"bee-hue-mina" (whole plant) (James Grandjambe); oochagaaipakwa; āchiygasipuk, muskomina, muskominanatik, pithīkōmin, kinnikinnick, oochagassimna or chigasphahoomna (berry)	deth nee ton ya; déni (berries) (Marles et al. 2000); délhni, déni, 'int'áné	Secure	•				•	•	•
Knight's Plume	*Ptilium crista-castrensis*	astāskamik		Secure							
Larkspur	*Delphinium spp.*			Secure							
Marsh Cinquefoil	*Comarum palustre*			Secure				•	•	•	•
Marsh Marigold	*Caltha palustris*			Secure				•	•	•	
Milfoil	*Myriophyllum sp.*			Secure		•	•	•	•	•	•
Mooseberry or Low Bush Cranberry	*Viburnum edule*	moosomina	denÍjÍé	Secure	•	•			•	•	•
Northern Bedstraw	*Galium boreale*			Secure				•			
Northern Black Currant	*Ribes hudsonianum*			Secure				•	•	•	•
Northern Gooseberry	*Ribes oxyacanthoides*	niskiminah		Secure							
Northern Valerian	*Valeriana dioica*	ups sa gee wus koos		Secure							
Pasture Sagewort	*Artemisia frigida*		Sagebrush	Secure							
Peat Mosses (Group)	*Sphagnum sp.*	uske, muskak, askīyah, mīkaskwahkawow, āsāskumkwa, eskiya	tthal	Secure						•	•
Perennial Sow Thistle	*Sonchus arvensis*			Exotic							
Pin Cherry	*Prunus pensylvanica*	ne-syoo-mina" (FM elder); "ba-goo-min-nana" (FM elder); pusawemina, pasisāwimin, pāsuwiymayātik	jíyëraze	Secure	•	•			•	•	•
Pitcher Plant or Frog Pants	*Sarracenia purpurea*	ayekitas, ayikitās, ayīkicās, athīkacās	ts'ëli tili	Sensitive						•	•
Plated Rock Tripe	*Umbilicaria muehlenbergii*			Secure							
Pondweed (Group)	*Potamogeton sp., Stuckenia sp.,*			Secure		•	•	•	•	•	•
Puffball	*Calvatia booniana*			Not Assessed							
Quinine Conk Fungus	*Fomes officinalis*		Agarikon	Secure							
Ratroot	*Acorus americanus*	wachuskomechiwin (Marles et al. 2000) (FM Workshop); wachuskomechiwin, wachuskowmiytsuwin, wacaskōmīcowin, wacaskwatapih, wiy(h)kiyuw, wihkes, wīkīs, wihkis	dzën ni	Secure				•	•	•	•
Red and White Baneberry	*Actaea rubra*	achiygasipuk, muskomina, muskominanatik, pithikomin, kinnikinnick	delhni, deni, int'ae	Secure							
Red-Belted Conk	*Fomitopsis pinicola*			Secure							
Red Osier Dogwood, Red Willow	*Cornus sericea*	"mee-howp-ee-ma-guista" (FM elder); mīhkwanīpisīya (Marles et al. 2000) mehka pemakwa, mikwapamuk, mīhkwa pēmakwa, mīkobīmaka, mikwanbimaka, mikwapimakwah, mithkwāpīmak, miskwāpīmak, mi(h)kwapiymak, mikwapiskaw, nipsiy wasaskwetow pīmīhkwāhtik, mīhkwanīpisīya, mikobimuk	k'ái k'ozé	Secure	•	•	•	•	•	•	•
Red-Stemmed Feathermoss	*Pleurozium schreberi*	astāskamik		Secure						•	•
Reindeer Lichen	*Cladonia rangiferina*	Wāpiskastaskamikh, ahdikomaychoona	tsanjú	Secure							
River Alder	*Alnus incana ssp tenuifolia*	Ahtoospee; "o-chi-gash-o-pi-qua" (for inner bark) (FM elder)		Secure	•	•	•	•	•	•	•
Rush (Group)	*Juncus sp., Lizula sp.*			Secure	•	•	•	•	•	•	•
Rock Tripe	*Umbilicaria spp.*			Secure							
Saskatoon	*Amelanchier alnifolia (Nutt.)*	sasktoomah		Secure	•	•		•		•	•
Sedges (Group)	*Carex sp.*			Secure	•	•	•	•	•	•	•
Seneca Snakeroot	*Polygala senega*			Sensitive							
Showy Aster	*Aster conspicuus*			Secure							
Shrubby Cinquefoil	*Dasiphora fruticosa*			Secure	•						
Slender Beak Rush	*Rhynchospora capillacea*			Secure							
Small Bog Cranberry	*Vaccinium oxycoccos*			Secure						•	•
Smooth Aster	*Aster laevis*			Secure							
Smudge Fungus	*Fomitopsis pinicola*			Secure							
Spikerush (Group)	*Eleocharis sp.*			Secure				•	•	•	•
Stair-Step Moss	*Hylocomium splendens*	astāskamik		Secure						•	•
Stemless Lady's Slipper	*Cypripedium acaule*			Sensitive							
Stinging Nettle, Common Nettle	*Urtica dioica*	mus ah nuck		Secure							
Strawberry Blite	*Blitum capitatum*			Secure							
Stovepipe Plant	*Unknown*	kos tas gway ka nah		Not Assessed							
Swamp Birch, Dwarf Birch	*Betula pumila*	Ahdikoonanatik		Secure	•	•				•	•
Sweet-Coltsfoot	*Petasites frigidus var. x vitifolius*			Secure							
Sweetgrass	*Anthoxanthum hirtum*			Secure				•	•		
Sweet-scented bedstraw	*Galium triflorum*			Secure							
Tall Anenome	*Anemone riparia*			Secure							
Tall lungwort	*Mertensia paniculata*			Secure							
Tamarack	*Larix laricina*			Secure	•				•	•	•
Tinder Conk	*Fomes fomentarius*			Not Assessed							
Trailing Raspberry	*Rubus pubescens*	oskeesoomna		Secure	•			•	•		

Trembling Aspen	*Populus tremuloides*			Secure	•	•	•	•	•	•	•
Twinflower	*Linnaea borealis*			Secure	•			•	•		
Twining Honeysuckle	*Lonicera dioica*			Secure							
Tuberous Polypore	*Polyporus tuberaster*			Not Assessed							
Tuckahoe Fungus	*Polyporus tuberaster*			Not Assessed							
Veiny Meadow Rue	*Thalictrum venulosum*			Secure				•	•		
Water Hemlock	*Cicuta maculata var. angustifolia*			Secure							
Water Smart Weed	*Polygonum sp.*			Secure				•	•	•	•
Western Dock	*Rumex occidentalis*			Secure							
Western Mountain Ash	*Sorbus scopulina*	wah chee wah tihk		Secure							
Western Wood Lily	*Lilium philadelphicum*			Secure							
White or Paper Birch	*Betula papyrifera*	waskway; waskwayāhtik (birch roots) (Marles et al. 2000); waskway "awpway" (birch sap) (FG); wuskwi-atik, wāsk-wayahtik, wasgwah, waskwaha, wākwāh, waskway, owkimawa(h)-tik,	k'i	Secure	•	•	•	•	•	•	•
White Spruce	*Picea glauca*	sī(h)ta (Marles et al. 2000) (FM elder); See Tah		Secure	•	•	•	•	•	•	•
White Water Lily	*Nymphaea spp.*			Secure				•	•		
White Wintergreen	*Pyrola elliptica*			Sensitive							
Wild Black Current	*Ribes americanum*			Secure				•			
Wild Chamomile	*Maticaria chamomilla*			Exotic							
Wild Mint	*Mentha arvensis*	amisko wehkuskwa, amiskōwīkask, āmskuwiy(h)kusk, wīkask, wīkaskwah, wakaskwah	tsá tlh'ogh tsëné	Secure				•	•	•	•
Wild Onion or Chives	*Allium schoenoprasum*			Secure							
White Poplar Fungus	*Fomes fomentarius*			Not Assessed							
Wild Potato, Alpine Sweet-Vetch	*Hedysarum alpinum*			Secure							
Wild Red Currant	*Ribes triste*			Secure					•	•	•
Wild Red Raspberry	*Rubus idaeus*	ah yous kanack		Secure	•	•		•	•	•	•
Wild Rose	*Rosa acicularis*	oh-gin-ee-ack, oo-tin-eyuk, or oh gone ma ga see (FM workshop); okīnīak or ōginīatik (Marles et al. 2000), kaminakuse, okīnīa, okwāminakwasi-āhtik, ohinīwiwapgwīnīwa, ogiminakasiatik, ōginīatik, owkiniy, owkāmnekusiy	íntsólé	Secure	•	•		•	•	•	•
Wild Sarsaparilla	*Aralia nudicaulis*	wāpsōcēpīhk, wāposocīpihk, wāpōsogībī	gaijié	Secure							
Wild Strawberry	*Fragaria virginiana*	otehiminipukos, otahimin, otehimina, otīhīminah, okdeamena, owtiyhiymin, otīhīminipukwah	ídzíaze	Secure	•			•	•		
Willow fungus	*Lenzites betulina*			Not Assessed							
Willow	*Salix sp.*	Neepseeya, neepseewahtokwa		Secure	•	•	•	•	•	•	•
Wolf Willow, Silverberry	*Elaeagnus commutata*	Maiheegahn nackoksa (berry)		Secure							
Wood Anemone	*Anemone parviflora*			Secure							
Woodland Strawberry	*Fragaria vesca*	miti heem na		Secure							
Yellow Avens	*Geum aleppicum*			Secure							
Yellow Pond Lily	*Nuphar sp.*	Wusk wa tamoo		Secure				•	•	•	•
Total Number of Other, Non-Traditional Species					**5**	**1**	**1**	**21**	**24**	**9**	**9**
Total Number of Traditional Species (150)					**36**	**16**	**16**	**50**	**57**	**56**	**55**
Total Percent of Traditional Species (%)					**23**	**11**	**11**	**33**	**38**	**37**	**37**

Table 5-5 Traditional use mammals used by the Fort McKay First Nation

Common Name	**Latin Name**	**Cree Name**	**Dene Name**	**Alberta Conservation Status**	**Oil Sands Mine Closure and Reclamation Plans**						
					A	**B**	**C**	**D**	**E**	**F**	**G**
American Badger	*Taxidea taxus*	mistahnuus		Sensitive							
American Mink	*Neovision vision*	Sagwees, shaagweesh		Secure							
Arctic Shrew	*Sorex arcticus*	chiboosjooyahgahngeesh		Secure							
Arctic Fox	*Vulpes lagopus*			Accidental/Vagrant							
Barren-ground Caribou	*Rangifer tarandus tarandus*			Accidental/Vagrant							
Beaver	*Castor canadensis*	Amisk	Cha	Secure	•	•	•	•	•	•	•
Big Brown Bat	*Eptesicus fuscus*	abahgwahjeesh		Secure		•				•	•
Black bear	*Ursus americanus*	kus ka tew Muskwa, mushkwaw	Sus	Secure	•	•	•	•	•	•	•
Canada Lynx	*Lynx canadensis*	Pihsew, beesoo		Sensitive	•	•		•	•	•	•
Common Porcupine	*Erethizon dorsatum*			Secure							
Common Racoon	*Procyon lotor*			Secure							
Cougar	*Puma concolor*	asiiniwaychunshimiinoos		Sensitive							
Coyote	*Canis latrans*	miistachagahnees		Secure							
Deer Mouse	*Peromyscus maniculatus*	apokswees		Secure							
Eastern Gray Squirrel	*Sciurus carolinensis*			Secure		•					
Eastern Red Bat	*Lasiurus borealis*	abahgwahjeesh		Sensitive		•				•	•
Elk or Wapiti	*Cervus canadensis*	washkeesoo		Secure							
Ermine, Stoat, Short-Tailed Weasel	*Mustela erminea*	Sekos, saykoos		Secure							
Feral Horse	*Equus caballus*			Exotic; Extirpated from Fort McKay Traditional Territory							
Fisher	*Martes pennanti*	o cheek		Sensitive	•	•		•	•	•	•
Gray Wolf	*Canis lupus*	muh hecun		Secure							
Grizzly Bear	*Ursus arctos*	mishtahaayah		At Risk; Extirpated from Fort McKay Traditional Territory?							
Groundhog, woodchuck	*Marmota monax*	weenahsheegahchay		Secure							
Hoary Bat	*Lasiurus cinereus*	abahgwahjeesh		Sensitive		•				•	•
Least Chipmunk	*Tamias minimus*	shashakawaabskoos		Secure							
Least Weasel	*Mustela nivalis*	Sekos, saykoos		Secure							
Little Brown Bat	*Myotis lucifugus*	abahgwahjeesh		Secure		•				•	•
Long-Tailed Weasel	*Mustela frenata*	Sekos, saykoos		Secure							
Marten	*Martes americana*	wahbeshaahnsh		Secure		•					

Masked Shrew	*Sorex cinereus*	chiboosjooyahgahngeesh		Secure							
Meadow Jumping Mouse	*Zapus hudsonius*			Secure							
Moose	*Alces americanus*	mooswah		Secure	•		•	•	•	•	•
Mule deer	*Odocoileus hemionus*	ahbeestahmoosis		Secure							
Muskrat	*Ondatra zibethicus*	wachusk		Secure	•	•	•	•	•	•	•
Northern Flying Squirrel	*Glaucomys sabrinus*	shaynahskahtahweezoo		Secure							
Northern Long-Eared Bat	*Myotis septentrionalis*	abahgwahjeesh		May Be At Risk		•				•	•
Northern Water Shrew	*Sorex palustris*	chiboosjooyahgahngeesh		Secure							
Red Fox	*Vulpes vulpes*	muckeesees		Secure							
Red Squirrel	*Tamiasciurus hudsonicus*	umgwah chas, shaynahskahtahweezoo		Secure							•
River Otter	*Lontras canadensis*	nik gik		Secure	•			•	•		•
Silver-Haired Bat	*Lasionycteris noctivagans*	abahgwahjeesh		Sensitive		•				•	•
Snowshoe Hare	*Lepus americanus*	wapoose		Secure	•	•	•	•	•	•	•
Southern Red-backed Vole	*Myodes gapperi*			Secure						•	•
Striped Skunk	*Mephitis mephitis*	Shiigaak		Secure							
Taiga Vole	*Microtus xanthognathus*			Undetermined							
White-tailed Deer	*Odocoileus virginianus*	Upsih Moosus		Secure							
Wolverine	*Gulo gulo*	Ke-ku-hagew or geekwahaagiw		May Be At Risk							
Wood Bison	*Bison Bison athabascae*	puskwow moos toos, seekaamooshtos	?ejere	At Risk	•						
Woodland caribou	*Rangifer tarandus caribou*	atikh sagow, ahdik (single), ahdeekwahk (plural)		Threatened							
Total Number of Other, Non-Traditional Species in Plan					**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total Number of Traditional Species (49)					**9**	**14**	**5**	**8**	**8**	**14**	**16**
Total Percent of Traditional Species (%)					**18**	**29**	**10**	**16**	**16**	**29**	**33**

Table 5-6 Traditional use fish and amphibians used by Fort McKay First Nation

Common Name	**Latin Name**	**Cree Name**	**Alberta Conservation Status**	**Oil Sands Mine Closure and Reclamation Plans**						
				A	**B**	**C**	**D**	**E**	**F**	**G**
Arctic Grayling	*Thymallus arcticus*		Sensitive							
Boreal Chorus Frog	*Pseudacris maculata*	maayakatay	Secure							
Canadian Toad	*Anaxyrus hemiophrys*	pokateestiw	May be at Risk	•	•	•	•	•	•	•
Cisco	*Coregonus artedi*		Secure							
Fathead Minnow	*Pimephales promelas*		Secure				•	•	•	•
Goldeye	*Hiodon alosoides*	nabukonosheesh	Secure		•	•		•		
Lake Chub	*Couesius plumbeus*		Secure		•	•	•	•	•	•
Lake Trout	*Salvelinus namaycush*	nahmiigoos	Sensitive							
Lake Whitefish	*Coregonus clupeaformis*		Secure		•	•				
Longnose Sucker	*Catostomus catostomus*		Secure		•	•	•	•		•
Marai, Burbot or Ling Cod	*Lota lota*	meeyeyi, meeyayi	Secure		•	•	•			
Mountain Whitefish	*Prosopium williamsoni*	ahtikamik	Secure							
Northern leopard Frog	*Rana Pipiens*		Threatened							
Northern Pike or Jackfish	*Esox lucius*	iinginoshiw	Secure		•	•	•	•	•	•
Yellow Perch	*Perca flavescens*	shaweeshuk	Secure					•	•	•
Other Suckers	*Catostomus sp.*	nahmaybee	Secure							•
Walleye or Pickerel	*Sander vitreus*	hookau	Secure		•	•	•			
White Sucker	*Catostomus commersoni*	nahmaybee	Secure				•	•	•	
Wood Frog	*Lithobates sylvaticus*	maayakatay	Secure							
Total Number of Other, Non-Traditional Species in Plan				**0**	**4**	**4**	**2**	**5**	**2**	**4**
Total Number of Traditional Species (19)				**1**	**8**	**8**	**7**	**8**	**6**	**7**
Total Number of Traditional Species (%)				**5**	**42**	**42**	**37**	**42**	**32**	**37**

Table 5-7 List of traditional use birds of importance to Fort McKay First Nation

Common Name	**Latin Name**	**Cree**	**Alberta Conservation Status**	**Oil Sands Mine Closure and Reclamation Plans**						
				A	**B**	**C**	**D**	**E**	**F**	**G**
Chickadees (Passeriformes: Paridae) beecheegeeshkeesh						•			•	•
Black-capped Chickadee	*Poecile atricapillus*		Secure			•			•	•
Boreal Chickadee	*Poecile hudsonicus*		Secure			•			•	•
Corvids (Passeriformes: Corvidae) 5						•			•	
American Crow	*Corvus brachyrhynchos*	ahazoo	Secure			•			•	•
Black-billed Magpie	*Pica hudsonia*	apishtagaagaagiish	Secure			•			•	•
Blue Jay	*Cyanocitta cristata*		Secure			•			•	•
Canada Jay or Whiskey-Jack	*Perisoreus canadensis*	wiiskeychans	Secure			•			•	•
Common Raven	*Corvus corax*		Secure			•			•	•
Cranes (Gruiformes: Gruidae)										
Sandhill Crane	*Grus canadensis*		Sensitive							
Whooping Crane	*Grus americana*		Endangered							
Diurnal Birds of Prey (Accipitriformes: Accipitridae)										
Bald Eagle	*Haliaeetus leucocephalus*		Sensitive							
Broad-winged Hawk	*Buteo platypterus*	bonasoo	Sensitive		•					
Cooper's Hawk	*Accipiter cooperii*	bonasoo	Secure		•					
Golden Eagle	*Aquila chrysaetos*		Sensitive		•					
Northern Goshawk	*Accipiter gentilis*	bonasoo	Sensitive		•				•	
Northern Harrier	*Circus hudsonius*	bonasoo	Secure		•					
Red-tailed Hawk	*Buteo jamaicensis*	bonasoo	Secure		•					
Rough-legged Hawk	*Buteo lagopus*	bonasoo	Secure		•					
Sharp-shinned Hawk	*Accipiter striatus*	bonasoo	Secure		•					
Swainson's Hawk	*Buteo swainsoni*	bonasoo	Secure		•					
Diving Bird (Podicipediformes: Podicipedidae)										
Eared Grebe	*Podiceps nigricollis*		Sensitive							
Horned Grebe	*Podiceps auritus*		Sensitive							
Pied-billed Grebe	*Podilymbus podiceps*		Sensitive							
Red-necked Grebe	*Podiceps grisegena*		Secure							
Western Grebe	*Aechmophorus occidentalis*		Threatened							
Ground-Living Birds (Galliformes:Phasianidae)										
Gray Partridge	*Perdix perdix*		Exotic							

Ruffed Grouse, Bush Chicken	*Bonasa umbellus*	paspaskoo	Secure	•			•	•	•	•
Sharp-tailed Grouse	*Tympanuchus phasianellus*	paspaskoo	Sensitive							
Spruce Grouse, Fool Hen	*Falcipennis canadensis*	oshkatakopiheo	Secure							
Willow Ptarmigan	*Lagopus lagopus*		Secure							
Herons and Bitterns (Pelecaniformes: Ardeidae)										
American Bittern	*Botaurus lentiginosus*		Sensitive							
Great Blue Heron	*Ardea herodias*	mookooshoo	Sensitive							
Hummingbirds (Caprimulgiformes: Trochilidae) amoobeewaysis										
Rufous Hummingbird	*Selasphorus rufus*		Secure							
Ruby-throated Hummingbird	*Archilochus colubris*		Secure							
Kingfisher (Coraciiformes: Alcedinidae) aabagabaktisoo										
Belted Kingfisher	*Megaceryle alcyon*		Secure							
Loons and Divers (Galliformes:Phasianidae) mahgwah										
Common Loon	*Gavia stellata*		Secure							
Pacific Loon	*Gavia pacifica*		Secure							
Red-throated Loon	*Gavia immer*		Secure							
Medium-Sized and Large Waterbirds (Pelecaniformes: Pelecanidae)										
American White Pelican	*Pelecanus erythrorhynchos*		Sensitive							
New World Blackbirds (Passeriformes: Icteridae) chakchakayoos						•			•	•
Baltimore Oriole	*Icterus galbula*		Secure			•			•	•
Brewer's Blackbird	*Euphagus cyanocephalus*		Secure			•			•	•
Brown-headed Cowbird	*Molothrus ater*		Secure			•			•	•
Common Grackle	*Quiscalus quiscula*		Secure			•			•	•
Red-winged Blackbird	*Agelaius phoeniceus*		Secure			•			•	•
Rusty Blackbird	*Euphagus carolinus*		Sensitive			•			•	•
Western Meadowlark	*Sturnella neglecta*		Secure			•			•	•
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*		Secure			•			•	•
Owls (Strigiformes: Strigidae) hoohoo (singular), hoohoowakh (plural)					•					
Barred Owl	*Strix varia*		Sensitive		•					
Boreal Owl	*Aegolius funereus*		Secure		•					•
Great Gray Owl	*Strix nebulosa*		Sensitive		•					
Great Horned Owl	*Bubo virginianus*		Secure		•					
Long-eared Owl	*Asio otus*		Secure		•					
Northern Hawk Owl	*Surnia ulula*		Secure		•					
Northern Saw-whet Owl	*Aegolius acadicus*		Secure		•					
Short-eared Owl	*Asio flammeus*		May Be At Risk		•					
Snowy Owl	*Bubo scandiacus*		Secure		•					
Plovers (Charadriiformes: Charadriidae) sheesheeshoo										
American Golden-Plover	*Pluvialis dominica*		Undetermined							
Black-bellied Plover	*Pluvialis squatarola*		Secure							
Killdeer	*Charadrius vociferus*		Secure							
Mongolian Plover	*Charadrius mongolus*		Exotic							
Semipalmated Plover	*Charadrius semipalmatus*		Secure							
Rails (Gruiformes: Rallidae)										
American Coot, Mud Hen	*Fulica americana*	Chageek (singular), chageewakh (plural)	Secure							
Sora	*Porzana carolina*		Sensitive							
Yellow Rail	*Coturnicops noveboracensis*		Undetermined						•	•
Virginia Rail	*Rallus limicola*		Undetermined							
Sandpipers (Charadriiformes: Scolopacidae) sheesheeshoo										
Baird's Sandpiper	*Calidris bairdii*		Secure							
Dunlin	*Calidris alpina*		Secure							
Greater Yellowlegs	*Tringa melanoleuca*		Secure							
Hudsonian Godwit	*Limosa haemastica*		Sensitive							
Least Sandpiper	*Calidris minutilla*		Secure							
Lesser Yellowlegs	*Tringa flavipes*		Secure							
Long-billed Curlew	*Numenius americanus*		May Be At Risk							
Long-billed Dowitcher	*Limnodromus scolopaceus*		Secure							
Marbled Godwit	*Limosa fedoa*		Secure							
Pectoral Sandpiper	*Calidris melanotos*		Secure							
Red-necked Phalarope	*Phalaropus lobatus*		Secure							
Ruddy Turnstone	*Arenaria interpres*		Secure							
Sanderling	*Calidris alba*		Secure							
Semipalmated Sandpiper	*Calidris pusilla*		Secure							
Short-billed Dowitcher	*Limnodromus griseus*		Undetermined							
Solitary Sandpiper	*Tringa solitaria*		Secure							
Spotted Sandpiper	*Actitis macularius*		Secure							
Stilt Sandpiper	*Calidris himantopus*		Secure							
Western Sandpiper	*Calidris mauri*		Secure							
Whimbrel	*Numenius phaeopus*		Secure							
White-rumped Sandpiper	*Calidris fuscicollis*		Secure							
Wilson's Phalarope	*Phalaropus tricolor*		Secure							
Wilson's Snipe	*Gallinago delicata*		Secure							
Upland Sandpiper	*Bartramia longicauda*		Sensitive							
Seabirds (Charadriiformes: Laridae)										
Arctic Tern	*Sterna paradisaea*		Secure							
Black Tern	*Chlidonias niger*		Sensitive							
Bonaparte's Gull	*Chroicocephalus philadelphia*		Secure							
California Gull	*Larus californicus*		Secure							
Caspian Tern	*Hydroprogne caspia*		Sensitive							
Common Tern	*Sterna hirundo*		Secure							
Forster's Tern	*Sterna forsteri*		Sensitive							
Franklin's Gull	*Leucophaeus pipixcan*		Secure							

Glaucous Gull	*Larus hyperboreus*		Secure							
Herring Gull	*Larus argentatus*		Secure							
Iceland Gull	*Larus glaucoides*		Exotic							
Ivory Gull	*Pagophila eburnea*		Exotic							
Ring-billed Gull	*Larus delawarensis*		Secure							
Sabine's Gull	*Xema sabini*		Secure							
Mew Gull	*Larus canus*		Secure							
Cormorants (Suliformes: Phalacrocoracidae)										
Double-crested Cormorant	*Nannopterum auritum*									
Waterfowl: Ducks and Geese (Anseriformes: Anatidae)					•	•	•	•	•	•
American Wigeon	*Mareca americana*		Secure	•	•	•	•	•	•	•
Barrow's Goldeneye	*Bucephala islandica*		Secure	•	•	•	•	•	•	•
Black Scoter	*Melanitta nigra*		Exotic	•	•	•	•	•	•	•
Blue-winged Teal	*Spatual discors*		Secure	•	•	•	•	•	•	•
Bufflehead	*Bucephala albeola*	*waabinooshipshuk*	Secure	•	•	•	•	•	•	•
Cackling Goose	*Branta hutchinsii*	*niiskahk*	Exotic		•	•	•	•	•	•
Canada Goose	*Branta canadensis*	*niiskahk*	Secure		•	•	•	•	•	•
Canvasback	*Aythya valisineria*		Secure	•	•	•	•	•	•	•
Cinnamon Teal	*Spatula cyanoptera*		Secure	•	•	•	•	•	•	•
Common Goldeneye	*Bucephala clangula*		Secure	•	•	•	•	•	•	•
Common Loon	*Gavia immer*		Secure	•	•	•	•	•	•	•
Common Merganser	*Mergus merganser*		Secure	•	•	•	•	•	•	•
Eurasian Wigeon	*Anas penelope*		Migrant	•	•	•	•	•	•	•
Greater Scaup	*Aythya marila*		Secure	•	•	•	•	•	•	•
Greater White-fronted Goose	*Anser albifrons*	*niiskahk*	Secure		•	•	•	•	•	•
Green-wing Teal	*Anas crecca*		Secure	•	•	•	•	•	•	•
Harlequin Duck	*Histrionicus histrionicus*		Sensitive	•	•	•	•	•	•	•
Hooded Merganser	*Lophodytes cucullatus*		Secure	•	•	•	•	•	•	•
Gadwall	*Mareca strepera*		Secure	•	•	•	•	•	•	•
Lesser Scaup	*Aythya affinis*		Secure	•	•	•	•	•	•	•
Long-tailed Duck	*Clangula hyemalis*		Secure	•	•	•	•	•	•	•
Mallard	*Anas platyrhynchos*	*iinsheebahk*	Secure	•	•	•	•	•	•	•
Northern Pintail	*Anas acuta*	*shesheep*	Secure	•	•	•	•	•	•	•
Northern Shoveler	*Spatula clypeata*		Secure	•	•	•	•	•	•	•
Red-breasted Merganser	*Mergus serrator*		Secure	•	•	•	•	•	•	•
Redhead	*Aythya americana*		Secure	•	•	•	•	•	•	•
Ring-necked duck	*Aythya collaris*		Secure	•	•	•	•	•	•	•
Ross's Goose	*Anser rossii*	*niiskahk*	Secure		•	•	•	•	•	•
Ruddy Duck	*Oxyura jamaicensis*		Secure	•	•	•	•	•	•	•
Snow Goose	*Answer caerulescens*	*weehoowahk*	Secure		•	•	•	•	•	•
Surf Scoter	*Melanitta perspicillata*		Secure	•	•	•	•	•	•	•
Trumpeter Swan	*Cygnus buccinator*		Sensitive		•	•	•	•	•	•
Tundra Swan	*Cygnus columbianus*		Secure		•	•	•	•	•	•
White-winged Scoter	*Melanitta deglandi*		Sensitive	•	•	•	•	•	•	•
Woodpeckers and Sapsuckers (Piciformes: Picidae)										
American Three-toed Woodpecker	*Picoides dorsalis*	*pahpahgeesh*	Secure							
Black-backed Woodpecker	*Picoides arcticus*	*pahpahgeesh*	Sensitive							
Downy Woodpecker	*Dryobates pubescens*	*pahpahgeesh*	Secure							
Hairy Woodpecker	*Dryobates villosus*	*pahpahgeesh*	Secure							
Northern Flicker	*Colaptes auratus*		Secure							
Pileated Woodpecker	*Dryocopus pileatus*	*miimiw*	Sensitive				•	•	•	•
Yellow-bellied Sapsucker	*Sphyrapicus varius*		Secure							
Total Number of Other, Non-Traditional Taxa in Plan				**0**	**12**	**0**	**0**	**0**	**1**	**0**
Total Number of Traditional Species (145)				**28**	**52**	**49**	**36**	**36**	**53**	**53**
Total Number of Traditional Species (%)				**19**	**36**	**34**	**25**	**25**	**37**	**37**

Table 5-8 A summary of reclamation biodiversity planning in oil sands mine projects within the Fort McKay Traditional Territory

Oil Sands Mine	Plants	Mammals	Fish & Amphibians	Birds	Total Reclamation Biodiversity	Percent Reclamation Biodiversity
A	36	9	1	28	74	20.4 %
B	16	14	8	52	90	24.8 %
C	16	5	8	49	78	21.5 %
D	50	8	7	36	101	27.8 %
E	57	8	7	36	108	29.8 %
F	56	14	6	53	129	35.5 %
G	55	16	7	53	131	36.1 %
Average	40.9	10.6	6.3	43.9	101.6	28.0 %
Total No. of Traditional Use Species	150	49	19	145	363	100 %

Figures

Figure 5-1 (Left) A birds-eye view of the oil sands industrial footprint within the Fort McKay Traditional Territory (white line) in 1967, the year oil sands activities commenced, and (right) present day. Pink are Fort McKay First Nation reserve lands, green are active oil sands projects, red are proposed or approved but not yet operating projects, and orange is primarily oil and gas exploration footprint. Truck symbols are oil sands mines (Map Credit: Fort McKay First Nation).

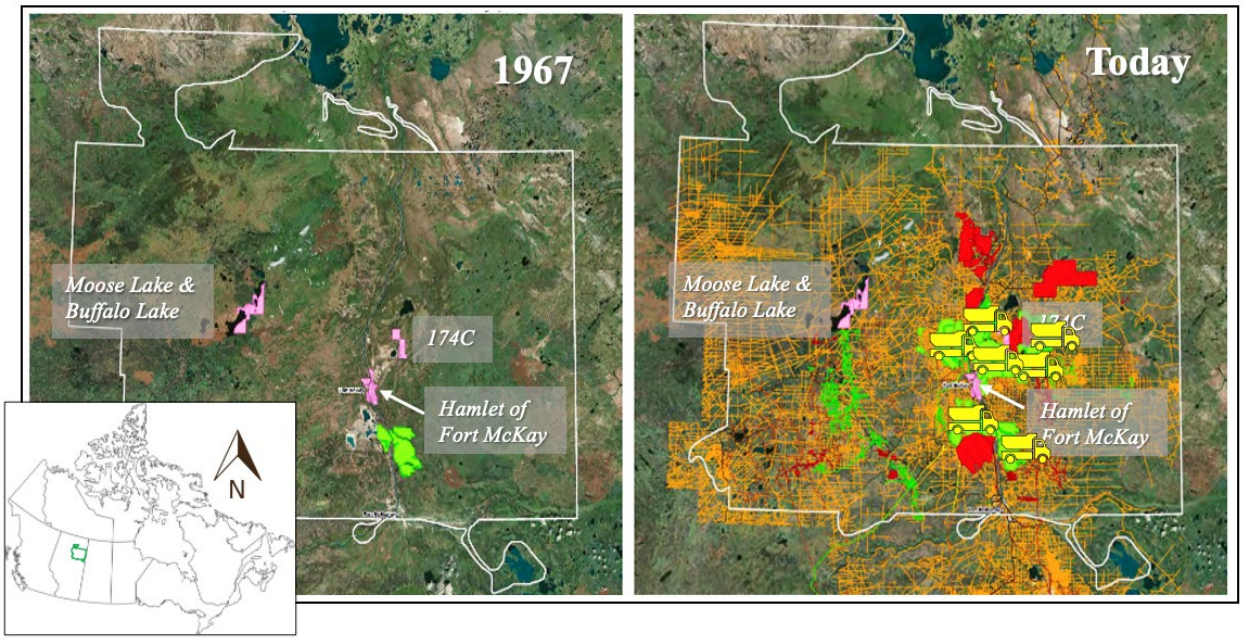
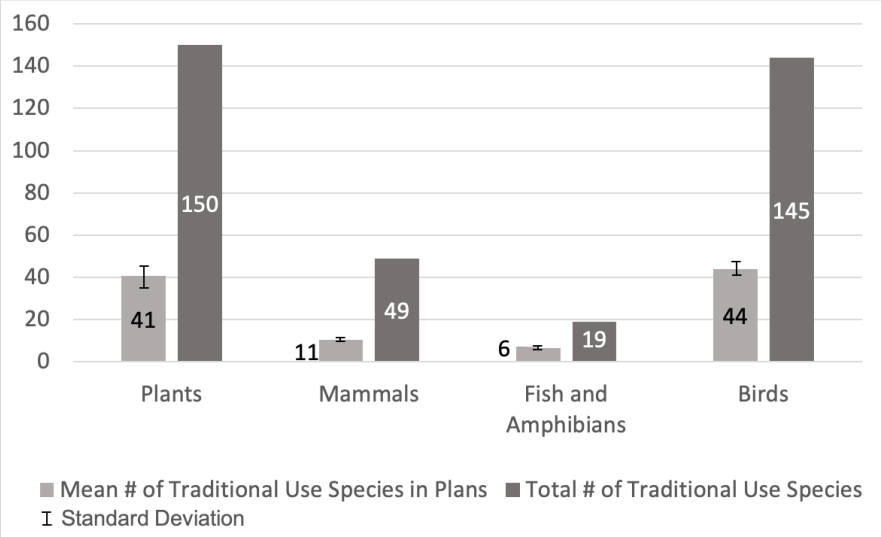


Figure 5-2 An illustration of the total percentage of traditional use plants, mammals, fish and amphibians and birds being planned for in oil sands mine closure and reclamation plans.



CHAPTER SIX

CONCLUSIONS

6.1 Review of the Research Intent and Approach

This study was born out of an aspiration from the people of Fort McKay to reclaim their homelands to a state capable of supporting their traditional land uses and culture, an industry's corporate Indigenous relations target to earn trust in reclaimed landscapes, and this doctoral student's interest to be of service to the inclusion of local Indigenous communities, like Fort McKay, their knowledge systems, and perspectives, and Aboriginal, Treaty, and land use rights into mine closure and reclamation of their lands and waters. This dissertation presents emerging intercultural mine closure and reclamation tools and approaches co-created by academic researchers and the Fort McKay research team, which consists of community researchers who are rights holders hosting oil sands projects on their traditional territory, community staff, and a technical advisor. An oil sands company took part in early portions of the project.

This dissertation is a part of the Co-Reclamation Project, which was conceived in 2018 by the Fort McKay research team, the Universities of Calgary and Waterloo, and an oil sands company. The Project aims were to "support intercultural knowledge exchange to enhance mutual understanding of oil sands reclamation, land reclamation, land use practices and community health and wellness for future generations" and "for scientific and Indigenous Knowledge, approaches and peoples to collaboratively heal a piece of the land degraded by oil sands development and return it to its original stewards through co-reclamation" (The Parties 2019, p. 18-19).

The research goal of this dissertation was to explore a participatory and inclusive approach to mine closure and reclamation of lands disturbed by oil sands activities in the Fort McKay Traditional Territory (FMTT) to support the renewal of cultural landscapes capable of supporting Fort McKay's traditional uses. The research objectives of this dissertation were to:

1. Develop a code of conduct to guide effective intercultural research and practice;
2. Develop tools for co-reclamation that support intercultural understanding and the participation of a local Indigenous community in reclamation and closure planning decision-making;
3. Evaluate traditional use planning in mine closure and reclamation plans to understand if cultural landscapes and relationships are being renewed; and
4. Develop an effective co-reclamation framework to support ethical reclamation and closure practices for (i) the oil sands industry with a legal obligation for and commitments to responsible closure; and (ii) Fort McKay who have rights to care for and use their traditional lands.

The Co-Reclamation Project and this dissertation applied a methodology called a "Two-Roads Approach", which is grounded in ethnoecology. It was selected because the methodology was co-created with the participation of Fort McKay and the oil sands company to support the inclusion of Indigenous Peoples and their IK and perspectives into oil sands reclamation planning alongside western science (Two Roads Research Team 2011, 2012). Since ethnoecology is "the science of how people understand the

relationship between humans, animals, plants and physical elements of a local environment" (Davison-Hunt 2000), the Two-Roads Approach elevated Fort McKay's voices, research inquiries, knowledge system, and ways of working throughout the study. It also guided co-researchers actions during knowledge gathering to support plural ways of being and knowing that includes multiple cultural themes, worldviews, ideologies, and mindsets (Two Roads Research Team 2011, 2012).

6.2 Research Products

Fort McKay, academic, and, at times, industry co-researchers conceived, tested, adaptively optimized, and partially validated an inclusive and collaborative approach to mine closure and reclamation for the Fort McKay homelands. Using the Two-Roads Approach, a toolkit of resources was co-created by Indigenous and non-Indigenous co-researchers to supply guidance on how to engage in respectful intercultural communication and collaborative action while reclaiming Fort McKay's homelands. The toolkit includes the following emergent intercultural resources: consultation, engagement and mine closure good practices; an indigenized code of conduct; traditional Indigenous cultural methods for creating a shared closure vision; a shared First Nation-industry aspirational story - *te mamano aski ki kakio asiniwak* (Cree) / *ʔeła ʔeghdalaída niha tuha* (Dënesuliné) / working together for the betterment of our people and land (English); a subset of the traditional use plants, wildlife, birds, amphibians, and fish taxa which are important to Fort McKay people; a gap analysis of traditional land use planning in mine closure and reclamation at seven oil sands mine projects; and a Two-Roads Reconciliation & Reclamation Framework to assist oil sands operators and Canadian Provincial Government agencies with ethical intercultural dialogue and meaningful engagement with Fort McKay on mine closure and reclamation of their traditional territory.

6.3 Barriers to Intercultural Understanding and the Inclusion of Fort McKay and their Research Outcomes in Mine Closure and Reclamation Processes

It is common for major mine closure and reclamation decisions to be made without sufficient input from key stakeholders and Indigenous communities. A literature review found that some of the current barriers to participatory and inclusive mine closure and reclamation processes include a lack of instruction manuals, tools, and case studies to explain how to execute planning with (*and not for*) local communities on social and cultural dimensions (Bond and Kelly 2020; Daly 2021; Morrison-Saunders 2019; ICMM 2019; Unger et al 2019). The most frequently cited barrier in the academic literature was the lack of policy and regulations (e.g., Aheto-Tsegah 2019; Edwards and Maritz 2019; Morrison-Saunders 2019; O'Faircheallaigh and Lawrence 2019).

Results from this dissertation identified the following barriers to the inclusion of Fort McKay and their research outcomes, rights, and needs in mine closure and reclamation processes:

- Different worldviews and priorities resulted in planning blind spots - While the participating company's closure and reclamation plans reference that reclaimed lands will supply a range of end uses, including traditional use, company co-researchers dialogue during research activities lacked descriptions of people returning to reclaimed land and practicing traditional land uses again. They instead focused on ecological elements. For example, one company co-researcher said, "*I put all the components of the boreal forest we want to bring back to what they were pre-disturbance. Trees growing and birds are there; soils and a small lake.*" In contrast, Fort McKay and university co-researchers described the potential for reclaimed land to be lived in and used by the First Nation. Examples include: "*a dwelling that they're trying to build in this space*"; "*teepee, humans…not everything that should be here is here yet*"; "*the hogan represents a permanent home*"; "*a representation for people being able to use the land*"; and "*cabins, trails, traplines is a powerful way to show that this land was used by Fort McKay before [the company]…which is potentially unknown to them.*" Additionally, there was evidence that the landscape is viewed differently. Industry co-researchers described individual, company-owned project sites, short-term company planning cycles, and zones within sites, such as "*littoral zone*", "*upland*", "*wetland.*" In contrast, Fort McKay co-researchers described a holistic view over space and time with terms like: "*integrated landscape*", "*can see how much has changed*", "*the need for action and reconciliation at a much larger scale*", "*[planning] for future generations."* One company co-researcher acknowledged the dissonance between Fort McKay and company temporal and planning perspectives by saying "*people want innovation on a schedule, but we can't have that. Same with a relationship on a schedule. It must take time.*" See chapter 3 and 4 for more details.
- The ongoing disconnection of Fort McKay from their Traditional Territory – Rapid, widespread landscape changes from multiple oil sands companies and projects which started in the 1960s, fences, and onerous security protocols impede Fort McKay's access across their Traditional Territory. "*But the biggest sacrifice for us is our culture and our way of life in our connection to the land we're being pulled away. Further and further away. Because of non-access, because of the depletion of our of oil, boreal forest, and those are the things we depend on for our livelihood"* (Fort McKay co-researcher). While Fort McKay and the Biodiversity TK study (Two Roads Research Team 2011, 2012) have provided recommendations related to the inclusion of IK holders and land users in reclamation monitoring to renew their connection their traditional lands, waters and culture, no oil sands

company has provided the opportunity for collaborative monitoring of reclaimed landscapes to date. In contrast, these companies have prioritized and resourced numerous western science mine closure research and monitoring projects (e.g., COSIA 2021; Hawkes et al. 2013; Hawkes and Gerwing 2019; Hawkes et al. 2020; NSERC 2012; Yelland 2012).

- Technocratic companies and government – There is a bias towards technocratically directed geoenvironmental-focused mine closure planning practices and policies. One Fort McKay co-researcher said, *"No one listens to community input."* Others said*, "[The company] and Fort McKay can talk, but government has their own criteria and companies will only follow that…why can't industry change a little bit?" and "Time and time again in meeting with industry we hear that government had approved the sites or the activity. The companies effectively just come and tell the community what they are doing without providing any opportunities for actually influencing what is being done."* A systematic review of seven Life of Mine Closure Plans found that provincial law (i.e., regulatory policy, directives, approval requirements) and western science-focused reclamation guidance documents and methods (e.g., AENV 2010, Beckingham and Archibald 1996, ESRD 2015, GDC 2009, Wylynko and Hrynyshyn 2014, etc.) were the primary drivers for mine companies planning decisions (see Chapter 5 for details). Study results found that current mine closure and reclamation approaches do not adequately understand, nor mitigate traditional land use impacts and rights. This is in contrast to cases around the world where mine closure plans included Indigenous voices in mine closure planning decisions (e.g., Drylie et al. 2013; Everingham et al. 2020; Gundjeihmi Aboriginal Corporation 2017; McCarthy et al. 2014). Furthermore, existing traditional land use planning tools and approaches designed for oil sands mine closure and reclamation were not included in any of the seven plans.
- Lack of understanding and/or committed action to reconciliation and building trust in reclamation with Fort McKay - While Fort McKay's closure vision emphasized that "*reclaiming the land is a form of reconciliation*" and the participating company was interested to "*Collaboratively reclaim impacted land with Fort McKay First Nation to enhance reciprocal learning in land stewardship, relationships, and trust in reclamation and closure outcomes*" (see Table 4-3), company actions did not consistently align with their words (see Table 2-4). For example, in 2021, part-way through the Co-Reclamation Project, the company terminated their participation and funding of this research project while continuing to support other, western-science reclamation research projects. A Fort McKay co-researcher said, "*Where are they? They're they are the ones that should be in this reclamation project. They're the ones that that took and destroyed the land…So, in the spirit of*

reconciliation, which we always talk about, industry should be working towards reconciliation and…the land back." Other Fort McKay comments added, "*We can't trust them*", "*this is so disheartening, disrespectful, and a slap in the face from [the company] to our community, to our group, and to everyone that was involved*", and "*they are not seeing our point of view and, you know, bringing about the Two-Road approach.*" Another incongruent action was the regular company co-researcher turnover, in part due to company layoffs and job attrition, which made relationship-(re)building challenging. One Fort McKay co-researcher described this challenge as follows: "*But some of the issues, when they come, is that they will bring different people. We had this issue at the beginning with this project. We kept saying that you guys changed people and we have to tell the same story again and again because there's going to be a new set of people coming that don't have the story of the history for example of this reclamation project.*" Another said, "*All the work that has been advanced here, the new people will not have that*." Another challenge was the lack of participation from the mine closure and reclamation department, which was replaced with a hired consultant and other departmental staff (e.g., sustainability, government relations), after the first few research gatherings. Another contradictory action identified by Fort McKay co-researchers was the resistance to supporting the Fort McKay road alongside their reclamation or western science road, such as an attempt to integrate the Fort McKay road into a company technology development process. Another example is the opposition to the inclusion of Fort McKay's new ideas and recommendations into the shared research co-reclamation research project plan because company co-researchers deemed the ideas to be out of scope. "*There was a lot of delay and back and forth on what was considered to be in scope versus too much out of scope" (Fort McKay co-researcher*). Fort McKay suggested it was not "*out of scope for a community that has to live with it every day*" and there is a need *"to merge these scopes to work together."*

6.4 A Reflection on the Research Objectives and Hypothesis

The research objectives outlined in section 1.5 (and restated in section 6.1) were completed, including:

I. The co-creation of a code of conduct, called the Cycle of Respect (Chapter 3),
II. Other resources to support intercultural understanding and participation of Fort McKay in mine closure and reclamation decision-making (Chapters 3 (i.e., site selection criteria), and 4 (i.e. Journey of Trust Actions; a First Nation-industry aspirational story; and a baseline survey that

examined project barriers, opportunities, perceptions, trust and relations between project participants),

III. Consultation, engagement and mine closure good practices, and a gap analysis of traditional land use planning in mine closure (both located in Chapter 5), and

IV. The Two-Roads Reconciliation & Reclamation Framework (Chapter 2).

Application of inclusive approaches - which value IK and reclamation science and different worldviews and approaches - supported enhanced intercultural understandings and insights between Fort McKay and an oil sands company such as:

- Mine reclamation and closure of the Fort McKay Traditional Territory with, and not for, the First Nation is an act of reconciliation.
- There were moments where Fort McKay, university, and company co-researchers showed gestures towards partnership and intercultural co-creation in mine reclamation and closure (e.g., experiencing a Two-Roads Approach led to new lessons about reclamation and relationships and cultural landscape tools, and shared decisions). See section 2.4.3 and 4.3.3 for more details.
- The sharing of sacred Fort McKay teachings supplied new insights on treaty relations and cultural landscapes. For example, a Fort McKay co-researcher taught co-researchers that a Two-Roads Approach goes all the way back to Treaty signing and exemplifies partnership. Another example is that dialogue on ancestral Fort McKay trails enabled co-researchers to view Fort McKay homelands as cultural landscapes which connect past, present, and future generations, and not just environmental landscapes.
- The intercultural insights and indicators of improved relations early in the project, before the company stopped participating, exemplify the potential of the Two-Roads Approach to establish a safe and shared ethical space for Fort McKay and industry to work meaningfully together on reclamation of homelands.

Nonetheless, the research hypothesis was incorrect. Collaborative development and application of cultural reclamation and closure processes and tools supported fair decision-making between Fort McKay and an oil sands company and led to mutual understandings across cultural paradigms and improved trust during the first parts of the study. However, Fort McKay co-researchers shared a unified voice that their trust in the company was later eroded when they made a business decision to stop taking part in this Two-Roads Approach to reclamation study while continuing to fund their western-science focused reclamation and closure research priorities. Therefore, intercultural and collaborative approaches must be sustained by

resources, law, and policy in order for reconciliation and trust building with Fort McKay to occur and their Aboriginal, Treaty, and land use rights to be mitigated.

A limitation of the study was that the latter bridges in the Two-Roads Reconciliation & Reclamation Framework (Figure 2-6) have not yet been applied and validated to assess and confirm if co-reclamation can lead to mutually beneficial landscape outcomes. Also, a lack of funding, the COVID-19 pandemic, and colonial biases limited a fulsome examination of reclamation from the perspectives of all the Fort McKay co-researchers as per the Two-Roads Approach as originally planned.

6.5 Key Takeaways

- We were the first to partially apply the Two-Roads Approach, an ethnoecological framework and strategy, to reclamation of oil sands industry-degraded lands.
- We co-created intercultural tools that support the meaningful engagement of Fort McKay and cultural landscape planning.
- Study results found that current mine closure and reclamation approaches do not adequately understand, nor mitigate traditional land use impacts and Aboriginal, Treaty and land use rights. For example, a systematic review of seven Life of Mine Closure Plans found that all plans targeted traditional use, but most held limited or no evidence that local Indigenous Nations' questions, concerns, and IK were adequately captured (n=1), resulted in Indigenous-informed closure decisions (n=2), or were accommodated (n=1).
- The plans are targeting low biodiversity since, on average, 101.6 or 28.0% of a subset (i.e., 363) of Fort McKay's traditional use species were included.
- Development of mine closure and reclamation plans are driven by regulatory policy, directives, approval requirements, and western science-focused guidance documents and methods that do not include complementary and inclusive Indigenous ways of knowing, learning, and working as a good practice. Instead, they narrowly focus on technical geoengineering and environment planning and regulations, and not reclamation of cultural landscapes.
- Reclaiming land with, and not for, Fort McKay is an act of reconciliation that builds bridges towards the renewal of culture and homelands and a more just and equitable closure landscape for all.
- Considering Canada's position as an energy and mining leader, we recommend that mining and energy companies, and provincial government agencies adopt inclusive, participatory reclamation, and closure procedures, policy, and regulations to address Aboriginal, Treaty and land use rights.

6.6 Overall Recommendations and Future Work

- Strive for the aspirational Fort McKay-industry story - *te mamano aski ki kakio asiniwak* (Cree) / *ɂeła ɂeghdalaída niha tuha* (Dënesuliné) / working together for the betterment of our people and land (English).
- Take action by understanding and adopting a partnership approach and/or the Two-Roads Approach, the Cycle of Respect, the Fort McKay Closure Vision, and the Two-Roads Reconciliation & Reclamation Framework.
- Test the remaining bridges of the Two-Roads Reconciliation & Reclamation Framework (i.e., co-create a reclamation plan and co-monitoring plan).
- Support intercultural skills and knowledge development, which includes resourcing the development of traditional land use tools (e.g., planning guide, success metrics, TLU trajectories, collaborative monitoring, etc.).
- Support training modules which educate company and provincial government staff (e.g., ethical space, rights, worldviews, and mine closure and Indigenous engagement best practices).
- Establish a multistakeholder mine closure and reclamation forum and a research chair to support knowledge braiding and research that explores the Fort McKay road in parallel to the already well-financed reclamation science road. Additionally, these venues should advance outstanding Fort McKay recommendations (see Table 2-5).
- International (UN 2007), national (GOC 2021; TRCC 2015) and provincial (GOA 2013) human rights policies and laws need to be translated into oil sands project operating approval regulations and directives to support the long-term prioritization of Fort McKay and their rights in mine closure and reclamation decision-making since oil sands companies use project-specific approval conditions to develop mine closure and reclamation plans.

6.7 References

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