Mikisew Cree First Nation Indigenous Knowledge and Use Report and Assessment for Shell Canada’s Proposed Jackpine Mine Expansion, Pierre River Mine, and Redclay Compensation Lake

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Mikisew Cree First Nation Indigenous Knowledge and Use Report and Assessment for Shell Canada’s Proposed Jackpine Mine, Pierre River Mine, and Redclay Compensation Lake
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On behalf of:
Mikisew Cree First Nation (MCFN)

Submitted to:
Mikisew Cree First Nation Government and Industry Relations (MCFN GIR)
Executive Summary

This report provides non-confidential baseline information and impact assessment regarding Mikisew Cree First Nation (MCFN) indigenous knowledge and use in the area of three projects proposed by Shell Canada: the Jackpine Mine Expansion (JPME), the Pierre River Mine (PRM), and the Redclay Compensation Lake (RCL). Taken together, these three projects are referred to as the ‘Shell Projects’.

Building on previous land use and occupancy mapping and traditional knowledge studies conducted with the MCFN, baseline information for this assessment includes data on Mikisew use and occupancy from Tobias (2010), as well as additional data collected through interviews conducted as part of this study. Twenty-eight mapping and indigenous knowledge interviews specific to the Shell Projects were conducted with twenty-eight MCFN elders and land users in Spring and Summer 2011. An additional eight oral history and indigenous knowledge interviews with key elders and land users focused on the Project areas were conducted over the same time period. In total, baseline data is drawn from 163 individual MCFN mapping interviews conducted with a total of 98 MCFN elders and land users, plus eight additional indigenous knowledge and oral history interviews.

Digitization, analysis and impact assessment took place through October and November 2011 with a major clarification in Project data received from the proponent on October 14, 2011, and Submission of Additional Traditional Knowledge and Traditional Land Use Information to the Joint Review Panel on November 15, 2011.

For the purpose of this assessment, Mikisew knowledge and use are considered to be linked and interdependent categories of practice, both of which are necessary to the maintenance and transmission of sakaw pimachiwin— a Mikisew Cree term meaning, literally, ‘bush way of life’. Mikisew elders use the same term, sakaw pimachiwin, as a translation of the English phrase ‘traditional knowledge’, suggesting that from a Mikisew perspective, knowledge, and way of life, are not separate. Within the assessment, site-specific values associated with Mikisew use and occupancy, and non-site-specific values associated with broader Mikisew indigenous knowledge and oral history, are considered in relation to potential effects from the Shell Projects.

Analysis of map data was based on local study areas (LSAs) that included lands and water bodies within 5km of each of the three Shell project footprints, and a larger regional study area (RSA) within 25km of the three project footprints and extending downstream, and 5km either side of, the Athabasca River, including the Athabasca delta. Mapped data illustrates MCFN use and occupancy within, adjacent to, and down
stream of the proposed project footprints, including several focal areas for MCFN use, including Kearl and McClelland lakes and surrounding areas, and along existing roads and waterways, including the Athabasca River corridor, and in the vicinity of the Firebag River and the Muskeg River.

- 375 MCFN site-specific use values were reported within the JPME LSA including complex concentrations of mapped features in the area of Kearl and McClelland Lakes, extending along current road networks, and the Athabasca River, including portions of the LSA associated with the JPME PRM compensation lake. Reported site-specific values within the LSA include seventy reported habitation values, preferred hunting sites for moose, small game and other resources, fishing sites (including Kearl Lake), medicinal and food plant gathering sites, trapping sites, and important boreal caribou habitat. Ninety-two mapped MCFN use values, including ten habitation values, are inside, or within 250m of the proposed JPME footprint.

- 358 MCFN site-specific use values were reported within the PRM LSA including a concentration of mapped features along the Athabasca River and at the confluence of the Athabasca and Firebag Rivers, including eighty-two habitation values, one burial, hunting sites for moose, wood buffalo, and other game, berry gathering sites, fishing sites, preferred drinking water sources, and water transportation routes along the Athabasca River, Firebag River, and adjacent streams. Seventy-one mapped MCFN use values, including twenty habitation values, are inside, or within 250m of the proposed PRM footprint.

- 220 MCFN use values were reported within the RCL LSA, which overlaps with the northern portion of the PRM and JPME LSAs. The RCL LSA includes forty-nine habitation values, six reported cultural/spiritual areas, preferred hunting sites for moose, wood buffalo, and other game, berry gathering sites, fishing sites, preferred drinking water sources, and water transportation routes. Eighteen mapped MCFN use values are inside, or within 250m of the proposed RCL footprint.

Analysis of mapped data, including estimated time of last use, demonstrates that lands and waters within the LSAs and RSA have been widely used by MCFN members over a long period of time, and that they include unique and important species specific values including preferred hunting or harvesting areas for moose, wood bison, fish, and various other resources integral to Mikisew sakaw pimachiwin, as well as location specific values including habitation areas, transportation corridors, and other values. Two culturally important species, boreal caribou and wood bison, are reportedly found within the LSAs but are rare or difficult to access elsewhere within MCFN territory.

Interview quotes and qualitative analysis provide contextual information regarding the importance of Mikisew practice, and changes over time, in the area of the Shell Projects. Consideration of indigenous knowledge and oral history interviews, alongside use and occupancy mapping, suggests that:

- reliable, peaceful, and unimpeded access to preferred areas that are historically
known and personally familiar is integral to the transmission, and current and future practice, of sakaw pimacihiwin within the LSAs and RSA;

- residual effects from existing oil sands and related development upstream along the Athabasca River have already resulted in loss of Mikisew access to preferred areas within the LSA, as well as wide spread impediments to use, including observed industrial contamination of water, air, and subsistence resources, as well as other effects, throughout the RSA, and particularly within the JPME LSA;

- Existing impacts from industrial oil sands operations along the Athabasca River are currently being experienced. Evidence from this study suggests that these effects are widespread, acute, and have caused serious declines in Mikisew use and occupancy in the RSA since at least the mid-1980’s. These environmental effects are acting cumulatively and have a cascading effect on Mikisew individuals and families, on the inter-generational transmission of cultural knowledge, and on the ability of Mikisew members to meaningfully practice sakaw pimacihiwin, or way of life, within the LSAs, RSA, and beyond.

- Despite declines in Mikisew use and occupancy in the RSA and LSAs, and due to a variety of reasons, Mikisew members continue to highly value the impacted lands and waters, and continue to see them as a foundation for identity and future livelihood. As one Mikisew elder insisted, despite industrial contamination and loss of use, and his own decision to live away from the Fort Chipewyan area, in part because of concerns regarding industrial contamination, “I never threw my land away”.

One MCFN elder noted:

[translated from Cree at time of interview] He said he didn’t throw his land away, but because of the water quality, that’s why he is staying over here [in Edmonton], because nobody ever throws their land away. If the land was good, he would be back there, if the water was good. He said even if he moved back there, nothing to live on on the land, he said, all the animals are gone, even the fish, he said, they’re poisoned too he said. So I guess what he’s saying is, what’s the use to go back? (M39 2011)

Another MCFN land user living in Fort McMurray noted:

It’s hard to live our way right now. I remember them days, a lot of people used to go hunting all over the place with dogs and stuff like that. Everybody is starting to give up now because … oil company is taking over (M18 2011).

Residual Shell Project effects anticipated within the LSAs vary by Project, but include permanent removal of preferred harvesting and habitation areas with unique histories of Mikisew use, including removal of habitat for culturally important species that are rare or hard to access within Mikisew lands such as wood buffalo and boreal caribou. Other regularly used resources, camps, cabins and other unique values, and constellations of
value, associated with Kearl Lake, McClelland Lake, and the Athabasca River Corridor will also be lost to use, or permanently impacted. Existing effects within the wider RSA include contribution to cumulative effects resulting in widespread downstream loss of use, continued out-migration from Fort Chipewyan and Mikisew on-reserve communities due to perceived or observed contaminants, human health impacts linked by Mikisew members to existing industrial pollution, and declines in the quantity and quality of available resources, including water and land based access to resources.

Residual effects from the proposed Shell Projects would combine with and be in addition to these existing effects within the LSAs and RSA. Based on pre-development, or pre-1965 levels, the cumulative effect of existing industrial development on Mikisew indigenous knowledge and use (sakaw pimacihiwin) within the RSA, including all three LSAs, has clearly been significant and adverse. Based on standard criteria, including magnitude and duration, and considering mitigations proposed by the proponent, the Shell Projects, either separately or taken together, are anticipated to have additional residual adverse effects on Mikisew indigenous knowledge and use within the LSAs, and the larger RSA. As such, in the absence of substantial additional mitigation, and as proposed, each of the Shell Projects is anticipated to have significant adverse residual effects on MCFN indigenous knowledge and use, including (i) the use of lands and resources by MCFN members, and (ii) unique heritage resources (tangible and intangible) of value or concern to MCFN members.

Using a current (2011) baseline, and based on standard criteria including magnitude and duration, and considering mitigations proposed by the proponent, the Shell Projects, either separately or taken together, are also anticipated to have significant adverse residual effects on Mikisew indigenous knowledge and use, within the respective LSAs, and the wider RSA, including (i) the use of lands and resources by MCFN members, and (ii) unique heritage resources (tangible and intangible) of value or concern to MCFN members.

In light of existing, and anticipated further significant adverse effects, it is recommended that the proponent, MCFN, and Federal and Provincial Crown undertake a process to evaluate and ensure that adequate quantity and quality of resources exist and remain within preferred MCFN areas to allow for the meaningful practice and transmission of Mikisew sakaw pimacihiwin in the LSAs and RSA into the future. In the event that adequate access to a sufficient quantity and quality of resources cannot be ensured in the vicinity of preferred areas, then future impacts should be avoided or fully mitigated to below a significant level, as defined in this report, using effective strategies agreeable to the MCFN. Due to the nature and extent of PRM and JPME Project effects, effects from these two Projects cannot likely be fully mitigated.
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## Acronyms and Abbreviations

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<td>MCFN</td>
<td>Mikisew Cree First Nation</td>
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<tr>
<td>ATK</td>
<td>Aboriginal traditional knowledge</td>
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<td>CASCA</td>
<td>Canadian Anthropology Society/Société Canadienne d'Anthropologie</td>
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<td>JPME</td>
<td>Jackpine Mine Expansion</td>
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<td>LSA</td>
<td>Local study area</td>
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<td>PRM</td>
<td>Pierre River Mine</td>
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<tr>
<td>RFMAs</td>
<td>Registered Fur Management Areas (Alberta)</td>
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<td>RSA</td>
<td>Regional study area</td>
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<tr>
<td>TEK</td>
<td>Traditional ecological knowledge</td>
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<td>Firelight Group or Firelight</td>
<td>Firelight Group Research Cooperative</td>
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<td>TUS</td>
<td>Traditional use study</td>
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Section 1: Outline of the Report

This report provides information and assessment based on available Mikisew Cree First Nation (MCFN) knowledge and land use data and with regard to two proposed oil sand mine developments, and a compensation lake ("the projects") as well as related works, proposed by Shell Canada ("the proponent") within the traditional lands of the Mikisew Cree First Nation.

The projects (defined in Section 2), are the Jackpine Mine Expansion (JPME) immediately adjacent to, and extending north and west from, Kearl Lake, Alberta, the Pierre River Mine (PRM) located north and west of Kearl Lake on the west side of the Athabasca River, and the Redclay Compensation Lake (see Figure 1). Specific MCFN knowledge and use values,\(^1\) including areas and resources relied upon by MCFN members for the practice of treaty rights,\(^2\) have been documented within and adjacent to the proposed footprints for each of the projects.

The primary goal of this report is to articulate available MCFN knowledge and use related to the area of the proposed projects, including how MCFN use has changed over time, where areas of lost use resulting from impacts by oil sands or other developments already exist, and how the projects are likely to further influence MCFN knowledge and use values. The report is intended for consideration as part of the JPME and PRM regulatory approval process and for JPME and PRM planning purposes. It integrates qualitative information collected through a 2008 MCFN study submitted to the proponent (summarized in Section 2) along with additional and supplemental MCFN information and analysis (summarized in Sections 5, 6, and 7).

Based on available evidence, and considering the level of existing adverse industrial effects in the Kearl Lake area and on the Athabasca River, this report finds that the projects, as proposed, either separately or taken together, are likely to result in significant adverse residual effects (separate from the effects of other known and anticipated projects) on MCFN knowledge and use within the local study areas (LSAs).

\(^1\) For the purpose of this report, an “MCFN knowledge and use value” is any reported cultural resource, tangible or intangible, including site-specific (mapped) and non-site-specific (non-mapped) value, that is considered important to MCFN livelihood (see Section 3), or is associated with past, present or planned MCFN use.

\(^2\) For the purpose of this report, aboriginal and treaty rights are understood to include, but are not limited to, hunting, fishing, trapping and gathering for sustenance and livelihood purposes. For additional detail, see Section 5.
In combination with effects from other projects, the residual effects of the projects are likely to contribute to and exacerbate existing significant cumulative effects on MCFN knowledge and use in the regional study area (RSA). Both LSA and RSA are described in detail below.

Despite available information, the proponent’s application does not directly consider the significance of residual project effects on Mikisew use or rights. Instead, as indicated in the proponent’s Submission of Additional Traditional Knowledge and Traditional Land Use Information to the Joint Review Panel (September 2011) filed with the JRP on November 15, 2011, the proponent evaluates significance based on a set of biophysical key indicator resources (KIRs) which it uses as a proxy for a direct assessment of effects on the practice of Mikisew use and rights. The findings of this report are specific to Mikisew use and rights, and are consistent with data available to the proponent at the time of application, as well as information collected through additional interviews with MCFN members.

The report is organized into eight sections:

- Section 1 provides an outline of the report, including goals and limitations;
- Section 2 provides a summary description of the projects based on documentation provided by the proponent and a summary of previous studies of MCFN knowledge and use specific to the proposed projects, including the consideration of effects on MCFN knowledge and use within the proponent’s applications, and the initial MCFN project-specific study submitted to Shell in 2010;
- Section 3 provides contextual information regarding the Mikisew Cree, including a brief discussion of Treaty 8, the relationship between treaty and trapline rights, and a general ethno-historical summary;
- Section 4 provides a discussion of methods used for baseline information collection, and for impact assessment;
- Section 5 provides baseline information and impact assessment regarding MCFN knowledge and use within the JPME LSA and beyond within the RSA, and includes an identification of key valued components (VCs), a description of maps and observations by traditional land users regarding ecological and industrial change in the LSA and RSA, as well as related changes in MCFN use;
- Section 6 provides baseline information and impact assessment regarding PRM knowledge and use within the JPME LSA and beyond within the RSA, in the same format provided for the JPME;
- Section 7 provides baseline information and impact assessment regarding MCFN knowledge and use within the RCL LSA and beyond within the RSA, in the same format provided for the two mining projects;
- Section 8 provides a summary of findings and conclusions.
1.1 About the Authors

The lead author of this report, Dr. Craig Candler, holds a Bachelor of Arts (with Honours) in Anthropology, a Master of Arts in Anthropology from the University of Alberta, and a Doctor of Philosophy in Anthropology from the University of British Columbia (completed in 2008). He has taught senior undergraduate courses at the University of Alberta and the University of British Columbia. Dr. Candler has more than 15 years experience working in the fields of community-based research and traditional use and traditional knowledge studies with First Nations. Much of Dr. Candler’s work, including graduate work, has been with Dené and Cree peoples in the boreal forest of British Columbia and Alberta. He has written components for large and small environmental assessments and has been an invited speaker on cultural impact assessment for the Western and Northern Canada Affiliate of the International Association for Impact Assessment (IAIA). Dr. Candler worked for five years with the Victoria Office of Golder Associates as a Senior Traditional Studies Specialist, and as the Senior Technical Lead for traditional studies in Golder’s Cultural Science Division in BC. Much of this work involved integration of indigenous use and knowledge within environmental assessments, including identification of mitigations, and including consideration of data from multiple disciplines, including wildlife, aquatic resources, and vegetation. In late 2009 Dr. Candler left Golder Associates to co-founded the Firelight Group Research Cooperative, and is currently its President. Dr. Candler serves on the Executive of the Canadian Anthropology Society/Société Canadienne d'Anthropologie (CASCA), and is a professional member of the American Anthropological Association (AAA), the National Association for Practicing Anthropology (NAPA), and the Society for Applied Anthropology(SfAA).

Interviews specific to this report were conducted by Craig Candler, Rachel Olson, and Steven DeRoy of the Firelight Group, Matthew Whitehead of the MCFN GIR, and Sherri Labour. Cartography was provided by Steven DeRoy. Steven has over 14 years’ experience working with aboriginal communities in Canada, focusing on cartography, GIS, community training, and technical services.

An internal peer review of the draft report was completed by Dr. Ginger Gibson of the Firelight Group. Additional review and support was also provided by Carolyn Whittaker (the Firelight Group). While others have assisted, reviewed and made suggestions, the opinions and conclusions expressed herein are those of the primary author, Craig Candler. Appendix 6 provides a CV for Dr. Craig Candler, Lead Researcher and Author, and for Steven DeRoy, Cartographer.
1.2 What is a Project Specific Traditional Use Study?

A project specific traditional use study (TUS)\(^3\) is a systematic and evidence based form of investigation that applies indigenous knowledge and social science to accomplish goals that may include:

- Describing the knowledge, use and interests of a community in relation to a proposed project or area;
- Assessing potential project effects; and
- Identifying mitigations or recommendations that may reduce negative effects and maximize positive ones.

Most TUS use mapping as an important method. Good community mapping practice (see Tobias 2010) emphasizes individual map biography interviews involving documentation of prior informed consent and a consistent and well documented method for data collection and management (see Appendices 4 through 6).

1.3 Limitations of the Report

This report is based on research conducted by the Firelight Group Research Cooperative and the MCFN as part of a project-specific MCFN knowledge and use study conducted in response to the proposed Projects.

Information provided herein is the most current available to MCFN. It is based on the understandings of the authors, and is not intended as a complete depiction of the dynamic and living system of use and knowledge maintained by MCFN elders and members. Absence of data does not mean absence of use or value. Additional studies are necessary to fill information gaps regarding MCFN knowledge and use, and the resources, criteria, thresholds and indicators necessary to sustain meaningful practice of Treaty 8 rights into the future.

Nothing in this submission should be construed as to waive, reduce, or otherwise constrain MCFN rights within, or outside, regulatory processes. Nor should it be construed as to define, limit, or otherwise constrain the treaty or aboriginal use or rights of other First Nations or aboriginal peoples.

This report integrates and includes information from several sources (see Section 4), including use and occupancy data collected by Terry Tobias with the MCFN in 2009.

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\(^3\) While there are various names and acronyms used, the term traditional use study (TUS), or variants, is perhaps the most common in western Canada. Tobias (2010: 32-33) provides a discussion of terms and definitions and suggests the term use-and-occupancy mapping (UOM). For the purpose of this study, we use the term TUS to remain consistent with past work.
This report is specific to the JPME and PRM projects and should not be relied upon to inform other projects or initiatives without written consent of the MCFN.
Section 2: The Projects and Existing Studies

Shell is seeking approval for the Jackpine Mine Expansion (JPME), including new mining areas adjacent to the existing Jackpine Mine operations (Jackpine Mine – Phase 1), approval of a new mine, the Pierre River Mine (PRM), on the west side of the Athabasca River. The JPME and PRM projects include a shared compensation lake on the west side of the Athabasca River immediately north of the PRM mine area. For the purpose of this assessment, the JPME and PRM compensation lake is considered to be a project component of both the JPME and the PRM Projects.

Shell is also seeking approval for the Redclay Compensation Lake (RCL), a compensation lake immediately north of the JPME and PRM compensation lake. The Redclay Compensation Lake (RCL) is proposed by Shell as compensation for harmful alteration, disturbance, or destruction of fisheries habitat resulting from construction of another oil sands mine, the Muskeg River Mine Expansion, and as such is not part of the JPME or PRM regulatory applications. For the purpose of this assessment, the RCL constitutes a third Project separate from the PRM and JPME.

Based on project information, the JPME and PRM are on opposite sides of the Athabasca River, are proposed within distinct areas, and rely on separate facilities. They constitute two separate applications. For the purposes of this report, JPME and PRM are treated as separate projects. Where they are discussed together, the term “the projects” is used.

Within the project description for the JPME submitted with its application, the proponent states:

The combined EIA for the Jackpine Mine Expansion and the new Pierre

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4 Project information reviewed includes: digital map data provided by the proponent; Project Descriptions for the JPME and PRM (Volume 1 and 2 of the EIA); Traditional Land Use Environmental Setting for the JPME and PRM Project (December 2007); Volume 5, Sections 8.1 (Human Environment Conclusions), 8.3 (Traditional Knowledge and Land Use), and 8.7.7 (Traditional Land and Culture Impacts) of the Environmental Impact Assessment (2007); those portions I believed to be relevant of the Environmental Impact Update Report (2008); those portions I believed to be relevant of the Additional Information and Clarification for Federal Departments (2010); those portions I believed to be relevant of the Round 1 and Round 2 Supplemental Information Responses. A general search of project documents for mitigations considered to be of relevance to MCFN values was compiled for appendix 3.
River Mine concluded that there would be no unacceptable environmental or socioeconomic effects from the projects, provided that the proposed mitigation and monitoring are undertaken (p. P-3).

Regarding project benefits, the proponent states that the projects will result in approximately 2,130 new full time permanent jobs and approximately 28,790 work years of construction employment over a 10-year period:

These new projects will contribute billions of dollars in taxes and royalties to the municipal, provincial and federal governments, which will benefit all Canadians…Since the Muskeg River Mine started up in 2002, Albian Sands has paid more than $50 million in taxes to the Regional Municipality of Wood Buffalo. The proposed projects will continue to build on this tax base, contributing substantial economic benefits to the region (p. 1-9).

Regarding project benefits to aboriginal peoples, the proponent is more muted:

Indirect benefits from these projects will be created by using local suppliers, including First Nations and Métis companies, provided that they are competitive and meet the project and operations requirements (p. 1-9).

2.1.1 Jackpine Mine Expansion

The existing Jackpine Mine – Phase 1 is located on the east side of the Athabasca River, west of Kearl Lake, and approximately 70 km north of Fort McMurray, Alberta. It has an approved production capacity of 200,000 barrels per calendar day (bbl/cd). Other operating or proposed oil sands mines in the immediate area include the Kearl Oil Sands project (operated by Imperial Oil), the Muskeg River Mine (operated by Albian Sands), and the Fort Hills Oil Sands project. The project is downstream, along the Athabasca River, from numerous other oil sands and industrial projects located in the Lower Athabasca Region.

Shell is proposing to expand the bitumen production of the existing Jackpine Mine – Phase 1 by 100,000 bbl/cd and open a large expanded mining area with associated processing facilities northeast of the existing Jackpine Mine facilities.

The proposed Jackpine Mine Expansion (JPME) is located within the Muskeg River watershed immediately south of the Firebag River, and includes areas north and west of Kearl Lake. Beginning in 2012, JPME anticipates diverting multiple streams, including portions of Pemmican, Green Stockings, Blackfly, Wesukemina and Lyinimin creeks. Later in the mine life (approximately 2041) upper reaches of the Muskeg River will be diverted through either an 11.3 km water pipe, or through ditches around the northern perimeter of the project footprint.

Based on map data provided by the proponent, the footprint of the JPME would more
than double the approved footprint of the existing Jackpine Mine – Phase 1. The operating lifetime of the JPME is anticipated to be approximately 40 years. A detailed project description for the JPME is included as Volume 1 of the proponent’s application.

2.1.2 Pierre River Mine

Shell is proposing to construct a new mining area on the west side of the Athabasca River approximately 12 km south of its confluence with the Firebag River. Based on Shell’s project description for the PRM, the mine would produce up to 200,000 barrels of bitumen per calendar day (bbl/cd).

The proposed PRM is located within the watershed of streams flowing east from the Birch Mountains into the Athabasca River. Beginning in 2016, PRM anticipates diverting multiple streams, including the lower portions of Pierre River, Eymundson Creek, Asphalt Creek and Big Creek. Other proposed or operating oil sands mines in the immediate area include the Horizon Mine (operated by CNRL), and the Frontier and Equinox Mines.

Based on Shell’s project description, the operating lifetime of the PRM is anticipated to be approximately 40 years. The PRM would be a truck and shovel mining operation similar in scope to Jackpine Mine – Phase 1. No facilities currently exist at the PRM site. All required systems would need to be constructed to service initial operations. A detailed project description for the PRM is included as Volume 2 of the proponent’s application.

2.1.3 Redclay Compensation Lake

Separate from the PRM and JPME applications, and as part of compensation for anticipated impacts to fish habitat from the Muskeg River Mine Expansion, the proponent is proposing to construct a human-made lake on the west side of the Athabasca River, to the north of the PRM, and immediately west of the confluence of the Athabasca River and the Firebag River. Based on map data provided by the Proponent, the RCL Project would be approximately 6km long, more than 500m wide at its widest point, and separated by less than 1km from that Athabasca River.

2.1.4 Water Withdrawals

The Athabasca River will be a primary source of water for both the JPME and the PRM.

Based on the JPME project description, the JPME will use an existing Athabasca River intake structure constructed for the Muskeg River Mine, but will upgrade the water intake, and will require increased water allocation of approximately 18 Mm3/a to support the expanded Jackpine Mine, for a total allocation of approximately 53.5 Mm3/a.
Based on the PRM project description, the PRM will require a new river intake structure planned for north of Sled Island on the Athabasca. The PRM will require a new water allocation to meet its water requirements of up to 55.1 Mm³/a.

### 2.2 Existing Studies

While a number of existing studies regarding MCFN knowledge and use have been considered in preparation of this report, two proponent documents address MCFN knowledge and/or use in direct relation to the Projects.

#### 2.2.1 Proponent’s Consideration of MCFN Traditional Knowledge and Land Use Within the Applications

Shell’s December 2007 Application for Approval for the Shell and JPME projects provides an assessment of impacts to traditional knowledge and land use as detailed in Volume 5, Section 8 – Human Environment. Shell submitted an update to the application on May 30, 2008, and corrected or modified the application through responses to supplemental information requests (SIRs).

On November 15, 2011, Shell submitted a Submission of Additional Traditional Knowledge and Traditional Land Use Information to the Joint Review Panel. This submission cites additional reports provided by both ACFN and MCFN and specific to knowledge and use in the area of the Shell Projects. No changes were made to Shell’s initial assessment, and no additional mitigations were undertaken.

The proponent’s initial baseline and assessment of effects on MCFN traditional knowledge and land use treats the JPME and PRM projects as a single project. This makes it difficult to identify distinct potential JPME or PRM project effects, and is compounded by the fact that much of the analysis does not clearly identify effects to MCFN, but speaks more generally regarding aboriginal peoples. Based on limited information, 8.3.3.2 of the proponent’s application provides a summary of findings indicating that the area of the project “has been actively used for traditional activities for hundreds of years” (p. 8-27), and that common themes of existing traditional land use studies available to the proponent and within “the RSA” include:

- Access to and conduct of traditional activities remains a vital part of aboriginal culture and daily life;
- Cumulative effects related to oil and gas activities and overall resource development in the area are already having a major impact on traditional lands and traditional use;
- Aboriginal peoples in the area maintain a strong connection to the land and highly value environmental integrity; and
• Traditional users feel that they should have an active role in resource management in the region. Their traditional knowledge can provide valuable insight for planning and decision making (p. 8-27, 28).

While the proponent’s assessment of the likely effects on MCFN traditional land use clearly anticipates direct project effects in some areas, several irregularities suggest that the assessment underestimates the likely residual project effects (post-mitigation), and cumulative effects, on MCFN traditional knowledge and land use. Some of the challenges identified in the proponent’s initial assessment include:

• **The LSA was not based on project effect or footprint:** The spatial scope of an LSA forms a primary basis for impact assessment. As shown in figure 8.3.1 (p. 8-20) of the EIA, with regard to effect on MCFN use, the proponent bases its LSA on registered fur management areas (RFMAs) currently held by First Nation members, rather than on the Project footprint itself. The Project footprint of the PRM extends beyond the shown boundaries of the six traplines. On the west side of the Athabasca River *more than half of the PRM footprint seems to be outside the LSA*, including the western extent of the Athabasca River bridge crossing. This is an extremely unusual approach that seems to confuse trapline rights for aboriginal rights, and suggests that a large area of the project was not appropriately assessed by the proponent in relation to MCFN knowledge and use.

• **Minimal attention to effects within the MCFN RSA:** The proponent’s unusual approach to determining the scope of the LSA meant that a large portion of the PRM footprint, as well as portions of the RCL and JPME footprint, are within a poorly defined area that the proponent uses as an MCFN RSA. The qualitative impact assessment does not address any of the RSAs, and while detailed attention is later given to the Fort MacKay RSA, minimal consideration is given to the MCFN RSA. This suggests that a large portion of the PRM footprint, as well as areas beyond, was not meaningfully assessed for effects on MCFN rights and use even where existing information made this possible. The extent of the area considered by the proponent as being within the MCFN RSA is not clear.

• **Confusion between trapline rights and aboriginal or treaty rights:** Throughout the assessment there is an implied assumption that the owner of an RFMA is an appropriate representative of the traditional use and rights of a First Nation, and that the boundaries of an RFMA define or constrain the practice of traditional use and aboriginal rights in some way. While there is often a relationship between an RFMA and the current or past practice of aboriginal rights, RFMA boundaries do not determine or limit traditional use and associated rights. The confusion of RFMAs with aboriginal rights and use seems to have influenced the scope of the LSA used by Shell, as well as the scope of interviews conducted by the proponent and considered in the assessment, and the nature of the mitigation recommended. In the case of the MCFN, this issue is particularly acute as, to our knowledge, none of the six RFMAs considered in Shell’s
assessment are owned or held by MCFN members, suggesting that MCFN practice of rights in the area was not addressed by Shell at all through its emphasis on RFMA holders. This confusion, in combination with a lack of appropriate data, is likely to have underestimated assessment of effects on MCFN knowledge and use, and resulted in inappropriate mitigations.

- **Inappropriately vague and unsupported conclusions:** Despite the presence of some very useful data, in places the proponent comes to conclusions that are not supported by data, and in others comes to only vague conclusions where the data supports much stronger ones.

8.3.6.2 finds that the area of disturbance within the MCFN RSA will be increased, and there will be direct project effects on the six RFMAs. However, despite available data that RFMA 1714 is highly disturbed in the base case (46% of total area) and the project will disturb an additional 14% to 27%, resulting in a total disturbance area of between 60% and 73%, there is no strong conclusion, no finding of significance, and no evaluation of environmental consequence.

In other cases, the proponent finds ‘no effect’ where this finding is not supported by available data:

*With regard to fishing, the project will not have a direct effect on traditional fishing* (p. 8-53).

This perspective is expanded in SIR 1, response 20b, which states that:

*The Jackpine Mine Expansion will not change the ability of aboriginal groups to use the fish and fish habitat resources in the lower Athabasca River* (p. 16-3).

While there seems to have been some evidence regarding fishing use in the LSA (provided by trapline holders), given the lack of attention to effects on traditional use within the MCFN RSA, it is unclear what kind of use data such a strong conclusion regarding traditional fishing in the Lower Athabasca region is based on. In each case, inappropriately strong or inappropriately vague conclusions by the proponent seem to underestimate impacts on MCFN use and rights.

- **Inappropriate reliance on optimistic and distant future reclamation objectives:** Much of the assessment relies on assumptions that reclamation of mined areas will be successful and will provide opportunities for MCFN knowledge and use that are equivalent (or greater than) what is naturally existing. Available information suggests that both these assumptions are highly questionable. Even in the event that the assumptions prove true, the removal of lands from aboriginal use for periods of time that exceed one generation (generally 20 to 25 years) is properly considered ‘permanent’ for the purposes of

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5 Federal guidance documents (Hegmann et al 1999: 44) suggest that a 10% (or greater) change in a VEC is usually considered significant.
traditional use and social or cultural impact assessment, due to the interruption of knowledge transmission regarding the disturbed areas\(^6\).

- **Inappropriate mitigations and no clearly identified residual effects ratings:**
  In section 8.3.5.5, the proponent identifies five mitigations specific to First Nations TEK and land use (p. 8-48, 49)\(^7\):  
  \begin{itemize}
    \item Compensation for directly affected trapline holders;
    \item Continued consultation with key aboriginal groups;
    \item Access to traplines;
    \item Employee/contractor education; and
    \item Reclamation
  \end{itemize}

  The adequacy of mitigations, and residual effects post-mitigation, are not considered in the applications. They also do not clearly distinguish impacts to MCFN use from impacts to the use of other potentially affected First Nations.

  Compensation of trapline holders is a common practice designed to compensate for the commercial rights of RFMA owners. As noted above, the proponent seems to have made an error in confusing traditional use rights with trapline or RFMA rights. As individual trapline holders are generally not understood to represent the aboriginal or treaty rights of a First Nation, compensation to a trapline holder is likely an inappropriate mitigation for impacts to MCFN knowledge and use.

  Likewise, because ongoing consultation with key aboriginal groups is a required component of the regulatory environmental process, and may be considered an ongoing legal obligation of the Crown delegated to the proponent, it is unusual to see it presented as mitigation.

\section*{2.2.2 Summary of the 2011 Submission of ‘Additional Information’}

The November 15, 2011, Submission of Additional Traditional Knowledge and Traditional Land Use Information to the Joint Review Panel (‘the Additional Information’) provides a brief review of additional MCFN information, including Peter Elias’ 2011 Mikisew Cree Use of Lands and Resources in the Vicinity of the Proposed Shell – Jack Pine and Shell – Pierre River Operations. The Additional Information restates the

\(^6\) This approach is consistent with that taken in other environmental assessments, and with the well-documented importance of particular places and landscapes to the continuity of aboriginal knowledge transmission (Basso 1996, Berkes 1999, Palmer 2005).

\(^7\) Section 5.7 of the 2008 project EIA update, and section 8.7.7 of the 2007 EIA mention additional mitigations including ‘agreements with First Nations, and others,’ and support for ‘community initiatives that contribute to the preservation of Aboriginal culture.’ While these may ultimately be relevant, we have not considered them under mitigations as the specifics of any planned agreement or contributions are not known.
general findings of the proponent’s assessment and provides a significance
determination based on an indirect assessment of Project effects on MCFN knowledge
and use – assuming that in order for significant effects on use of lands and resources by
aboriginal peoples, significant effects must occur to underlying resources such as
wildlife, fish, or plants. The assessment is provided, “from a scientific perspective and
ecological context”:

a project could potentially affect the resources used in traditional land use
(e.g., wildlife, fish and traditional plants); however, if that project does not
have a likely significant adverse effect on the resource in the region and
resource users can still access the resource within the TLU area that is in the
region, then that project is not expected to result in significant effects to the
traditional land users’ ability to practice traditional pursuits in the Oil Sands
Region and within the area those users traditionally use…This assessment
also considers whether the Project would preclude access by traditional land
users to resources beyond the Project’s boundaries. (Golder 2011:5-6)

The submission concludes that there are no significant residual Project effects on MCFN
TK and TLU.

While the additional TK and TLU information received has added to and
refined prior knowledge with respect to the potential impacts of the Project on
First Nations’ traditional use, the concerns raised and the information
contained in these recent TK/TLU documents is consistent with that which
was previously assessed in the EIA. Since the additional TK and TLU
information is consistent with the information used in the EIA, it supports the
EIA conclusions regarding the potential impacts to TLU in the Terrestrial and
Aquatics Regional Study Areas (Golder 2011: 8)

Considering the Additional Information, the proponent’s EIA, and other Proponent
submissions together, the following additional challenges, or gaps were noted:

- **Lack of information on likely significance of effects on aboriginal use of lands
  and resources directly**: Significance of effect is only considered indirectly through
  possible significant effects on other valued components (see Additional Information).
  Significance of effects MCFN knowledge, use or rights is not characterized directly or
  separately from biophysical components. For example, effects on particular site-
  specific values such as preferred harvesting areas at Kearl Lake, habitations and
  trails, or their zones of reliance, or other resources essential to the practice of MCFN
  knowledge and use are not considered;

- **Lack of consideration of baseline data and assessment already provided by
  First Nations, including use of lands, waters, access, way of life**: While
  substantial information has been provided by MCFN to the proponent, it is not clear
  how, or if, the proponent considered the information put before it by MCFN. This is of
  particular concern in light of recent updates to the proponent’s mapped data provided
to the MCFN in mid-October.

- **Lack of consideration of cumulative effects on aboriginal use of lands and
  resources, and no pre-development baseline**: Effects which are deemed not
significant for other valued components may act cumulatively with other projects, or changes in the environment itself, and result in a change that may be significant to aboriginal use of lands and resources, or other related endpoints.

- **Lack of consideration of effects which are not significant for other valued components, but which may be significant in relation to aboriginal use of lands and resources.** Effects which are not significant for biophysical valued components may be significant given an assessment endpoint of aboriginal use of lands and resources, effects on lifestyle, culture or health, or others. For example, water or air quality parameters that do not exceed legislated thresholds, may still cause a change to the observed or perceived environment resulting in loss of use or avoidance of traditional foods by aboriginal people;

- **Lack of clarity regarding the LSA or RSA used for assessing impacts to First Nations:** LSA used by the proponent in the EIA was extremely unusual, and the RSA used was unclear. The proponent’s approach does not adequately address the potential effects of the Project downstream along the Athabasca.

- **Lack of consideration of the specific, scarce, rare, or unique nature of particular resources within the LSA or RSA:** Practice of knowledge and use is assumed by the proponent to be generalized and not importantly modified by requirements to ‘go elsewhere’. Resources that are either unique, rare, or in short supply elsewhere in the regional study area (such as site-specific cabins, trails, cultural/spiritual areas, or harvesting areas, the Athabasca River, wood bison, or woodland caribou), including heritage resources, are not adequately considered.

- **Lack of consideration of effects on access to resources (by water or land):** Submitted documents do not contain sufficient information on First Nation access to the LSA, or within the broader RSA, including access by boat for subsistence purposes.

- **Inappropriate scale of analysis:** In relation to aboriginal rights that are collectively held, but individually practiced, the appropriate scale for analysis of effect on practice is the ‘most sensitive receptor’, or most vulnerable individual rights practitioner, not the aboriginal group as a whole.
Section 3: Mikisew Cree First Nation

3.1 Culture and History

The Mikisew Cree First Nation is part of the larger Western Woods Cree cultural group, that spans the subarctic from Hudson Bay through what is now Manitoba, Saskatchewan, and Alberta. The Mikisew Cree were deeply involved in a mixed economy incorporating subsistence hunting, fishing and gathering, and fur trading through the 19th and most of the 20th centuries. The Mikisew way of life relies upon the resources of the boreal forest, and especially the unique river, delta, and forest environments of the Athabasca and Peace Rivers, and what is now Wood Buffalo National Park. Critical species of cultural and economic importance included, and continue to include moose, woodland caribou, wood bison, elk, deer, and bear. Of these, Smith notes, “Of these, moose and woodland caribou were most important for subsistence” (1981:257). In Mikisew territory, wood bison and small game including beaver, muskrat, porcupine, ducks and waterfowl, were also critical.

The North West Company established Fort Chipewyan in 1789, by which time the Cree were already well established in the region as trading partners, often intermarried with Denesoline (Chipewyan). With establishment of the Fort as a trading post, some Woodland Cree, including the ancestors of the MCFN, began to reside more permanently in the boreal forest and around the western edge of Lake Athabasca and along the Peace and Athabasca Rivers, relying on wood bison, moose and various other fish and game. “…the network of kinship ties still functions and affects how people work together and share material possessions and bush foods…the major rivers- Peace, Slave, and Athabasca- comprised three significant axes that linked together the members of the local bands along these routes (McCormack 2010: 53-54).”

By the late 19th century, most Mikisew Cree lived in several key village areas for at least part of the year, still relying primarily on subsistence hunting and gathering, but also actively engaged in the fur trade. Village areas were located along the Athabasca River and Peace Rivers, at Birch River, and elsewhere in what would become Wood Buffalo National Park. While officially Cree, the Mikisew Nation is culturally diverse. With establishment of Wood Buffalo National Park in 1922, and expansion in 1926, members of the Cree band residing in the area were allowed to maintain homes and use rights within the bounds of the park. Members of the Chipewyan band were excluded from use
of homes and cabins in the Birch River settlement and lucrative trapping areas along the shores of Lake Claire. Patricia McCormack examined this transition and indicates that, "in 1944, a sizeable portion of the Chipewyan band, those members living in WBNP, was quietly removed from the Chipewyan Band list and added to the Cree band list. Legally, they became Cree Indians" (McCormack 1989:125).

In the late 1960s, construction of the W.A.C. Bennett Dam on the upper Peace River impacted water levels in the Peace-Athabasca Delta and led to a rapid decline in the population of muskrat and other aquatic furbearers, a staple of the local fur economy.

And through the eighties, like in the seventies, eighties, nobody really paid attention to what they [industry] were doing so they would dump any time. I think about it, like, where’s all the tailings going? It’s got to be seeping into the ground, because underneath there’s ground water … you know how much water they use, don’t you think those things would have been overfilled by now? (M15 2011)

Changes in the environment, lower fur prices, industrial impacts, and Canadian colonial and education policies all influenced transition to a permanent MCFN settlement at Fort Chipewyan through the 1960s and 70s, but reliance on historic village areas, traplines, and the wider traditional territory continued. Permanent and seasonal Mikisew bush settlements at Quatre Forche and along the Peace River are still active. The last active Mikisew bush settlement along the Athabasca River was at Snowbird’s Camp, or Embarras Portage. It was an active settlement until at least the mid-1980’s when concerns regarding declining environmental quality, including low water levels, and pollution from oil sands operations up stream, combined with other factors, resulted in the end of Snowbird’s Camp, and a transition to seasonal, rather than permanent year round, reliance on the Athabasca River.

Since the late 1960s, and with the intensification of the oil sands economy over the past 20 years, MCFN members and families continue to maintain livelihoods that are lived in relationship to the land, and also participate in the contemporary wage economy. The MCFN established a landmark treaty land entitlement agreement with the federal government in 1986. This established a series of MCFN reserves on the Athabasca River, near Fort Chipewyan, and north along the Peace River. In 2005 the MCFN won a major case at the Supreme Court of Canada. The relationship between MCFN peoples and the lands and waters they depend on remains central to the Mikisew way of life, despite increasing industrial oil sands developments that challenge, and in places, threaten to undermine, the Mikisew way of life, and relationship to lands, water, and resources.

Native people when we take, we give back. We only take what we need. We don’t kill a whole bunch of animals for nothing and just leave them to rot. You’ve just got to take what you need and that’s it, to survive. These guys are taking it all. My grandfather used to tell me, bitumen, they used to use it as a medicine, put it on a cut or something that was infected, it would suck all
the infection out, he said that. They don’t know that, Syncrude don’t know that. They say, ah, we used to use it for canoes, patching canoes, that’s not all. We respected that, we knew, leave it. You use it when you have to, leave the rest, leave it natural. Now they break it all up and take all these chemicals and other shit out of it, like they create it. But if they just left it naturally, it doesn’t hurt you. (M15 2011)

3.2 Treaty 8 and Mikisew Livelihood

The Cree speaking peoples of Fort Chipewyan signed Treaty 8 on the shores of Lake Athabasca in 1899 alongside the Chipewyan or Dené population of Fort Chipewyan. The MCFN considers the promises the Crown made in entering into Treaty 8 to be the foundation on which all subsequent non-aboriginal use, including Crown and industrial use, in the region depends.

The Crown’s own negotiators confirm, shortly after signing, that:

Our chief difficulty was the apprehension that the hunting and fishing privileges were to be curtailed…We had to solemnly assure them [the First Nations] that only such laws as to hunting and fishing as were in the interest of the Indians and were found necessary in order to protect the fish and fur-bearing animals would be made, and that they would be as free to hunt and fish after the treaty as they would be if they never entered into it.

We assured them that the treaty would not lead to any forced interference with their mode of life…As to education the Indians were assured that…the law, which was as strong as a treaty, provided for non-interference with the religion of the Indians in schools maintained or assisted by the Government (Laird, Ross and McKenna, Report of Commissioners for Treaty No. 8, 1899).

In work with MCFN members and elders, Treaty 8 is consistently held up as a vital and foundational document that forms the basis for a relationship between aboriginal and non-aboriginal peoples based in reconciliation, sharing, and protection of MCFN cultural and economic livelihood in relation to all lands and waters covered by the treaty.

At the time of signing, the Crown was well aware of the extent of resources that lay beneath the area encompassed by Treaty 8 (Fumoleau 2004). In 1888, the director of the geological survey of Canada, Dr. Robert Bell, confirmed, “the existence in the

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8 Interview quotes are referenced using participant ID number and date.
9 For a detailed history of Treaty 8 and its signing, see Fumoleau 2004. For a detailed history of Fort Chipewyan, see McCormack 2010.
Athabaska and Mackenzie valleys of the most extensive petroleum field in America, if not in the world… it is probable this great petroleum field will assume an enormous value in the near future and will rank among Canada’s chief assets” (quoted in Hein 2000: 2-3). Ten years later, Treaty 8 was signed. Almost 70 years later, in the late 1960s, the first large scale oil sands mining operation (what would become Suncor) opened north of Fort McMurray.

3.2.1 Sakaw Pimacihiwin

Mikisew knowledge and use are linked and interdependent categories of practice, both of which are necessary to the maintenance and transmission of sakaw pimacihiwin— a Mikisew Cree term meaning, literally, ‘bush way of life’. Mikisew elders use the same term, sakaw pimacihiwin, as a translation of the English phrase ‘traditional knowledge’, suggesting that from a Mikisew perspective knowledge, and way of life, are not separate. MCFN’s recent (2010) submission to the Alberta government on the Lower Athabasca Regional Plan provides a clear MCFN perspective regarding the future of Treaty 8 rights, including livelihood rights.

3.3 MCFN Reserves and Traplines

Prior to signing Treaty 8, the aboriginal rights and titles of the Mikisew Cree were held outside of Canadian law. In practice, indigenous law and land management remained in place well past signing of the treaty. In the 1920s, through formation of Wood Buffalo National Park, and in the 1940s through the creation of traplines, Canadian laws and restrictions regarding the practice of MCFN knowledge and use were imposed in the Fort Chipewyan area.

Mikisew approaches to governing lands, and rights relating to use of lands, including trapping, continue to be grounded in pre-treaty relationships between people and place. However, through most of the 20th century, until today, traplines and Indian Reserves provided one of the most common Canadian legal mechanism for recognizing special rights within MCFN territory, and so provided ‘safe’ places for the practice of indigenous rights within a privately and commercially oriented land governance system. While reserves and traplines do not constrain treaty rights, Indian Reserves and traplines controlled by MCFN members do provide unique legal status that can be integral to contemporary practice of land and resource use by MCFN members.

Figure 1 shows MCFN Indian Reserves and traplines (RFMAs) held by MCFN members in relation to the Shell Projects. Two of MCFN’s traplines\(^\text{10}\) are held in the area of the Athabasca River.

\(^{10}\) For the purpose of this report, MCFN traplines are those RFMAs that are held, in whole or in part, by an MCFN member.
Figure 1: MCFN Indian Reserves and Traplines (RFMAs) Held by MCFN Members in Relation to the Projects
3.4 Population and Demographics

The registered population of the MCFN is 2,705 (INAC 2011). While Fort Chipewyan remains the administrative base, the population of the MCFN is widely dispersed, with the majority of members living off reserve in Fort McMurray or other more southern areas. While the community of Fort Chipewyan has been an economic and administrative centre for the MCFN for generations, the cultural heartlands of MCFN knowledge and land use are further south in what is now Wood Buffalo National Park, and along the Athabasca River. Members living in southern areas tend to use nearby resources, though many return to Fort Chipewyan and surrounding territories on a regular basis, frequently including fall and spring bird hunts.

3.5 MCFN Vision and Planning

The MCFN’s submission on the Lower Athabasca River Plan (MCFN 2010) provides an articulation of MCFN’s planned future land use. Consistent with the spirit and intent of Treaty 8, it prioritizes lands, waters and resources essential to the future practice for MCFN rights and way of life. Based on a series of ecological and cultural criteria, the plan emphasizes the importance of water and waterways, including the Athabasca River, the Muskeg River, and Inland Lakes like Kearl and McClelland Lakes, as focal points for MCFN knowledge and use.
Figure 2: MCFN Traditional Lands and Cultural Protection Areas in Relation to the Projects
Section 4: Methods for Baseline Collection and Impact Assessment

4.1 Baseline Collection Methods

Baseline data collection for the Shell projects involved scoping of valued components, existing document review and gap analysis, interviews and data collection, and analysis.

4.1.1 Identification of Key Valued Components

Consistent with standard assessment practice, a valued component (VC)\(^{11}\) is an important aspect of the environment that a project has potential to effect and that is considered within an environmental assessment (Hegmann et al. 1999). The term key indicator resource (KIR) is used in the proponent’s EA to designate a similar concept, however the proponent’s use of KIRs in relation to Mikisew knowledge and use relies upon biophysical endpoints and does not consider potential effects on Mikisew use, knowledge, or rights directly. In the context of MCFN knowledge and use, the identification of VCs provides a way to focus on what is most important regarding a particular project. The VCs for this assessment were determined through:

- consideration of past work with MCFN community and staff; and
- Review of materials from past MCFN studies.

For the purpose of this report, site-specific VCs include values that may be mapped and are reported as specific and spatially distinct (though the locations may be considered confidential). Site-specific values, such as cabins, or kill sites, reflect specific instances of use that anchor the wider practice of livelihood within a particular landscape.

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\(^{11}\) Valued ecosystem component (VEC) is another term frequently used, but is focused on biophysical resources. This report uses the more general term valued component (VC) in relation to MCFN knowledge and use values, as VCs may include tangible or biophysical resources (e.g., particular places or species), as well as more social or knowledge based VCs such as place names or traditional knowledge regarding a particular area.
particular moose kill site may be mapped with a precise point, but that value is correctly interpreted as an anchor, or focal point, for a wide spectrum of other related livelihood practices and values, including wider hunting areas covered in efforts to find the moose, practice of navigation and tracking in order to access it, religious or ceremonial practices that may be associated with the hunt, food processing and preparation techniques to utilize it, and the range of social relationships and knowledge transmission (teaching) activities that are required for a successful hunt to occur. In other words, every mapped site-specific value implies a much wider range of activities, and a wider geographic area, upon which the meaningful practice of that use relies. The actual area covered by recorded site-specific use values should be understood as a tiny portion of the area actually required for the meaningful practice of MCFN livelihood.

Site-specific Valued components (VCs) for baseline collection include five classes of site-specific values:

- Subsistence values (including harvesting and kill sites, plant food and medicine collection areas, and trapping areas reported within the LSA and RSA);
- Habitation values (including temporary or occasional and permanent or seasonal camps and cabins reported within the LSA and RSA);
- Cultural/spiritual values (including burials, village sites, ceremonial areas, and medicinal plant sites reported within the LSA and RSA);
- Transportation values (including trails, water routes, and navigation sites reported within the LSA and RSA); and
- Environmental feature values (including specific highly valued habitat for moose, Woodland bison and woodland caribou reported within the LSA and RSA).

For the purpose of this report, non-site-specific VCs include values that may be specific to a resource or other concern, but are spatially indistinct or difficult to map. Non-site-specific VCs included in this assessment are:

- Water and river values (including quality and quantity of water and aquatic resources);
- Access and enjoyment of MCFN lands (especially MCFN traplines, reserves and cultural protection areas indicated in Figure 1 and Figure 2);
- Culturally important\(^{12}\) species (including quality and quantity of wood bison, moose, woodland caribou, migratory birds, and plants); and

\(^{12}\) For the purpose of this report, a culturally important resource is one that is especially integral, or important to, an aspect of MCFN culture or livelihood. Examples include species that are relied upon for subsistence, for specific cultural practices, or because of particular cultural associations. Garibaldi and Turner define ‘cultural keystone species’ as, “…the culturally salient species that shape in a major way the cultural identity of a people, as reflected in the fundamental roles these species have in diet, materials, medicine, and/or spiritual practices” (Garibaldi and Turner 2004).
• Intangible cultural resources including intergenerational transmission of MCFN language and knowledge, sense of place, and ability of current and future MCFN members to practice sakaw pimachiwin.

### 4.1.2 Temporal and Spatial Boundaries

The temporal boundaries for baseline collection include past, present, and planned future MCFN knowledge and use. For the purpose of this study, a past value refers to an account of MCFN knowledge and use prior to living memory, a present value refers to an account of MCFN knowledge and use within living memory of MCFN participants, and a planned future value refers to anticipated or intended MCFN knowledge or use patterns.

Spatial boundaries for baseline collection include a local study area (LSA) for each of the projects within which intense project related disturbance can be expected, and a larger regional study area (RSA) shared by the projects, and within which project related effects may interact with MCFN values (see Figure 3). The LSA is defined as an area within 5 km\(^{13}\) of the Project footprints including the mine site and associated works as indicated in Figure 3. Each of the LSAs used for this report includes the footprint of a single project, plus a buffer within which direct interactions between the project and MCFN values may exist.

The RSA is a broader area within which direct or indirect effects of the projects may be anticipated, such as noise, dust, odors, access management activities, traffic, effects on water and other forms of disturbance experienced by MCFN members. A single RSA has been defined for all three Shell Projects. The southern and western and eastern limits of the RSA are defined by a buffer of 25km around the Project footprints. The northern extent is defined by the flow of the Athabasca River to Lake Athabasca, along which downstream water related effects are anticipated to flow. A buffer of 5 km was applied to the river and bodies of water that receive flow from the Athabasca River, including Lake Mamawi. The northern, or downstream, extent of the RSA, in the area of the Peace-Athabasca Delta, was identified based on MCFN knowledge of river flows reported by elders and river users. Inclusion of the Lake Mamawi area (east of Lake Athabasca) in the RSA based on knowledge of MCFN elders and land users regarding the flow of the Athabasca River was confirmed by an experienced hydrologist (Martin Carver, personal communication, January 18, 2011). Attention to downstream effects is based on MCFN concerns regarding loss of use due to increased fear or concerns regarding waterborne contamination caused by the projects. Due to the potential displacement of MCFN land use, indirect project effects outside the RSA are also possible as MCFN members avoid areas perceived to be affected by the projects.

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\(^{13}\) Five kilometers (just over three miles) is an approximation of the distance easily travelled in a day trip from a point (such as a cabin, camp or other location) by foot through bush, as when hunting, and returning to the point of origin (Candler et al. 2010: 29). This distance was confirmed by the MCFN elder’s council as part of the MCFN Athabasca River Knowledge, Use and Change Study (2010). It is used as a reasonable approximation of the area of regularly relied upon resource use, or zone of reliance, surrounding a given transportation or habitation value.
Figure 3: Regional Study Area and Local Study Area in Relation to the Project
4.1.3 Interview and Mapping Methods

Building on previous land use and occupancy mapping conducted with the MCFN, baseline information for this assessment includes data on Mikisew use and occupancy from Tobias (2010), as well as additional data collected through interviews conducted as part of this study. Twenty-eight follow-up mapping and indigenous knowledge interviews specific to the Shell Projects were conducted with twenty-eight MCFN elders and land users in Spring and Summer 2011. An additional eight oral history and indigenous knowledge interviews with key elders and land users focused on the Project areas were conducted over the same time period. In total, baseline data is drawn from 163 individual MCFN mapping interviews conducted with a total of 98 MCFN elders and land users, plus eight additional indigenous knowledge and oral history interviews. No GPS based field verification of interview data was conducted.

Digitization, analysis and impact assessment took place through October and November 2011 with a major clarification in Project data received from the proponent on October 14, 2011, and Submission of Additional Traditional Knowledge and Traditional Land Use Information to the Joint Review Panel on November 15, 2011.

All Shell project-specific mapping interviews were conducted with individuals, included documentation of prior informed consent (see Appendix 4), and used a standardized interview guide (see Appendix 5) designed to meet the needs of the study and to provide a consistent, but flexible, framework for soliciting and recording responses. Rachel Olson, Steven DeRoy, and Sherri Labour conducted the interviews with assistance from Matthew Whitehead, using a direct to digital mapping process. Interview and mapping protocols were based on standard techniques (Tobias 2010). Map data was captured and managed using a direct-to-digital process involving mapping on-screen, with Google Earth imagery as a digital base and geo-referenced 1:50,000 scale or better data displayed on a wall or screen. Appendix 6 contains additional details on the mapping process. Interview data was collected so that disaggregation of individual participant data is possible, and first hand and second hand information is distinguishable.

Oral history and indigenous knowledge interviews followed a flexible semi-structured method focused on why changes in use or practice in the RSA or adjacent areas have occurred for particular land users. The lead author, Dr. Craig Candler, conducted the eight oral history and indigenous knowledge interviews.

All mapping interviews were recorded using digital audio recording, digital video recording of the map surface, and through interview notes captured on interview forms or in notebooks. Questions were designed to gain an understanding of the participant’s background and relationship to the RSA, patterns of avoidance and use, including hunting, trapping, fishing and related practices, and how the participant’s use has changed over time. Where data was location-specific it was mapped using points, lines, or polygons. Where possible, temporal information regarding season and year was recorded.
Where previously recorded digital map data was available for a participating individual from previous datasets, including Tobias 2010, PACTeam 2007, Calliou Group 2010, Tanner 2006 and Husky 2005, this data was projected and reviewed during the interview to verify its quality (including validity and accuracy) and to avoid redundancy. Where necessary, spatial data was updated or corrected for location, and where possible, temporal information was added. Original data was maintained, with new or refined data added as new layers or fields. Within the RSA, more than 370 previously mapped values were updated within timestamps, and more than 340 previously unreported values were mapped.

Coding of data took place on screen so that it could be reviewed as it was entered confirmed, and Interviews averaged approximately two and a half hours, with the longest lasting approximately three hours. For some participants, there was not adequate time to address the RSA as a whole. Where this was the case, areas in the vicinity of the footprints of the proposed Shell Projects were emphasized. All interviews were conducted in English with the exception of one oral history and indigenous knowledge interview which was conducted with Cree translation by a younger Mikisew member familiar with the participant.

Data collection focused on the project LSAs, but extended north as far as Wood Buffalo National Park. A scoping process (see below) and a review and gap analysis of existing information sources, including existing MCFN data sets and ethnographic material, was conducted prior to the start of interviews in order to inform the interview process. Additional detail regarding other information sources and how they were used is provided in Section 4.1.4 below.

4.1.4 MCFN Baseline Information Sources

MCFN mapped (site-specific) existing baseline information sources accessed prior to interviews included the following five studies reviewed in Elias (2011):

- The Ayapaskowinowak Study (Tanner 2006)
- Husky Sunrise Study (Husky 2005)
- PACTeam Historic Study (PACTeam 2007)
- Total Joslyn North Mine Study (Calliou Study 2010)
- MCFN Comprehensive TLU Study (Tobias 2010)

Data from the Tanner 2006, Husky 2005, PACTeam 2007 and Calliou 2010 study were reviewed in interviews, but were not used in the dataset for this assessment unless values were confirmed and remapped through the Shell Project specific interviews. Because of the quality and reliability of the Tobias 2010 study, this data was used for this assessment and was confirmed and updated with time stamps where possible.
Additional map data from the MCFN Athabasca River Knowledge and Use Study (Firelight 2010) and the MCFN submission on the Lower Athabasca Regional Plan (LARP) (2010) was relied on for some figures.

To enable integration of the 2011 and earlier data sets, old and new data was categorized or 'lumped' using five broad activity classes. A new column was added to the dataset, and was used to produce the maps and analysis included in Sections 5, 6 and 7. For example, various sites recorded as burials, medicine collection, ceremonial sites, and birth/death sites were all considered to be part of the “cultural/spiritual” activity class. Permanent and temporary habitation areas, including cabins, permanent camps, and temporary camps, were classed as “habitation.” Hunting sites, fishing sites, berry collection areas, and trapping areas were classed as “subsistence.” Trails, water routes, and hazards like sand bars, dangerous rocks, or other transport related locations were classed as “transportation.”

Additional baseline information sources, including ethnographic material, internal MCFN reports, and academic papers were reviewed and considered in the gap analysis, or following the interviews. Existing MCFN spatial data collected by Tobias (2009) was used, in particular, to identify interview participants, and refine the interview guide and VCs. Data collected in 2009 was reviewed and updated in 2011.

4.2 Impact Assessment Methods

4.2.1 Valued Components for Assessment

Valued components (VCs) for assessment are the same as those noted above for baseline collection. They include five classes of site-specific values:

- Subsistence values (including harvesting and kill sites, plant food and medicine collection areas, and trapping areas reported within the LSA and RSA);
- Habitation values (including temporary or occasional and permanent or seasonal camps and cabins reported within the LSA and RSA);
- Cultural/spiritual values (including burials, village sites, ceremonial areas, and medicinal plant sites reported within the LSA and RSA);
- Transportation values (including trails, water routes, and navigation sites reported within the LSA and RSA); and
- Environmental feature values (including specific highly valued habitat for moose, Woodland bison and woodland caribou reported within the LSA and RSA).

They also include non-site-specific values. For the purpose of this report, non-site-specific VCs include values that may be specific to a resource or other concern, but may be spatially indistinct or difficult to map. Non-site-specific VCs included in this
assessment are:

- Water and river values (including quality and quantity of water and aquatic resources within the LSA and RSA);
- Culturally important species (including bison, moose, caribou, migratory birds, and plants within the LSA and RSA);
- Access and enjoyment of MCFN lands and waters (especially MCFN traplines, reserves, or other identified areas within the LSA and RSA); and
- Intangible cultural resources (including intergenerational transmission of MCFN language and knowledge, sense of place, and ability of current and future MCFN members to practice sakaw pimachiwin).

4.2.2 Temporal and Spatial Boundaries

The temporal and spatial boundaries for assessment correspond to those for baseline collection. Past, present, and planned future MCFN use and rights practice were considered within a local study area (LSA) consisting of the footprint plus 5 km buffer, and a larger regional study area (RSA) within which project related effects may interact with or influence MCFN values (see Figure 3).

4.3 Assessment Methods

To facilitate consideration and integration of findings, the methods used in residual effects characterization are generally consistent with the methods used by the proponent in the applications made for the PRM and JPME projects. Knowledge and use values, like ecosystem values, are not static. Like many social and ecological values, First Nations traditional use values exist within an ongoing process of interdependent environmental, cultural, economic and social change that is rooted in the past and extends into the future. The assessment of impacts provides a prediction of likely future change resulting from the projects given available information. MCFN knowledge and use involves complex and dynamic cultural and ecological systems where what appear to be minor changes in a single component may have larger and unexpected consequences for the whole.

4.3.1 Residual Effects Characterization

Residual effects are those effects remaining following full implementation of mitigation measures. In this assessment, generally consistent with the methods used in the proponent’s applications, and with Canadian Environmental Assessment Agency guidance documents (Hegmann et al 1999), residual effects are characterized based on criteria outlined below:
Direction of an impact may be positive, neutral or negative with respect to the baseline (e.g., a change resulting in increased traditional use would be classed as positive, whereas a change resulting in decreased traditional use would be considered negative).

Magnitude describes the intensity, or severity of an effect. It is the amount of change in a measurable or perceivable parameter or variable relative to the baseline condition, guideline value, or other defined standard. In the case of effects on MCFN knowledge and use, magnitude was determined based on a qualitative and quantitative (where possible) evaluation of VCs potentially effected (as discussed in the baseline). Factors considered include:

- Vulnerability of value or sensitivity to change (high/low);
- Cultural importance (high/low);
- Rarity of similar values within the LSA/RSA (high/low);
- Intensity of likely community concern (high/low); and
- Degree of likely change in use practice (high/low).

Where change is predicted to be discernable but low in all factors, magnitude is considered to be low. Where change is predicted to be discernable and only one factor is high, magnitude is considered to be moderate. Where change is predicted to be discernable and more than one factor is high, then the magnitude is considered to be high.

Geographic extent is the spatial area affected by a specific project. It is generally based on the local and regional study areas developed. Effects within the LSA only (within 5 km of footprint) are considered to be local, effects extending into the RSA are considered to be regional (even if they diminish in magnitude), and effects that extend outside the RSA are considered to be beyond regional.

Duration refers to the length of time over which an environmental impact occurs. It considers the various phases of a project, including construction, operation, reclamation and closure, during which the effects may occur as well as the length of time for the environmental component to recover from the disturbance.

Reversibility indicates the potential for recovery of pre-project patterns or conditions of use and knowledge. An effect is defined as not reversible if the VC cannot be restored to pre-impact condition within the long term as defined under duration. Because traditional knowledge and use is dynamic, a value is considered restored if pre-existing cultural transmission and use patterns are restored. Reversibility is achieved where transmission and use are restored to the point of moving toward a condition that is essentially indistinguishable from pre-existing cultural transmission and use patterns. For this to occur, both the physical/economic and cultural/spiritual relationships between people and land need to return to pre-existing patterns. Due to the importance of intergenerational transmission to the survival of cultural knowledge and cultural landscapes, where an area will be removed from aboriginal use for one generation
(generally between 20 and 25 years) or more, impacts to the transmission of knowledge regarding that area are considered permanent (irreversible)\(^{14}\).

**Frequency** describes how often the effect occurs within a given time period and is classified as low, medium or high in occurrence. Seasonal effects (intermittent, but effect may last for weeks or months) are considered to be of medium frequency. Continuous effects are considered to be of high frequency.

### 4.3.2 MCFN Sensitive Receptors

Consistent with good EA practice (Vanclay 2003), this assessment is designed to be conservative and is based on the most sensitive receptors or most vulnerable users. In the case of the Shell Projects, this is understood to be those MCFN members most closely connected to the LSA.

### 4.3.3 Environmental Consequence

To facilitate compatibility between assessments, an environmental consequence rating was calculated based on the method described in the proponent’s assessment. The environmental consequence rating consolidates the results of the impact characterization (direction, magnitude, duration, frequency, geographic extent and reversibility) into one rating that can be considered in assessment of significance. This approach allows different components to be compared using a common rating so that areas of greatest potential concern can be identified. Figure 4 shows how environmental consequence of residual impacts is estimated.

**Figure 4: Environmental Consequence Rating System**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Direction</th>
<th>Magnitude</th>
<th>Geographic extent</th>
<th>Duration</th>
<th>Reversibility</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCFN knowledge, use and rights practice</td>
<td>positive, negative or neutral</td>
<td>negligible (0)</td>
<td>local (0): effect restricted to the LSA</td>
<td>short-term (0): &lt;3 years</td>
<td>reversible (-3)</td>
<td>low (0): loss of use or avoidance occurs once per year or less</td>
</tr>
<tr>
<td></td>
<td></td>
<td>low (+5)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>medium-term (+1): 3 to 20 years</td>
<td>irreversible (+3)</td>
<td>moderate (+1): occurs intermittently</td>
</tr>
<tr>
<td></td>
<td></td>
<td>moderate (+10)</td>
<td>beyond region (+2): effect extends beyond the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>high (+15) magnitude varies</td>
<td></td>
<td></td>
<td></td>
<td>high (+2): occurs continuously</td>
</tr>
</tbody>
</table>

\(^{14}\) As noted in section 2, this approach is consistent with that taken in other environmental assessments, and with the well-documented importance of particular places and landscapes to the continuity of aboriginal knowledge transmission (Basso 1996, Berkes 1999, Palmer 2005).
The system identifies a numerical score for each VC used to assign environmental consequence to residual impacts. Consistent with the proponent’s assessment, the following score ranges were used to characterize effect:

- Negligible – 0 to 5;
- Low – 6 to 10;
- Moderate – 11 to 15;
- High – 16 to 20; and
- Very high – over 20.

### 4.3.4 Significance Threshold

In addition to the environmental consequence rating, and consistent with good practice (Vanclay 2003, UNPAN 2006), a significance evaluation is provided for anticipated residual project effect.

In this assessment, with regard to MCFN knowledge and use, a significant effect is considered to be:

- An effect (positive or adverse) that is attributable to the projects or the projects in combination with other changes (including effects of other projects or human activities), and that is likely to result in:
  - Strong concern or interest by MCFN members, and
  - Clearly discernable (measurable or perceivable) changes to the preferred exercise of a culturally important practice, or land, water, or resource use or right.\(^{15}\)

Significant effects are generally related to a change in the availability or quality of, or access to, resources (tangible or intangible) important to MCFN knowledge, use, or rights practice. Significance evaluation is based on post-mitigation residual effect and may differ when considered at various spatial or social scales, for example individual, family or community, is based on impact characterization (summarized by the environmental consequence rating), assumes the most sensitive user or receptor (MCFN family or sub-group), and is based on an explicit significance threshold.

\(^{15}\) This definition, including consideration of measurable or perceivable effect, is similar to qualitative thresholds used in other environmental assessments, and is consistent with good practice described in the Canadian Environmental Assessment Agency’s *Cumulative Impact Assessment Practitioner’s Guide* (Hegmann *et al.* 1999).
4.3.5 Confidence in Predictions

Confidence in predictions provides the level of certainty that the effects of the projects will occur at the level predicted (Hegmann et al. 1999). For the purpose of this report, confidence in predictions is assigned based on the following three categories:

- **Low** — Based on professional judgment with limited available secondary or primary information.
- **Medium** — Based on professional judgment and primary information that is limited due to extent of primary research or level of community representativeness among research participants.
- **High** — Based on professional judgment, strong primary information (including mapping at 1:50,000 or better) conducted with a reliable sample or operational-level studies involving field visits with knowledge holders, strong project information, and secondary literature review.
Section 5: JPME Project Baseline and Assessment

The JPME project is proposed in the upper Muskeg River watershed. This section provides baseline and assessment specific to the likely effects of the project on MCFN knowledge and use.

5.1 Baseline for Site-specific VCs within the JPME LSA and RSA

...We used to go up in there, used to go out and my brother’s mother-in-law used to have a cabin up there in Muskeg Lake... That’s Kearl Lake, we used to call it Muskeg Lake but ….they’ve changed a lot of names of the lakes, traditional names...Around the lake there [Kearl Lake] and up this way, you could hunt moose all along there, used to be nice, there used to be berries along there and stuff... All this has been developed now... there’s no way to get there. (M15, Interview transcript, 2010)

Yeah, always go to McClelland Lake, from MacKay, and we would just go through there and that’s before the industry got there. Go hunting and stuff, lots of berries and stuff, my son-in-law used to bring me over there, his grandfather and his uncle used to go with him and stuff like that, that’s how I got to know the place, go with him all the time. So after everything’s been cut down, ... you know, my son-in-law he asked me and no, I said, all I see is cut lines, wide open spaces. (M35, Interview transcript, 2010)

Figure 6 provides a map of MCFN site-specific data reported within the JPME project LSA including 92 site-specific use values inside, or within 250 m, of the proposed project footprint. 375 site-specific use values were identified within the LSA (5 km of the proposed JPME project footprint), including 296 subsistence values, and 69 habitation values clustered primarily along the Athabasca River or near Kearl or McClelland Lakes. These provide ecological focal points for unique patterns of MCFN cultural practice in the area. While not every site-specific value includes time information, reported time of last use for habitation values within the LSA range from the 1960’s to summer 2009 (see Appendix 9). Almost 6,000 MCFN use values were identified in the RSA, the majority of them along the Athabasca River and in the Athabasca Delta. All mapped values are based on the use and knowledge of MCFN members.
Due to the density of reported transportation features and navigational hazards along the Athabasca River, river-based transportation is not shown and is analyzed as a simplified transportation ‘corridor.’ All MCFN data (points, lines and polygons) are shown with a 1 km buffer. Points were randomized by 250 m, then 1 km buffers were generated around all points, lines, and polygons in order to account for margin of error, and to protect confidential information. Figure 5 provides an account of reported MCFN site-specific values inside or within 250 m of the JPME footprint, within the LSA, and RSA.

**Figure 5: Reported MCFN Site-Specific Use Values in Relation to the JPME Project Footprint, LSA and RSA**

<table>
<thead>
<tr>
<th>Activity Class</th>
<th>Within 250 m of JPME Footprint</th>
<th>Within 5 km of JPME Footprint (LSA)</th>
<th>Within Regional Study Area (RSA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of values</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsistence</td>
<td>79</td>
<td>296</td>
<td>4254</td>
</tr>
<tr>
<td>Habitation</td>
<td>10</td>
<td>69</td>
<td>1324</td>
</tr>
<tr>
<td>Cultural/spiritual</td>
<td>2</td>
<td>5</td>
<td>399</td>
</tr>
<tr>
<td>Transportation</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Environmental features</td>
<td>1</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>92</strong></td>
<td><strong>375</strong></td>
<td><strong>5992</strong></td>
</tr>
</tbody>
</table>

Specific traditional use activities reported by MCFN members inside or within 250 m of the proposed JPME footprint include:

- Multiple permanent habitations (cabins) and camping areas at Kearl Lake, McClelland Lake, along the Athabasca River. Some of the cabins owned by members of other First Nations in the region, but are shared, through family or friendship ties, with MCFN members (e.g., M18, M73, M23, M56, M25).
- Commercial and subsistence fur trapping areas (e.g., M35, M73, M22, M60).
- Small game hunting (grouse and rabbit kill sites) along Wapisew Creek, access road, and Athabasca River (e.g., M73, M35);
- Environmental Features (including high value moose and woodland caribou habitat) (e.g., M18, M35);
- Big game hunting including multiple bison kill sites (on west side of Athabasca) and moose kill sites (e.g., M35, M18, M56);
- Preferred fishing areas at Kearl Lake and along Athabasca River (e.g., M19, M23, M22, M26);
- Food plant and medicine collection (berries) (e.g., M57, M80); and
- Transportation values including a water route into McClelland Lake (e.g., M18).
Figure 6: Reported MCFN Use Values within the JPME Project Local Study Area

Reported MCFN site specific values within the Jackpine Mine Expansion local study area (LSA) by activity class

Legend
- Cultural
- Environmental
- Habitat
- Subsistence
- Transportation
- JPME local study area
- JPME maximum footprint (250m)
- Proposed Jackpine mine expansion
- Existing Jackpine mine footprint

To account for margins of error and protect confidentiality of locations, all reported use value event locations are represented by 250 meters and are shown with a 1 kilometer buffer. All reported sites and polygons are shown with a 1 kilometer buffer. Absence of site-specific data does not indicate absence of interest or use.

Map produced by Steven DeRoy of the Firelight Group on October 20, 2011. MCFN use values derived from the MCFN 2008-2010 Local and Uncompahing Mine Journey (Derek Kibbey) with assistance from Carla Kocicko (Firelight Group). Base map data originates from the National Topographic System and Natural Resources Canada, and footprint areas provided by Firelight Group.

This map does not capture the complexity of MCFN’s relationship to the traditional lands or the extent of the presence of treaty and aboriginal rights. This map is a living document and is intended to be amended and refined over time. The data used to produce this map originate from multiple sources. This map is property of the Mikisew Cree First Nation and may only be reproduced with written permission.
Prior to about 2002, Kearl Lake and surrounding area is reported to have provided a heavily relied upon focal point for MCFN use south of the Firebag River, and particularly for MCFN members living in Fort McMurray. Regarding use of the LSA for subsistence practices, participants noted:

Around the lake there [Kearl Lake] and up this way, you could hunt moose all along there, used to be nice, there used to be berries along there... All this [area south of Kearl Lake] has been developed now, eh, there's no way to get there. (M15 2011)

When you turn off to the right to go to Jackpine, this one, there's a little lake, it's not very far I know ... This little lake right here [pointing at map] I do believe it is, there's a little road, we used to go and do a lot of hunting right in here, calling and everything else, this was a good moose area, this whole area. Actually this whole road. Right in there there's a little road that goes in there ... This is just a short little road, it takes minutes to get up here. Right in here we used to call and hunt moose there all the time. (M24 2011)

Intensification of industrial impacts, particularly since the late 1990s, in the area of Kearl Lake, including physical disturbance of lands, traffic, noise, physical disturbance, and concerns regarding contamination, have resulted in general loss of use of the area by many MCFN members. This loss of use is due largely to concerns regarding the quality of resources, including water and meat, from the area, and because of disturbance from traffic, noise, and other industry-related activities. Effects from existing industry in the area has already resulted in shifts in land use by some MCFN members to north of the Firebag River or elsewhere in MCFN territory.

The concentration of MCFN use values in the Kearl Lake area is visible in several of the past MCFN traditional use studies, and is likely due to a number of factors:

- The JPME LSA includes RFMAs, which are held by members from other First Nations, but which include family and friends of MCFN land users. These social connections to the area provide MCFN members with welcome opportunities to hunt, trap, and teach their children in areas relatively near to Fort McMurray (within an easy day trip) by vehicle.

- The JPME LSA is accessible by road from Fort McMurray and Fort MacKay. The area has historically been a preferred area for the practice of livelihood use and knowledge by many MCFN members living in the Fort McMurray and Fort MacKay area, and was considered relatively undisturbed until intensification of oil sands activities in the area in the late 1990s.

- The area includes preferred hunting and fishing areas and high value wildlife habitat (especially moose). As a result, even prior to roads, the area was a
preferred harvesting area for subsistence resources including moose, whitefish, deer, small game (grouse and rabbit), fur, berries, and other resources.

One MCFN land user noted the unique saltiness of Kearl Lake water in early Spring results in the lake being used as a natural mineral lick by moose. This was an important feature reinforcing the importance of the area for hunting and moose habitat:

I was hunting in the area, I wasn’t trapping …., just go there [Kearl Lake area] hunting moose, come all the way from Fort Chip, I know I’m going to kill a moose there, so it’s all clear to hunting, it’s a real good place, so that’s why I always come up there....Kearl Lake has stuff like … right around the spring time, March something, you go down there, you’ve just got to sit by the lake there with your dogs and moose they used to come to that lake, drink that salty, spring water that comes out, right at the overflow. You know that overflow [water flowing onto ice surface from cracks in the ice] … I thought to myself oh, I’m going to drink water, there’s lots of water here, I drank some water and it just taste like salt. From Kearl Lake. You go towards Clearwater here, there’s one lake in the back here, you can go alongside, lot of cabins alongside there and if you ever drink from one of those lakes that have water on top of the ice, I see moose there all the time, even when you’re driving with the truck, you see them all the time, maybe ten, fifteen moose you see in that lake, just drinking that stuff. Same thing with Kearl Lake like that…it’s just that overflow. (M18 2011)

As shown in the time sequence maps in appendix 9, use of the LSA by MCFN members has been ongoing through to recent years. Participants also referred to the area as a preferred source of whitefish, with fishing at Kearl and McClelland Lakes being an important and regular part of the annual round for at least some MCFN families.

When I was twenty something years old, I was born in 1952, so them days in the seventies, earlier seventies, maybe ’74 or ’76… we used to come hunting all the way from Fort Chip with a dog team sometimes you know, come all the way down there just to come hunting for moose or something in that area [Muskeg River and Kearl Lake area]….and sometimes when it was summer time, when we used to come up from Fort Chip, we’d come to McMurray, September before school starts, we used to go hunting, used to make some dried fish, some of those areas, down a creek and you’d come to a big lake [McClelland Lake], spent our time picking berries and my mum, all our family used to spend all our time making dried fish and dried meat if we killed a moose, see a lot of moose some days. (M18 2011)

Figure 7 provides a map of MCFN site-specific use data reported within the JPME Project RSA and shows the relative density of site-specific use values downstream of the JPME project. The RSA includes almost 6,000 reported site-specific use values, including 1,325 habitation values, the majority of which are located in the Athabasca delta.
Figure 7: Reported MCFN Site-specific Use Values Within the JPME Regional Study Area
Figure 8 shows areas of general loss of use due to industrial impacts reported by MCFN members in the RSA, as well as instances of specific lost use due to resource or water quality (perceived contamination), and low water levels along the Athabasca River. Areas of general loss of use are locations that MCFN members have reported using for subsistence, habitation, or other uses, but that are now partly or fully avoided due to perceived contamination or other concerns. As indicated by MCFN users, areas of general loss of use extend well beyond the existing physical footprint of oil sands development to the south of the proposed JPME footprint, including the LSA and extending into the RSA. Existing loss of use within the LSA and RSA is due to a range of factors including terrestrial disturbance, concerns regarding industrial contaminants, safety issues, and loss of access due to fencing, gated roads, and other oil sands activities:

Due to the pollution, you’re scared of everything nowadays, they’re scared of the animals, like before when you knock a moose off, you’re cooking a side of ribs right there in the fire, right at the site, now you’re a little hesitant, you know, is this a good area? are we safe eating this animal? (M24 2011)

It’s not only the pollution thing, it’s the animals have moved back farther from where you could get at them, they were more easily accessible before and they’ve moved or were eliminated, one or the other and industry just shuts you down, you go down any one of these roads and there’s big gates there and they just say you’re not allowed down here anymore and you can’t come in and that’s that. (M24 2011)

Gates, they have a lot of gates, they say they don’t have gates but I’ve heard hunters saying there’s gates that they have to go through or there’s gates or there’s moose on the other side of the gate, they can’t get at it. So no access plus pollution, those are the things that are preventing people from getting hunting. There’s always a road there that somebody has blocked off. (M27 2011)
Figure 8: Reported Current (Winter 2010/11) Loss of Use Areas in the RSA, Including Reported Specific Loss of Use Due to Water Level and Quality Downstream of the Muskeg River
5.2 Baseline Summary for Non-site-specific VCs Within the JPME LSA and RSA

Key non-site-specific VCs associated with the JPME Project LSA and RSA include:

- Water and river values (including quality and quantity of water, fish, and aquatic resources), particularly associated with the Muskeg River and Athabasca River;
- Culturally important species (including quality and quantity of high value moose habitat, and adjacent reported caribou habitat);
- Access and enjoyment of MCFN lands (especially Snowbird’s camp, MCFN reserves, traplines, and cultural and protection areas including the Athabasca River corridor);
- Intangible cultural resources including intergenerational transmission of MCFN language, knowledge and sense of place, opportunities for social and cultural cohesion across communities, and ability of current and future MCFN members to practice sakaw pimacihinwin.

5.2.1 Water and River values – Quantity

While not mapped as a site-specific transportation value, data from the MCFN Athabasca River Use Knowledge and Change Study (Candler et al. 2010) highlights the Athabasca River and adjacent streams as resources integral to the culture and economy of the MCFN. They are critical to the ability of MCFN members to hunt, trap, fish, and otherwise practice treaty rights in a preferred manner. Appendix 2 contains a summary of existing information regarding downstream effects of existing oil sands development on MCFN use and rights. MCFN river-based transportation routes at risk during low water have been documented downstream from the JPME within the LSA and RSA.

Within the LSA, both the Muskeg and Athabasca Rivers are used by MCFN members to access traditional lands. MCFN members report that at low flows, navigational use of the Muskeg River is restricted by low water levels. Figure 9, based on data from the MCFN Athabasca River Study, shows (in red) navigable watersheds\(^{16}\) that are known to become unnavigable at very low water, and hazards and incidents (in light yellow) downriver from the JPME along the Athabasca and Muskeg Rivers.

Reductions in flow on the Muskeg River also contribute to low flows, and resulting navigational hazards, on the Athabasca River, a critical transportation corridor for accessing MCFN territories. This corridor is vulnerable to low water conditions, especially towards the Athabasca delta where MCFN Indian Reserve lands, as well as important seasonal village areas, are located, and where all use depends on water

\(^{16}\) where at least a portion of the stream is navigable from the Athabasca River.
Figure 9: MCFN Navigation and Navigable Hazards in Relation to the JPME Project
access. The following quotes from oral history interviews provide a sense of the effects these changes have at the regional level.

You know that river used to be a nice big mighty river. You can go all through the channels like shortcuts. If you’re going down, instead of going this way, you could just go that way. You could go straight all the way. Now I hear that all these little places, like shortcuts, they’re all dried out, people have to turn around, from Fort Chip, going up to Fort McMurray, had to go back because the water was too low. It never used to be that way. It used to be big, deep and nice water, you could just go anywhere, there was hardly no sandbars. (M15 2011)

Yeah, yeah, one time there used to be a lot of water, not like now, now there’s lots of rapids, lots of rocks now, you won’t be able to go up there. Me and my partner tried to go there about four years ago, banged up our canoe, you have to come by foot, carry our canoe. Never going to go down there again. (M18 2011)

Oh, it [low water] would affect us in all kind of ways, my friend, yes. The way we live, we like to go to places, you can’t go anyplace, Quatre Forche is the only place we could go now. Our area anyway, that’s about all. Now it would be worse, you can’t even cross Lake Mamawi, not this year, just mud flat there. (M29 2011)

5.2.2 Water and River Values – Quality

You know, up until fifteen years ago, we used to take the cup and scoop it out of the Athabasca River. You’ll never do that now but scoop it out of the river and have a shot. (M24 2011)

[translated from Cree at time of interview] He said the water is poison [in the Athabasca River] so at least here [in Edmonton] the water is clean over here and there’s doctors here too. He said he can move back and get a house he said [in Fort Chipewyan], but the water’s no good. He said at least here the water’s good. … He said he’s been worried about it for a long time, he said, the water must have been starting to get polluted, he said, when he left Fort Chip. He said now it’s even worse. He said like the water quality is no good over there, even the animals and ducks and stuff like that, they don’t even land over there any more, they just fly right through. He said they’re even getting sick, even the animals, like there’s hardly any little animals, like rabbit, muskrat, beaver, moose, so he’s worried about the water back there after he moved. Already the water was starting to be polluted then, so he
moved. He says you ask the people, like Syncrude and all that, about the water quality, oh, there’s nothing wrong, there’s nothing wrong, we clean the water good but he said, they’re only lying. People are really sick, it’s like poison he said, and his friend [named individual], he used to work that tailings pond in a barge, I guess, he used to scrape that stuff up, he said, still that stuff still seeps in the little creeks and rivers and ends up on the river. People are poisoned, and they say that they clean the water but they don’t, they don’t clean it. He said it still goes in the water. (M39 2011)

Contamination, or perceived contamination, of water, and through it, wild foods, is perhaps the most important pathway of industrial impact on MCFN knowledge and use. As documented in the MCFN Athabasca River Use and Knowledge Study (Candler et al. 2010), MCFN members have observed important changes in the quality of water and aquatic resources (including perceived abnormalities in fish and contamination of medicinal plants) on the Athabasca River system since the arrival of large scale oil sand mining in the late 1960’s. These perceived changes in quality are attributed by MCFN members to oil sands development and have led to widespread loss of confidence in wild foods, especially fish and moose, as well as fear and other psycho-social impacts17 associated with contaminants. Changes in the environment that contribute to the loss of confidence in the quality of fish, water, moose and other aquatic resources, are having a serious effect on the continued practice of MCFN knowledge and use practice in the LSA and wider RSA. See Appendix 2 for a summary of existing information regarding downstream effects of existing oil sands development on MCFN use and rights. MCFN participants noted that both Kearl and McClelland lakes were preferred fishing areas in the past, as was the confluence of the Athabasca and Muskeg Rivers, and the Firebag and Athabasca Rivers. The Muskeg River, where it joins the Athabasca, was reported by MCFN members as a preferred fishing area that is now widely avoided (along with much or all of the Athabasca River) due to observed abnormalities in fish from the area, and fears regarding contamination from existing oil sands operations in the watershed.

I mean it doesn’t take a smart person to realize that it’s affecting all our livelihood up there and the river goes all the way down to the Lake Athabasca and they’re affecting all the animals, there’s no muskrat anymore up there. And the fish, nobody wants to eat fish anymore because they’re all getting contaminated. Moose and stuff they’re getting sick. (M15 2011)

For hunting or whatever, stay away from that [Kearl Lake] area. Because it affects animals, like what moose eat, what comes out of the [industrial] plant, it falls on the plants and that’s what affects the animals. Animals, we shoot moose around that area, it’s no good, it don’t taste like moose meat, it’s got a different taste and they’re not as healthy as the ones you would find near

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17 Health Canada (2005) identifies the following psycho-social factors associated with contamination – at least some of which are clearly affecting ACFN MCFN use of lands and waters: fear; feelings of vulnerability and powerlessness; anger; distrust; Grief; Guilt; Sense of depersonalization; Frustration; Isolation; Depression.
Birch Mountain and stuff like that, about a fifty mile area. That’s how that [industrial] plant affects animals, wildlife…

And even fish we catch here now, some of them are deformed, what caused that? It’s got to be something. I don’t know how they could prevent it, now they’ve gone too far, you know, you can’t erase all that poison they put already in the waters, now we can’t even drink the water. One time we tried drinking water in the Athabasca River, took water and we boil it, after it settled it was just like oil. You can’t drink it, you can’t drink that. Water is polluted (M29 2011).

As shown in Figure 8, MCFN participants in mapping interviews for the Shell projects consistently indicated an area of general loss of use in the vicinity of existing oil sands activity south of the Firebag River – this is an area within which they would not feel comfortable practicing harvesting rights – extending south from approximately the Firebag River and including the JPME LSA. There are also reported specific MCFN loss of use incidents, primarily related to quantity of water, but also quality issues, extending along the Athabasca river and concentrated in Lake Mamawi in the delta.

5.2.3 Culturally Important Species\(^\text{18}\) – Bison, Moose, Woodland Caribou

Based on reported MCFN knowledge, Kearl Lake and the JPME LSA includes critical and highly productive moose hunting habitat, particularly important for MCFN members living in Fort McMurray. Hunting of wood bison was also reported within the LSA. Wood bison are integral to MCFN cultural practices, and the population west of the Athabasca River, and within the JPME LSA, is understood to be the only healthy wild herd of wood bison in MCFN territory outside of Wood Buffalo National Park. As such is the only herd that MCFN members can freely hunt and rely upon. MCFN hunting of wood bison has been documented within the LSA on the west side of the Athabasca River, across from the confluence with the Firebag River, and within the footprint of the proposed JPME PRM Compensation Lake. Multiple MCFN bison kill sites are included in the subsistence activity class shown in Figures 6 and 7.

\(^{18}\) Wood bison, woodland caribou, and barren ground caribou seem to have largely not been addressed within the proponent’s EIA, though some additional information was submitted to the JRP in November 2011.
Also based on MCFN knowledge, Woodland Caribou are reported to frequent the JPME LSA, including the proposed mining footprint. The muskeg area north of Kearl Lake, and south of McClelland Lake, is reported to have been regularly used by woodland caribou as winter habitat within the past ten years. MCFN participants indicated that woodland caribou are a culturally important and historically relied upon subsistence resource.

Woodland caribou (Alberta boreal population) is listed as a threatened species protected under Schedule 1 of the federal Species at Risk Act.

5.2.4 Culturally Important Species – Migratory Birds

The air is no good for them ... Like now, these birds, like waveys and geese, stuff like that, most of them they're flying more on the west side than they used to fly right here. Not much flying over right here, you notice that, I don't know, but we notice that. Unlike before, before there's millions, now there's just a few, more on the west side. (Interviewer: Over towards Lake Claire?) Yeah, past it. That's where they fly. Going a different route now, on account of the air, I guess, I don't know. And the grass are not as good like before for them. Grass don't grow as good as before, that's what they eat, those roots and now everything is all dried up, that's why they're flying different places. And what about the muskrats? Nothing. They're all gone, you don't see any muskrats but of course that's water, I know. The problem is water, that's what's killing them, no water, the water is not moving in the little lakes are just dying, that's what's killing them, not like before, used to be high water, used to be a lot of rats, now there's nothing. (M29 2011)

MCFN members have reported changes in migratory bird patterns, including ducks and geese, and overall declines in the availability of migratory birds as a result of oil sands development. These changes are reported to have impacted the quantity of birds available for the MCFN spring and fall bird hunt, particularly in the area of the Athabasca delta. Effects on the quality of migratory birds were also noted:

My whole diet is wild meat or vegetables. It is scary because now like a lot of people see the lesions on fish and they see bears with worms in them or you could see these poor ducks that still have tar in them, it's pretty scary. (M38 2011)

MCFN hunting of migratory birds has been documented within the RSA and LSA, and is included in the subsistence activity class shown in Figure 7. Migratory birds are of key cultural importance to the MCFN. The spring bird hunt is a core component of the MCFN’s past and present seasonal round.

5.2.5 Access and Enjoyment of MCFN lands – MCFN Traplines, Reserves, and Protected Areas
As shown in Figure 8, MCFN members indicate that access and enjoyment has been lost to a large area south of the Firebag River, suggesting that a tacit, or implied threshold of disturbance has already been reached within the RSA, resulting in widespread loss of use by MCFN members due to oil sands related impacts including: road controls, traffic, noise, dust, smell, ground disturbance, perceived contamination, and disturbance by recreational users. The majority of these impacts are reported to have accumulated over the past decade (since approximately 2000).

As shown on Figure 1, two known MCFN traplines (RFMA #1570, and RFMA #2892) intersect with the RSA. Both are located on the west side of the Athabasca River north of the Firebag River. One MCFN Indian Reserve (Old Fort #217) is located within the RSA, on the east side of the Athabasca River. As shown in Figure 2, large portions of the LSA, and the footprints of the Shell Projects, are within areas identified for protection by the MCFN in land use planning processes because of their cultural and ecological value. These include areas adjacent to the Athabasca and Muskeg Rivers, as well as areas around McClelland and Kearl Lakes that would be directly affected by the Shell Projects.

As documented in the MCFN and MCFN Athabasca River Use and Knowledge Study (Candler et al. 2010), and as reported by MCFN member, impacts of existing oil sands operations on MCFN reserve lands include:

- Perceived impacts on Athabasca River water quality (due to contaminant concerns) resulting in loss of confidence in fish and other wild foods and resources; and

- The impact of water withdrawals on river flow during ice free low flow periods resulting in impediments to river travel and navigation required to access MCFN’s reserve lands.

5.2.6 Intangible Cultural Resources – MCFN Knowledge, Language and sakaw pimacihiwin

In additional to concerns regarding impact to more concrete values, many MCFN participants also identified concerns regarding the potential impact of oil sands developments on intangible cultural resources, including language and the transmission of knowledge regarding areas lost due to industrial effects, as well as the ability to practice sakaw pimacihiwin more broadly.

Particular kinds of knowledge, in the form of place based stories, place names, and histories, are associated with particular places (Basso 1996), and the cultural practices, or uses, that take place there. Actions that destroy a place, or cause the use of a place to be lost (for example, because of fear of contaminants), especially over long periods of time, frequently result in a gap in the transmission of place based knowledge, and eliminate the place as a cultural resource for remembering, teaching, and learning the knowledge associated with it.
Well, I started living in McMurray close to about twenty years now. Ever since 20 years, and now, now I won’t hunt around the plants because I know what their stuff can do, what falls around the plants, everyone says the worst plant to work for is Suncor, smelly and a lot of stuff and I see a lot of those white people who moved to McMurray here, I don’t know how they do it, they pick berries close to the plant, I would never do it. Even moose out here, I’m not starving to shoot a moose close the plant, I go quite aways to the Birch River or I go towards Slave Lake… There used to be something here, it’s hard to show them something that is not there any more, they just have to listen to stories, the history, a lot of the things that I saw in my time, my grandchildren will never see. It’s not going to be the same. Areas that are identified in my time and my father’s time are not going to be there. So that’s going to be lost too, except the stories, the history books. It’s pretty sad. (M18 2011)

…I wouldn’t go to my trapping, my hunting, that’s all gone now. That’s on account of those companies. Where are you going to go hunting, everytime you stop somewhere along the river, what do you hear? You hear equipment going, you can’t hunt along the river any more, it’s gone. There’s a lot of times you go up, you get off the boat and maybe walk over, check it out, and all of a sudden you come to a big clearing, where in the hell am I supposed to hunt here? (M25 2011)

Other kinds of knowledge may not be associated with a particular place, but with an aesthetic feeling, or sense associated with particular kinds of places, especially ones that are considered ‘natural.’ With increased urbanization, and the increasing rarity of places that are ‘natural’ or ‘wild’ for MCFN members living in urban areas, places that offer this sense, but that are still accessible from urban areas, can be a very valuable and rare cultural resource.

For me it was continuing the lifestyle, continuing enjoying the air, just to be outside, fishing at the Bridge to Nowhere, that’s where I used to go to when I was in McMurray, it’s continuing the lifestyle. Like I could easily have ended up like a zombie in Syncrude, I could have easily done that, it was all there, but I don’t like that lifestyle, I don’t like working 24/7 and get up, go to work, go to sleep, get up, go to work, go to sleep, for me it’s the continuing of the lifestyle and teach my kids to learn more. I learned from the McKay boys, I learn from you, you take me, I’ll learn something, so it’s just the continuance of it and getting better at it. And then we’re going to need it, we’re going to need our survival skills, that’s all there is to it, I’m a believer of that… (M32 2011)

Pollution, they’ve got to slow that down, there will be nothing for our children’s children’s children. They’ll wipe us out, like a genocide, slow but
effective, I guess …. and they just take, take, take, they don’t give nothing back. There’s no balance, everything is off balance. (M15 2011)

The effects of Industrial development along the Athabasca River are already having far reaching, and multi-generational effects on Mikisew Cree First Nation knowledge and use. One MCFN member who lives in Fort Chipewyan, but who’s children and grand children choose to live away from Fort Chipewyan because of concerns regarding pollution, provides an indication of the cascading effects that concerns regarding wild foods and environmental contaminants can have, in this case influencing health decisions, out-migration decisions, and ultimately creating a barrier, even within families, for the transmission of cultural knowledge to younger generations.

Because all the pollution comes up here, that's why I'm missing out on my daughter, I'm missing out on my grandson, the interactions we could have. I'm happy for Skype, it's the closest thing we have for interacting with each other … I can talk to him every day but I don't get to interact with him, I don’t get to show him all the traditional things that he could be doing in Fort Chip. He could be going setting rabbit snares and setting a net, he could be going on a job for the camp, we could be making all kinds of different crafts, we could be walking out in the forest, and there’s so much learning for a child and we miss out on that because my daughter chooses not to move back to Fort Chip. She doesn’t want to get her cancer again, I don’t want her to get her cancer, there’s not too much we can do...

My grandchildren and my children, they’ll never come back to Fort Chip. And because everything is being polluted, what do we have to pass onto them? there’s absolutely nothing. Once they poison all our water, like that old saying, once they poison everything, there’s nothing to pass on to our children. We won’t be eating wild meat pretty soon, like there’s less and less waterfowl coming. It’s spring time now, we should see tons and tons of them flying overhead. They’re stopping at all those tailing ponds over there for a drink and then they just don’t come back up. They could hide the facts from everybody, Industry could because they could, and we know. We know because we see them ... But there’s really nothing to pass onto our children. Maybe my generation, may the next generation, but that’s it. Because everything, our delta is drying up, they’re going to build another dam there in B.C. and that’s going to dry up our delta more. And then our water’s going to go down and so pollution is going to be more concentrated and it's going to be lower, you won’t even be able to go out by boat. There’s so many things that are just terrible, but I still love this place. I’m still going to stay here. So I’m kind of caught. (M38 2011)
5.3 Assessment of JPME Project Effects

Based on the proponent’s application (V. 5: 1-14), construction of the JPME is expected to begin in 2012, operations in 2015, and closure activities in 2065. Construction, operation, closure, and post-closure activities will result in clearing and taking up of lands, and may have effects on any or all of the categories of site-specific and non-site-specific traditional use values identified in the LSA and RSA through direct disturbance, reduced MCFN access, increased industry and recreational access, perceived or actual contamination on traditional resources or foods, including plants and animals, leading to lost or reduced use.

The following are anticipated JPME Project effects on site-specific VCs.

5.3.1 Anticipated JPME Project Effects on Site-specific VCs within the LSA and RSA

5.3.1.1 Site-specific Subsistence Values

Based on reported MCFN knowledge and review of project information, construction, operation, closure and post-closure project effects, the JPME footprint will destroy and/or render un-useable preferred and site-specific MCFN hunting, trapping, and food gathering values within the JPME footprint, including past, current, and planned future use areas. This effect is anticipated with a high degree of confidence.

Within the JPME LSA, up to 296 documented MCFN site-specific subsistence values will be adversely impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, fear associated with increased contamination of traditional resources or foods, including plants and animals, leading to increased scope and intensity of avoidance or reduced use. 79 documented MCFN site-specific subsistence values are inside or within 250 m of the project footprint and will be destroyed and/or rendered essentially un-useable by the project. These include important and currently used moose, deer, small game (rabbit and grouse), fishing, and plant food (berry) harvesting areas inside or adjacent to the project footprint, including Kearl Lake.

Within the RSA, and including the LSA, approximately 4,250 MCFN site-specific subsistence values have been documented including a large concentration of values in the Athabasca delta. Beyond the LSA, but within the RSA, and including MCFN values in the Athabasca Delta, the values most at risk of project effects are downstream of the project along the Muskeg and the Athabasca Rivers. MCFN member’s observations that oil sands related water withdrawals are adversely affecting the flow of the Athabasca River suggest that some or all of these subsistence values are likely to be impacted by the project as a result of effects on Athabasca River levels, especially during ice free periods of low flow, and increased perceived contamination of traditional resources and
foods, including plants and animals, leading to lost or reduced use. Also see non-site-specific effects below.

5.3.1.2 Site-specific Habitation Values

Based on reported MCFN knowledge and review of project information, construction, operation, closure and post-closure project effects will destroy and/or render unusable preferred MCFN habitation values within the LSA and RSA, including past, current, and planned future use areas. This effect is anticipated with a high degree of confidence.

Within the JPME LSA, up to 69 documented MCFN site-specific habitation values will be impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, perceived increases in contamination of traditional resources or foods, including plants and animals, upon which habitation areas rely, leading to increased scope and intensity of avoidance or reduced use, as well as other disturbance. 10 documented MCFN site- specific habitation values are inside or within 250 m of the project footprint and are anticipated to be destroyed and/or rendered un-useable by the project. These include multiple currently used cabin sites, as well as camp sites.

Within the RSA, and including the LSA, 1324 MCFN site- specific habitation values have been documented. Beyond the LSA, but within the RSA, values most at risk of project effects are those downstream of the project along the Muskeg and the Athabasca Rivers. These include regularly used cabins, village sites (Snowbird’s Camp) and MCFN Indian Reserve lands. As with subsistence values noted above, MCFN member’s observations that oil sands related water withdrawals are adversely affecting the flow of the Athabasca River suggest that these habitation values are likely to be impacted by the project through anticipated seasonal or intermittent effects on Athabasca River levels during ice free low flow periods, and increased perceived contamination of traditional resources and foods, including plants and animals, upon which use of habitation areas rely, likely leading to lost or reduced use.

5.3.1.3 Site-specific Cultural/ Spiritual Values

Based on reported MCFN knowledge and review of project information, construction, operation, closure and post-closure project effects of the JPME will disturb site-specific MCFN cultural/spiritual values within the LSA and RSA, including ceremonial areas, burials and medicine collection areas, including past, current, and planned future use areas. This effect is anticipated with a high degree of confidence.

Within the JPME LSA, up to five documented MCFN site-specific cultural / spiritual values are likely to be impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, or other disturbances. These include medicinal plant collection areas and one reported burial. Two of these values, both medicinal plant
collection areas associated with Kearl Lake, are within 250m of the JPME footprint and are expected to be destroyed.

Within the RSA, and including the LSA, almost 400 MCFN site-specific cultural / spiritual values are documented. These include ceremonial places, medicine collection places, and burials sensitive to a variety of effects, including water level and water quality changes. At least some of these cultural / spiritual values are likely to be impacted by the project as a result of anticipated effects on Athabasca River levels, especially during low flow, and increased perceived contamination of traditional resources and foods, including plants and animals, leading to avoidance or reduced use. See non-site-specific concerns below.

### 5.3.1.4 Site-specific Transportation Values

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will destroy and/or render unusable MCFN transportation values within the LSA and RSA. This effect is anticipated with a high degree of confidence.

Within the JPME LSA, one documented MCFN transportation value (a water route) was mapped. Other non-site specific water routes identified along the Muskeg River and used to access hunting and habitation areas are anticipated to be destroyed or rendered unusable by the JPME Project.

As discussed in Candler *et. al* 2010 (see appendix 2), water based navigation, downstream of the project along the Muskeg and the Athabasca Rivers is especially vulnerable to impact during ice-free low water periods. Also see non-site-specific concerns below.

### 5.3.1.5 Site-specific Environmental Feature Values

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects are likely to destroy and/or disturb site-specific MCFN environmental feature values including past, current, and planned future habitat areas. This effect is anticipated with a high degree of confidence.

Within the JPME LSA, MCFN site-specific environmental features include:

- important woodland caribou winter habitat in the upper Muskeg south of McLelland Lake;
- important moose habitat around Kearl Lake that is unique due to quantity of moose (possibly due to mineral rich 'overflow' on ice in late winter), and proximity or ease of access from Fort McMurray and Fort McKay.
These values will be impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, perceived increases in contamination of traditional resources or foods, including plants and animals, leading to increased scope and intensity of avoidance or reduced use, as well as other disturbances.

Beyond the LSA, but within the RSA, the values most at risk of project effects are areas of woodland caribou habitat both north and east of JPME, as well as areas downstream of the project along the Muskeg and the Athabasca Rivers. Some or all of these environmental feature values are likely to be impacted by the project as a result of increased perceived contamination of traditional resources and foods, including plants and animals, leading to avoidance or reduced use. See non-site-specific concerns below.

5.3.2 Anticipated JPME Effects on Non-Site-specific VCs

5.3.2.1 JPME Effects on Water and River Values – Quantity

MCFN members have identified the level of water, particularly water of the Muskeg and Athabasca Rivers, to be of concern within the RSA. Based on reported MCFN knowledge, and review of project information, it is anticipated that construction, operation, closure and post-closure project effects will destroy or disturb large areas of muskeg, wetlands, and stretches of rivers and streams within the footprint, and is likely to impede the practice of MCFN use downstream of the project by reducing water levels in the Muskeg and Athabasca Rivers during low flow periods. The project will increase the intensity, scope and area of existing patterns of MCFN loss of use due to disturbance of the Muskeg River. This effect will be most pronounced during ice free low water periods and is likely to result in impediments to access to past, current, and planned future use areas, documented areas of traditional use, and MCFN Indian Reserves. During periods of low flow, this effect is anticipated with a high degree of confidence.

Documented existing impacts to MCFN knowledge, use and rights practice related to water levels (Candler et al. 2010) include loss of access to large areas of traditional lands along the Athabasca River and adjoining tributaries, increased incidence of sand bars and navigational hazards, ecological change, including vegetation changes and changes in channel and channel migration, and loss of access to Indian Reserve lands leading to increased avoidance, reduced use, and loss of knowledge transmission opportunities. These changes would be most pronounced downstream of the project and in the Athabasca delta area where the greatest intensity of MCFN use values occurs. See Appendix 2 for additional detail.
5.3.2.2 JPME Effects on Water and River Values – Quality

MCFN members have identified the quality of water, particularly water of the Muskeg and Athabasca Rivers, to be a major concern within the RSA. Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will contribute to already high perceived levels of industrial contaminants within the MCFN environment. Currently perceived levels of water and air borne contaminants, in combination with other changes, are having serious psycho-social effects and resulting in wide spread avoidance and loss of use by MCFN members in the region (Candler et al. 2010). The project is likely to result in increased intensity, scope and area of MCFN avoidance and loss of use, particularly downstream of the project along the Muskeg and Athabasca Rivers and including past, current, and planned future use areas, documented areas of traditional use, and MCFN Indian Reserves. This effect is anticipated with a high degree of confidence.

As shown in Figure 8, current avoidance patterns related to existing industrial development indicate that, for MCFN members, the waters of the Muskeg and Athabasca Rivers downstream of the project, and much of the project footprint and LSA, have already reached and surpassed thresholds where widespread MCFN avoidance or loss of use is taking place. While these thresholds of practice/avoidance have not been quantified, existing patterns indicate that the project is likely to expand existing MCFN traditional use avoidance patterns, including increased intensity, scope and area of avoidance by MCFN members.

Documented existing impacts to MCFN knowledge, use and rights practice related to water quality (Candler et al. 2010) include observed adverse changes (including changes in taste, odor, and observed sheen) in traditional drinking water sources, and observed adverse changes in traditionally relied upon aquatic resources (abnormal fish, tainted aquatic medicines and moose meat). These are directly related to patterns of general avoidance of subsistence resources (aquatic and terrestrial) south of the Firebag River (figure 8), and leading to increased avoidance, reduced use, and loss of knowledge transmission opportunities. MCFN avoidance patterns related to the LSA are widespread. In some cases, particular resources (such as moose) are only avoided if there is a perceivable behavioral or physical abnormality (cysts noted in meat, or animals ‘look sick’). Project related avoidance and loss of use due to concerns regarding contaminants are likely to be most pronounced downstream of the project in the area of the Firebag River, and in the Athabasca delta area where the greatest intensity of MCFN use values occurs. See Appendix 2 for additional detail.

5.3.2.3 JPME Effects on Culturally Important Species – Wood Bison, Woodland Caribou and Migratory Birds

MCFN members have identified important wood bison and woodland caribou habitat within the LSA and RSA. Based on reported MCFN knowledge, and review of project
information, the construction, operation, closure and post-closure of the JPME Project is likely to disturb or destroy the range, and possibly core habitat, of culturally important populations of bison and woodland caribou resident west of the Athabasca River, and in the Kearl Lake and Muskeg River areas. In the area of JPME, similar interactions are also anticipated with woodland caribou and migratory birds.

Subject to a lack of available information regarding project interactions with bison, woodland caribou, and migratory birds, this effect is anticipated with a moderate degree of confidence. It is unclear from the proponent’s application whether or not potential project effects on woodland bison were evaluated. Based on the precautionary principle, in the absence of information regarding the likely effect of the project on culturally important and unique wood bison, woodland caribou, and migratory birds, caution should be applied.

In addition to disturbing or destroying caribou range, the project is also anticipated to increase perceived contamination potentially resulting in decreased or lost use of these animals by MCFN members.

5.3.2.4 JPME Effects on Culturally Important Species – Plants

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will disturb culturally important plant species and communities including berries and medicine plants. This effect is anticipated with a high degree of confidence.

5.3.2.5 JPME Effects on Access and Enjoyment of MCFN Lands

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will contribute to the disturbance or elimination of MCFN access and enjoyment of lands associated with proposed MCFN protection areas within the LSA, as well as MCFN proposed protection areas, Indian Reserves and traplines downstream of the project.

These effects are anticipated with a high degree of confidence.

5.3.3 JPME Effects on Intangible Cultural Resources including MCFN Knowledge, Language and sakaw pimacihiwin

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will reduce or eliminate opportunities for the transmission of MCFN knowledge specific to areas within the LSA, or within the project footprint. This is likely to impede or eliminate opportunities for the transmission of MCFN knowledge and language specific to the JPME area to younger generations. This
effect is also likely to extend to the RSA as a result of impediments to access and travel by water related to low flow levels on the Muskeg and Athabasca Rivers, and expansion of loss of use areas associated with contamination and perceived effects of industrial oil sands mining. Practice of sakaw pimacihiwin within the 250m of the footprint is anticipated to be eliminated for multiple MCFN generations (likely more than four). Project contributions to perceived contamination of wild foods are anticipated to be particularly important to the future persistence of MCFN sakaw pimacihiwin in the RSA. These effects are anticipated with a high degree of confidence.

5.4 Existing JPME Mitigations

The proponent’s applications identify five mitigations specific to First Nations TEK and land use (p. 8-48, 49). The mitigations are:

- Compensation for directly affected trapline holders;
- Continued consultation with key aboriginal groups;
- Access to traplines;
- Employee/contractor education; and
- Reclamation.

Appendix 3 contains a summary of other mitigations committed to by the proponent within the applications and associated documents.

At best, these constitute partial mitigations to the anticipated effects of the project for the following reasons:

- As noted in 2.2.1 above, compensation to trapline holders may be a mitigation for loss of commercial trapping rights, but is not a mitigation for impacts to aboriginal use or treaty rights;
- Regarding reclamation, as discussed in 5.4.1 below, the proponent’s assumptions regarding the ability to restore landscapes consistent with MCFN tangible and intangible cultural values is considered unreasonably optimistic by MCFN elders and knowledge holders, and does not consider effects of removing areas from MCFN use for multiple generations;
- While supported access to traplines through the mine footprint is useful, based on past experience in the region, and reports from MCFN members, it is unlikely to provide an effective mitigation to avoidance of areas due to larger access and disturbance issues;
- Cultural education of Shell employees and contractors is positive, but it is unclear what anticipated project effect this is a mitigation for; and
• Continued consultation with key aboriginal groups is also positive, but consultation with aboriginal groups is generally a responsibility delegated to the proponent by the Crown (and so is not a mitigation). In the absence of a formal shared decision making process, or JPME project co-management arrangements, it is unclear how the proponent could structure ongoing consultation in a manner that could provide reliable mitigation of anticipated project effects.

5.4.1 Oil Sands Mine Reclamation and MCFN Knowledge and Use

While the technology of reclamation continues to improve, proponents in the region have show slow progress in reclamation, and there is little evidence that the proponent’s reclamation plan can reasonably be expected to re-create cultural or ecological landscapes that MCFN members will be able to, or desire to use in a manner consistent with aboriginal traditions of knowledge and use. At best, reclaimed landscapes replace a natural area with a human made and technologically moderated re-creation. The practice of MCFN use and treaty rights involves a special and sacred relationship with the land which requires access to subsistence resources, but also requires the ability to practice and transmit place-based cultural knowledge which is essential to the ‘mode of life’.

Even if perfect reclamation of the physical and cultural landscape was possible, in the case of both JPME and PRM, the affected area will be removed from MCFN use for at least fifty years and potentially much longer, depending on the length of time closure and reclamation requires. Where an area has been removed from aboriginal use for one generation (approximately 22 years) or more, impacts to the transmission of knowledge regarding that area are considered permanent and irreversible. Where disturbance involves removal of landforms and where areas relied on for teaching are fundamentally altered or made inaccessible, then the role of landscape in transmitting knowledge (Basso 1996) is fundamentally and irrevocably changed through development.20

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19 The numeric definition of a generation varies, but is generally estimated as the average age at which a woman has her first child. While accurate demographic data for the MCFN is not available, 22 years is taken as a reasonable estimate.


…the Panel finds that the landscape itself would be substantially altered by the Project, and as a result, even after closure and reclamation, the spiritual and cultural connection to the Teztan Biny (Fish Lake) area would likely be irreversibly lost. A new cultural connection to the area could require thousands of years to develop to a level similar to that currently experienced by the Tsilhqot’in at Teztan Biny…The Panel has determined that the loss of the Teztan Biny (Fish Lake) and Nabas areas for current use activities, ceremonies, teaching, and cultural and spiritual practices would be irreversible, of high magnitude and have a long-term effect on the Tsilhqot’in.
Several MCFN participants expressed clear skepticism regarding the ability of proponents to reclaim lands in a manner consistent with MCFN knowledge and use values:

> But how are they going to fix this water now they pollute? how are they going to do it? there’s no way they could fix it. It’s even affected now, in Fort Smith now, their water and their fish. Same thing what’s happening right here. It will go down, down, down, I don’t know how far it’s going to go…(M29 2011).

> …How in the hell do you expect wildlife to grow there, it will take a long time for the growth of the land to come to natural, it wouldn’t come back overnight. A lot of times I went to the meetings, they said, okay, we’re going to use the guy’s land, we’re going to put it back like the way it is. I mean how in the hell are you going to put it back the way it is, you drove all the moose away and everything away from there, all the animals, you’re going to bring the animals back now? they’re not going to survive in that area, you know what I mean? even foxes like there was a time when you saw a burned trapline, everyone knew that that trapline would be no good because there’s nothing for animals to eat, they move away. So that change in the land when you destroy it like that, the nature, it don’t come back just like that (M18 2011).

Based on MCFN experience, even the best and most sensitive reclamation techniques cannot be expected to reverse or fully mitigate impacts to MCFN use values.

### 5.5 JPME Residual Project Effects

Given anticipated project effects on MCFN knowledge, use and rights practice, and considering existing mitigations proposed in the applications (described above and in Appendix 3), the residual (post-mitigation) effects of the JPME project on MCFN Knowledge and Use are anticipated to range from moderate to very high.

Figure 10 provides a characterization of the residual effects, and a rating of environmental consequence for each VC.
### Figure 10: Environmental Consequence of Residual Impacts

<table>
<thead>
<tr>
<th>Value</th>
<th>Direction</th>
<th>Magnitude</th>
<th>Geographic extent</th>
<th>Duration</th>
<th>Reversibility</th>
<th>Frequency</th>
<th>Environmental Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site-specific Subsistence Values</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Site-specific Habitation Values</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Site-specific Cultural/Spiritual Values</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Site-specific Transportation Values</td>
<td>Negative</td>
<td>moderate (+10)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>moderate (+1): intermittent</td>
<td>High (17)</td>
</tr>
<tr>
<td>Site-specific Environmental Features</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Water and River values (quantity, including access)</td>
<td>Negative</td>
<td>moderate (+15)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>moderate (+1): intermittent</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Water and River values (quality, including wild foods)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Culturally Important Species (Wood Bison)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Culturally Important Species (Woodland Caribou)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Culturally Important Species (migratory birds)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Culturally Important Species (plants)</td>
<td>Negative</td>
<td>moderate (+10)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>High (18)</td>
</tr>
<tr>
<td>Culturally Important Species (plants)</td>
<td>Negative</td>
<td>Low (+5)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
</tbody>
</table>
5.6 Significance of Residual JPME Effects

Based on available information, residual project effects (separate from effects of other projects) of the JPME on MCFN knowledge and use would be adverse and of moderate to very high environmental consequence. They are likely to result in serious adverse changes in the knowledge and use practice of MCFN members. The most serious adverse effects associated with JPME are likely to occur in the following areas:

- Disturbance or destruction of unique subsistence values, habitation values, environmental features, and other site-specific values historically and currently practiced within and around the Kearl Lake area. The project is likely to result in complete or near complete MCFN loss of use in the LSA for multiple generations. This change is attributable to the Project, is likely to result in strong concern by MCFN members affected, including members resident in the Fort McMurray area, and will be a clearly discernable (measurable or perceivable) change to the preferred location of exercise of a culturally important practice, land use or right. As such, this is considered a **significant adverse effect** on (i) the use of lands and resources by MCFN members, and (ii) unique heritage resources (tangible) of value or concern to MCFN members.

- Given the baseline of pre-existing impact along the Athabasca River, the Project is also likely to:
  - disturb or destroy specific values within the LSA including unique and important areas associated with culturally important and rare or hard to find resources (including wood bison and woodland caribou);
  - expand and intensify MCFN loss of use areas by increasing perceived contamination of water and river values, including wild foods;
  - impact water and river quantity at low flow levels, impacting access and transportation extending downstream to the Athabasca Delta;
  - result in permanent loss of use of preferred hunting, fishing and plant collecting areas, as well as culturally important camps and habitation
values in the vicinity of the Project and downstream along the Muskeg and Athabasca Rivers.

- contribute to cascading intergenerational effects on Mikisew knowledge and lifestyle, health and quality of life.

Loss of use is likely to result in strong concern or interest by MCFN members affected, and be a clearly discernable (measurable or perceivable) change to the preferred exercise of a culturally important practice, land use or right. As such, this is considered a **significant adverse effect** on (i) the use of lands and resources by MCFN members, and (ii) unique heritage resources (intangible) of value or concern to MCFN members.

The primary finding of this assessment is that the JPME project (not in combination with other projects) is likely to have **significant adverse residual effects** on MCFN knowledge and use, particularly in relation to effects to MCFN use in the vicinity of Kearl Lake, the upper Muskeg River, and portions of the Athabasca River, as well as downstream loss of use due to perceived contaminants and effects on the Athabasca River at low flow levels. Potential for the Project to contribute to cumulative effects

The primary recommendation of this assessment is that the proponent and the Federal and Provincial Crown undertake a process, agreeable to and involving the MCFN, to ensure that adequate quantity and quality of resources exist for the continuation of MCFN knowledge and use into the future. This process should prioritize avoiding and reducing impacts over mitigating them. Where impacts to MCFN knowledge and use cannot be avoided then they should be mitigated to below a significant level, as defined in this report, using effective strategies agreeable to the MCFN.
Section 6: PRM Project Baseline and Assessment

The PRM project is proposed on the west side of Athabasca River within the Pierre River watershed. This section provides baseline and assessment specific to the likely effects of the PRM project on MCFN knowledge and use.21

6.1 Baseline for Site-specific VCs within the PRM LSA and RSA

Figure 12 provides a map of MCFN site-specific data reported within the PRM project LSA including 71 site-specific use values inside, or within 250 m, of the proposed project footprint. 358 site-specific use values were identified within the LSA (5 km of the proposed PRM project footprint), including 266 subsistence values, and 82 habitation values clustered primarily along the Athabasca River, and especially at the confluence of the Athabasca and Firebag Rivers. While not every site-specific value includes time information, reported time of last use for habitation values within the LSA range from the 1970’s to summer 2007. Almost 6,000 MCFN use values were identified in the RSA, the majority of them along the Athabasca River and in the Athabasca Delta. All mapped values are based on the use and knowledge of MCFN members.

Due to the density of reported transportation features and navigational hazards along the Athabasca River, river-based transportation is not shown and is analyzed as a simplified transportation ‘corridor.’ All MCFN data (points, lines and polygons) are shown with a 1 km buffer. Points were randomized by 250 m, then 1 km buffers were generated around all points, lines, and polygons in order to account for margin of error, and to protect confidential information.

Figure 11 provides an account of reported MCFN site-specific values inside or within the 250 m of the PRM footprint, within the LSA, and within the RSA.

21 Several relevant figures and quotes that also apply to and are present in the JPME baseline and assessment are reproduced in this section to support independent review.
Figure 11: Reported MCFN Site-Specific Use Values in relation to the PRM Project footprint, LSA and RSA

<table>
<thead>
<tr>
<th>Activity Class</th>
<th>Within 250 m of PRM Footprint</th>
<th>Within 5 km of PRM Footprint (LSA)</th>
<th>Within Regional Study Area (RSA)</th>
<th># of values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsistence</td>
<td>49</td>
<td>266</td>
<td>4254</td>
<td></td>
</tr>
<tr>
<td>Habitation</td>
<td>20</td>
<td>82</td>
<td>1324</td>
<td></td>
</tr>
<tr>
<td>Cultural/spiritual</td>
<td>1</td>
<td>5</td>
<td>399</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Environmental features</td>
<td>1</td>
<td>4</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>71</td>
<td>358</td>
<td>5992</td>
<td></td>
</tr>
</tbody>
</table>

Specific traditional use activities reported by MCFN members inside or within 250 m of the proposed PRM footprint include:

- Multiple permanent habitation values (cabins) and camping areas along the Athabasca River. Some of the cabins are owned or built by others, but are shared, through family or friendship ties, with MCFN members (e.g., M26, M27, M36, M37, M32),

- Large game hunting (multiple moose and bison kill sites) associated with unique habitat (e.g., M19, M13, M32, M56); and

- Small game hunting (grouse, rabbits, beaver, duck, geese) (e.g., M57, M73, M19).

- Fishing (whitefish, Goldeye, Pickerel) (e.g., M57)

- Drinking water sources (springs) (e.g. M27)

Beyond 250 m of the project footprint, and within the PRM LSA there are:

- Multiple reported MCFN hunting and kill sites, particularly of moose, but also bison, along the Athabasca River (e.g., M13, M25, M60, M19);

- Subsistence fishing areas along the Athabasca River (pickerel, goldeye, pike) (e.g., M26, M23);

- Food plant and berry picking sites (e.g., M22, M23, M114, M57);

- Multiple permanent and temporary habitation values (cabins and camps) used by MCFN members along the Athabasca River (e.g., M16, M26, M27, M34).

- Transportation values including a water route into McClelland Lake (e.g., M19).
Figure 12: Reported MCFN Use Values within the PRM Project Local Study Area

The map illustrates reported MCFN use values specific to the Pierre River Mine local study area (LSA) by activity class. The map shows the geographical distribution of use values associated with cultural, environmental, habitation, subsistence, transportation, PRM local study area, and Pierre River Mine footprint (250m). The map also includes a 1-kilometer buffer and notes that reported areas and polygons are shown with a 1-kilometer buffer. Absence of site-specific data does not indicate absence of interest or use.

This map was produced by Stevens Diffuse of the Firelight Group on October 25, 2011. MCFN use values derived from the MCFN 2009-2010 site and drilling data survey (Territorial) and the Mikisew Cree First Nation (Mikisew Cree First Nation - Territorial, Drainage Basin, and Water Resource Canada) and footprint areas provided by Shell.

The map does not capture the complexity of MCFN’s relationship to the traditional lands or the extent of the provision of treaty and aboriginal rights. This map is a living document and is intended to be amended and refined over time. The data used to produce this map originate from multiple sources. This map is property of the Mikisew Cree First Nation and may only be reproduced with written permission.
Use of habitation areas by MCFN members within the footprint and LSA is ongoing and current, and relies upon confidence in the quantity and quality of resources in surrounding areas (including the footprint and LSA).

The PRM mine area, and associated LSA, is at the northern most boundary of a large area extending to the Fort McMurray area that multiple MCFN members have reported is no longer considered safe for hunting and other resource procurement uses due to access restrictions, disturbance, and concerns regarding contaminants from existing oil sands developments. This area is shown on Figure 15.

In most, if not all cases, general avoidance practices in the area of the proposed PRM by MCFN members has developed recently (within the past five to ten years) as a result of exploration activity and upstream oil sands developments. This loss of use is due largely due to concerns regarding the quality of resources, including water and meat, from the area, and because of disturbance from traffic, noise, and other industry related activities. Effects from existing industry in the area has already resulted in shifts in land use by some MCFN members to north of the Firebag River. As discussed in the assessment below, construction of the PRM is likely to expand the area of avoidance, or lost use, further to the north.

Figure 13 provides a map of MCFN site-specific use data reported within the PRM Project RSA and shows the relative density of site-specific use values downstream of the PRM project. The RSA includes almost 6,000 reported site-specific use values, including 1,325 habitation values, the majority of which are located in the Athabasca delta.

Figure 14 shows areas of general loss of use due to industrial impacts reported by MCFN members in the RSA, as well as instances of lost use due to resource or water quality (perceived contamination), and low water levels along the Athabasca River. Current general loss of use extends beyond the LSA and into the RSA, and is related to extensive industrial development to the south of the proposed PRM footprint. Loss of use within the RSA is due to factors including terrestrial disturbance, concerns regarding industrial contaminants, and loss of access due to reduced water levels, fencing, gated roads, and other oil sands activities:

Due to the pollution, you’re scared of everything nowadays, they’re scared of the animals, like before when you knock a moose off, you’re cooking a side of ribs right there in the fire, right at the site, now you’re a little hesitant, you know, is this a good area? are we safe eating this animal? (M24 2011)

It’s not only the pollution thing, it’s the animals have moved back farther from where you could get at them, they were more easily accessible before and they’ve moved or were eliminated, one or the other and industry just shuts you down, you go down any one of these roads and there’s big gates there and they just say you’re not allowed down here anymore and you can’t come in and that’s that. (M24 2011)
Figure 13: Reported MCFN Site-specific Use Values within the PRM Regional Study Area

Figure 13 is a map showing reported MCFN site-specific use values within the PRM Regional Study Area. The map includes various symbols and lines representing different activities and areas of interest. The map is used to illustrate the distribution and concentration of use values across the study area. The map is accompanied by a legend explaining the symbols used, which includes cultural, environmental, habitation, and transportation activities. The map also highlights specific areas of interest, such as proposed mines and existing shell mines. The map is produced to provide a visual representation of the use values as reported by the Indigenous community.
Figure 14: Reported Current (Winter 2010/2011) Loss of Use Areas in the RSA including Reported Specific Loss of Use due to Water Level and Quality Downstream of the Muskeg River
Gates, they have a lot of gates, they say they don’t have gates but I’ve heard hunters saying there’s gates that they have to go through or there’s gates or there’s moose on the other side of the gate, they can’t get at it. So no access plus pollution, those are the things that are preventing people from getting hunting. There’s always a road there that somebody has blocked off (M27 2011).

6.2 Baseline Summary for Non-Site-specific VCs within the PRM LSA and RSA

Key non-site-specific VCs associated with the PRM Project LSA and RSA include:

- Water and river values (including quality and quantity of water, fish, and aquatic resources), particularly associated with the Birch Mountains and including the Athabasca River;

- Culturally important species (including quality and quantity of high value moose, wood bison, and migratory bird habitat);

- Access and enjoyment of MCFN lands (especially Snowbird’s camp, MCFN reserves, traplines, and cultural and protection areas including the Athabasca River corridor). The PRM Project would create new road access to the west side of the River;

- Intangible cultural resources including intergenerational transmission of MCFN language, knowledge and sense of place, opportunities for social and cultural cohesion across communities, and ability of current and future MCFN members to practice sakaw pimacihiwin.

6.2.1 Water and River values – Quantity

While not mapped as a site-specific transportation value, data from the MCFN Athabasca River Use Knowledge and Change Study (Candler et al. 2010) highlights the Athabasca River and adjacent streams as resources integral to the culture and economy of the MCFN. They are critical to the ability of MCFN members to hunt, trap, fish, and otherwise practice treaty rights in a preferred manner. Appendix 2 contains a summary of existing information regarding downstream effects of existing oil sands development on MCFN use and rights. MCFN river-based transportation routes at risk during low water have been documented downstream from the PRM within the LSA and RSA.

As shown in red in Figure 15, within the LSA, both the Athabasca River, and smaller tributaries flowing from the west, including portions of Big Creek, and Redclay Creek, are reported to have been used in the past by MCFN members as water transportation routes to access resources, and both are reported to become too low to travel on at low
Figure 15: MCFN Navigation and Navigable Hazards in relation to the PRM Project
flow levels. The Athabasca River is a river historically and currently used by MCFN members to access large areas of traditional lands and practice livelihood and treaty rights. MCFN members report that the Athabasca has become increasingly difficult to navigate in recent years, particularly at low flows.

Reductions in flow in streams flowing into the Athabasca River also contribute to low flows, and resulting navigational hazards, especially towards the Athabasca delta where the majority of MCFN use, including important seasonal village areas, are located, and where all use depends on water access. As shown on Map 15, the PRM project is proposed along a stretch of the Athabasca River, extending downstream from the PRM, that is reported to be particularly difficult to navigate at low water levels due to sand bars and other hazards.

The following quotes from oral history interviews provide a sense of the effects water level changes have on MCFN use within the RSA.

You know that river used to be a nice big mighty river. You can go all through the channels like shortcuts. If you’re going down, instead of going this way, you could just go that way. You could go straight all the way. Now I hear that all these little places, like shortcuts, they’re all dried out, people have to turn around, from Fort Chip, going up to Fort McMurray, had to go back because the water was too low. It never used to be that way. It used to be big, deep and nice water, you could just go anywhere, there was hardly no sandbars. (M15 2011)

Yeah, yeah, one time there used to be a lot of water, not like now, now there’s lots of rapids, lots of rocks now, you won’t be able to go up there. Me and my partner tried to go there about four years ago, banged up our canoe, you have to come by foot, carry our canoe. Never going to go down there again. (M18 2011)

Oh, it [low water] would affect us in all kinds of ways, my friend, yes. The way we live, we like to go to places, you can’t go anyplace, Quatre Forche is the only place we could go now. Our area anyway, that’s about all. Now it would be worse, you can’t even cross Lake Mamawi, not this year, just mud flat there. (M29 2011)

6.2.2 Water and River values – Quality

You know, up until fifteen years ago, we used to take the cup and scoop it out of the Athabasca River. You’ll never do that now but scoop it out of the river and have a shot. (M24 2011)

[translated from Cree at time of interview] He said the water is poison [in the
Athabasca River] so at least here [in Edmonton] the water is clean over here and there’s doctors here too. He said he can move back and get a house he said [in Fort Chipewyan], but the water’s no good. He said at least here the water’s good … He said he’s been worried about it for a long time, he said, the water must have been starting to get polluted, he said, when he left Fort Chip. He said now it’s even worse. He said like the water quality is no good over there, even the animals and ducks and stuff like that, they don’t even land over there any more, they just fly right through. He said they’re even getting sick, even the animals, like there’s hardly any little animals, like rabbit, muskrat, beaver, moose, so he’s worried about the water back there after he moved. Already the water was starting to be polluted then, so he moved. He says you ask the people, like Syncrude and all that, about the water quality, oh, there’s nothing wrong, there’s nothing wrong, we clean the water good but he said, they’re only lying. People are really sick, it’s like poison he said, and his friend [named individual], he used to work that tailings pond in a barge, I guess, he used to scrape that stuff up, he said, still that stuff still seeps in the little creeks and rivers and ends up on the river. People are poisoned, and they say that they clean the water but they don’t, they don’t clean it. He said it still goes in the water.

Contamination, or perceived contamination, of water, and through it, wild foods, is perhaps the most important pathway of industrial impact on MCFN knowledge and use. As documented in the MCFN Athabasca River Use and Knowledge Study (Candler et al. 2010), MCFN members have observed important changes in the quality of water and aquatic resources (including perceived abnormalities in fish and contamination of medicinal plants) on the Athabasca River system since the arrival of large scale oil sand mining in the late 1960’s. These perceived changes in quality are attributed by MCFN members to oil sands development and have led to widespread loss of confidence in wild foods, especially fish and moose, as well as fear and other psycho-social impacts associated with contaminants. Changes in the environment that contribute to the loss of confidence in the quality of fish, water, moose and other aquatic resources, are having a serious effect on the continued practice of MCFN knowledge and use practice in the LSA and wider RSA. See Appendix 2 for a summary of existing information regarding downstream effects of existing oil sands development on MCFN use and rights. MCFN participants noted that the Athabasca River, and the confluence of the Firebag and Athabasca Rivers in particular, are preferred fishing areas, but that avoidance of fishing in the Athabasca River is now very wide spread due to concerns regarding pollution.

I mean it doesn’t take a smart person to realize that it’s affecting all our livelihood up there and the river goes all the way down to the Lake Athabasca and they’re affecting all the animals, there’s no muskrat anymore.

22 Health Canada (2005) identifies the following psycho-social factors associated with contamination – at least some of which are clearly affecting ACFN/MCFN use of lands and waters: fear; feelings of vulnerability and powerlessness; anger; distrust; Grief; Guilt; Sense of depersonalization; Frustration; Isolation; Depression.
up there. And the fish, nobody wants to eat fish anymore because they're all getting contaminated. Moose and stuff they're getting sick. (M15 2011)

For hunting or whatever, stay away from that area. Because it affects animals, like what moose eat, what comes out of the [industrial] plant, it falls on the plants and that's what affects the animals. Animals, we shoot moose around that area, it's no good, it don't taste like moose meat, it's got a different taste and they're not as healthy as the ones you would find near Birch Mountain and stuff like that, about a fifty mile area. That's how that [industrial] plant affects animals, wildlife...

And even fish we catch here now, some of them are deformed, what caused that? It's got to be something. I don't know how they could prevent it, now they've gone too far, you know, you can't erase all that poison they put already in the waters, now we can't even drink the water. One time we tried drinking water in the Athabasca River, took water and we boil it, after it settled it was just like oil. You can't drink it, you can't drink that. Water is polluted. (M29 2011)

As shown in Figure 14, MCFN participants consistently indicated an area of general loss of use in the vicinity of existing oil sands activity south of the Firebag River – this is an area within which they would not feel comfortable practicing harvesting rights – extending south from approximately the Firebag River and including the PRM LSA

6.2.3 Culturally Important Species\textsuperscript{23} – Moose and Bison

Based on reported MCFN knowledge, the PRM is proposed within an important moose hunting corridor along the Athabasca River. The area is also important for hunting of wood bison which are integral to MCFN cultural practices. The wood bison population west of the Athabasca River, and within the PRM LSA, is reported to be the only healthy wild herd of wood bison in MCFN territory outside of Wood Buffalo National Park, and as such, is the only herd that MCFN members can freely hunt and rely upon. MCFN hunting of wood bison has been documented within the LSA on the west side of the Athabasca River, across from the confluence with the Firebag River, and within the footprint of the proposed JPME PRM Compensation Lake. Multiple MCFN bison kill sites are included in the subsistence activity class shown in Figures 12 and 13.

\textsuperscript{23} Wood bison have largely not been addressed within the proponent's EIA, though some additional information was submitted to the JRP in November 2011.
6.2.4 Culturally Important Species – Migratory Birds

The air is no good for them ... Like now, these birds, like waveys and geese, stuff like that, most of them they’re flying more on the west side than they used to fly right here. Not much flying over right here, you notice that, I don’t know, but we notice that. Unlike before, before there’s millions, now there’s just a few, more on the west side. (Interviewer: Over towards Lake Claire?) Yeah, past it. That’s where they fly. Going a different route now, on account of the air, I guess, I don’t know. And the grass are not as good like before for them. Grass don’t grow as good as before, that’s what they eat, those roots and now everything is all dried up, that’s why they’re flying different places. And what about the muskrats? Nothing. They’re all gone, you don’t see any muskrats but of course that’s water, I know. The problem is water, that’s what’s killing them, no water, the water is not moving in the little lakes are just dying, that’s what’s killing them, not like before, used to be high water, used to be a lot of rats, now there’s nothing. (M29 2011)

MCFN members have reported changes in migratory bird patterns, including ducks and geese, and overall declines in the availability of migratory birds as a result of oil sands development. These changes are reported to have impacted the quantity of birds available for the MCFN spring and fall bird hunt, particularly in the area of the Athabasca delta. Effects on the quality of migratory birds were also noted:

My whole diet is wild meat or vegetables. It is scary because now like a lot of people see the lesions on fish and they see bears with worms in them or you could see these poor ducks that still have tar in them, it’s pretty scary. (M38 2011)

MCFN hunting of migratory birds has been documented within the RSA and LSA, and is included in the subsistence activity class shown in Figure 12 and 13. Migratory birds are of key cultural importance to the MCFN. The spring and fall bird hunt is a core component of the MCFN’s past and present seasonal round.

6.2.5 Access and Enjoyment of MCFN lands – MCFN Traplines, Reserves, and Protected Areas

As shown in Figure 14, MCFN members indicate that access and enjoyment has been lost to a large area south of the Firebag River, suggesting that a tacit, or implied threshold of disturbance has already been reached within the RSA, resulting in widespread loss of use by MCFN members due to oil sands related impacts including: road controls, traffic, noise, dust, smell, ground disturbance, perceived contamination, and disturbance by recreational users. The majority of these impacts are reported to have accumulated in the PRM LSA over the past decade (since approximately 2000).
As shown on Figure 1, two known MCFN traplines (RFMA #1570, and RFMA #2892) intersect with the RSA. Both are located on the west side of the Athabasca River north of the Firebag River. One MCFN Indian Reserve (Old Fort #217) is located within the RSA, on the east side of the Athabasca River. As shown in Figure 2, large portions of the LSA, and the footprints of the Shell Projects, are within areas identified for protection by the MCFN in land use planning processes because of their cultural and ecological value. These include a large area adjacent to the Athabasca River that would be directly effected by the PRM footprint.

As documented in the MCFN and MCFN Athabasca River Use and Knowledge Study (Candler et al. 2010), and as reported by MCFN member, impacts of existing oil sands operations on MCFN reserve lands include:

- Perceived impacts on Athabasca River water quality (due to contaminant concerns) resulting in loss of confidence in fish and other wild foods and resources; and

- The impact of water withdrawals on river flow during ice free low flow periods resulting in impediments to river travel and navigation required to access MCFN’s reserve lands.

6.2.6 Intangible Cultural Resources – MCFN Knowledge, Language and sakaw pimacihiwin

In additional to concerns regarding impact to more concrete values, many MCFN participants also identified concerns regarding the potential impact of oil sands developments on intangible cultural resources, including language and the transmission of knowledge regarding areas lost due to industrial effects, as well as the ability to practice sakaw pimacihiwin more broadly.

Particular kinds of knowledge, in the form of place based stories, place names, and histories, are associated with particular places (Basso 1996), and the cultural practices, or uses, that take place there. Actions that destroy a place, or cause the use of a place to be lost (for example, because of fear of contaminants), especially over long periods of time, frequently result in a gap in the transmission of place based knowledge, and eliminate the place as a cultural resource for remembering, teaching, and learning the knowledge associated with it.

Well, I started living in McMurray close to about twenty years now. Ever since 20 years, and now, now I won’t hunt around the plants because I know what their stuff can do, what falls around the plants, everyone says the worst plant to work for is Suncor, smelly and a lot of stuff and I see a lot of those white people who moved to McMurray here, I don’t know how they do it, they pick berries close to the plant, I would never do it, even moose out here, I’m not starving to shoot a moose close the plant, I go quite aways to the Birch River or I go towards Slave Lake… There used to be something here, it’s
hard to show them something that is not there any more, they just have to listen to stories, the history, a lot of the things that I saw in my time, my grandchildren will never see. It’s not going to be the same. Areas that are identified in my time and my father’s time are not going to be there. So that’s going to be lost too, except the stories, the history books. It’s pretty sad. (M18 2011)

I wouldn’t go to my trapping, my hunting, that’s all gone now. That’s on account of those companies. Where are you going to go hunting, everytime you stop somewhere along the river, what do you hear? You hear equipment going, you can’t hunt along the river any more, it’s gone. There’s a lot of times you go up, you get off the boat and maybe walk over, check it out, and all of a sudden you come to a big clearing, where in the hell am I supposed to hunt here? (M25 2011)

Other kinds of knowledge may not be associated with a particular place, but with an aesthetic feeling, or sense associated with particular kinds of places, especially ones that are considered ‘natural.’ With increased urbanization, and the increasing rarity of places that are ‘natural’ or ‘wild’ for MCFN members living in urban areas, places that offer this sense, but that are still accessible from urban areas, can be a very valuable and rare cultural resource.

For me it was continuing the lifestyle, continuing enjoying the air, just to be outside, fishing at the Bridge to Nowhere, that’s where I used to go to when I was in McMurray, it’s continuing the lifestyle. Like I could easily have ended up like a zombie in Syncrude, I could have easily done that, it was all there, but I don’t like that lifestyle, I don’t like working 24/7 and get up, go to work, go to sleep, get up, go to work, go to sleep, for me it’s the continuing of the lifestyle and teach my kids to learn more. I learned from the McKay boys, I learn from you, you take me, I’ll learn something, so it’s just the continuance of it and getting better at it. And then we’re going to need it, we’re going to need our survival skills, that’s all there is to it, I’m a believer of that… (M32 2011).

Pollution, they’ve got to slow that down, there will be nothing for our children’s children’s children. They’ll wipe us out, like a genocide, slow but effective, I guess. Who knows what they put in our water? been trying to put something in the water to wipe us out, you never know. Get rid of that Indian problem. That’s what we were. And they just take, take, take, they don’t give nothing back. There’s no balance, everything is off balance. (M15 2011)

The effects of Industrial development along the Athabasca River are already having far reaching, and multi-generational effects on Mikisew Cree First Nation knowledge and use. One MCFN member who lives in Fort Chipewyan, but who’s children and grand children choose to live away from Fort Chipewyan because of concerns regarding pollution, provides an indication of the cascading effects that concerns regarding wild
foods and environmental contaminants can have, in this case influencing health
decisions, out-migration decisions, and ultimately creating a barrier, even within families,
for the transmission of cultural knowledge to younger generations.

Because all the pollution comes up here, that’s why I’m missing out on my
daughter, I’m missing out on my grandson, the interactions we could have. I’m happy for Skype, it’s the closest thing we have for interacting with each other ... I can talk to him every day but I don’t get to interact with him, I don’t get to show him all the traditional things that he could be doing in Fort Chip. He could be going setting rabbit snares and setting a net, he could be going on a job for the camp, we could be making all kinds of different crafts, we could be walking out in the forest, and there’s so much learning for a child and we miss out on that because my daughter chooses not to move back to Fort Chip. She doesn’t want to get her cancer again, I don’t want her to get her cancer, there’s not too much we can do...

My grandchildren and my children, they’ll never come back to Fort Chip. And because everything is being polluted, what do we have to pass onto them? there’s absolutely nothing. Once they poison all our water, like that old saying, once they poison everything, there’s nothing to pass on to our children. We won’t be eating wild meat pretty soon, like there’s less and less waterfowl coming. It’s spring time now, we should see tons and tons of them flying overhead. They’re stopping at all those tailing ponds over there for a drink and then they just don’t come back up. They could hide the facts from everybody, Industry could because they could, and we know. We know because we see them ... But there’s really nothing to pass onto our children. Maybe my generation, maybe the next generation, but that’s it. Because everything, our delta is drying up, they’re going to build another dam there in B.C. and that’s going to dry up our delta more. And then our water’s going to go down and so pollution is going to be more concentrated and it’s going to be lower, you won’t even be able to go out by boat. There’s so many things that are just terrible, but I still love this place. I’m still going to stay here. So I’m kind of caught. (M38, interview transcript 2011)

6.3 Assessment of PRM Project Effects

Based on the proponent’s application (V. 5: 1-14), construction of the PRM is expected to begin in 2012, operations in 2015, and closure activities in 2065. Construction, operation, closure, and post-closure activities will result in clearing and taking up of lands, and may have effects on any or all of the categories of site-specific and non-site-specific traditional use values identified in the LSA and RSA through direct disturbance, reduced MCFN access, increased industry and recreational access, perceived or actual contamination on traditional resources or foods, including plants and animals, leading to lost or reduced use.
The following are anticipated PRM Project effects on site-specific VCs.

6.3.1 Anticipated PRM Project Effects on Site-specific VCs within the LSA and RSA

6.3.1.1 Site-specific Subsistence Values

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects, the PRM footprint will destroy and/or render un-useable preferred and site-specific MCFN hunting, trapping, and food gathering values within the PRM footprint, including past, current, and planned future use areas. This effect is anticipated with a high degree of confidence.

Within the PRM LSA, up to 266 documented MCFN site-specific subsistence values will be adversely impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, fear associated with increased contamination of traditional resources or foods, including plants and animals, leading to increased scope and intensity of avoidance or reduced use. 71 documented MCFN site-specific subsistence values are inside or within 250 m of the project footprint and will be destroyed and/or rendered essentially un-useable by the project. These include important and currently used bison, moose, small game (e.g., rabbit, beaver, duck and grouse), fishing, and plant food (berry and other plant food) harvesting areas inside or adjacent to the project footprint.

Within the RSA, and including the LSA, approximately 6,000 MCFN site-specific subsistence values have been documented including a large concentration of values in the Athabasca delta. Beyond the LSA, but within the RSA, and including MCFN values in the Athabasca Delta, the values most at risk of project effects are downstream of the project along the Muskeg and the Athabasca Rivers. MCFN member’s observations that oil sands related water withdrawals are adversely affecting the flow of the Athabasca River suggest that some or all of these subsistence values are likely to be impacted by the project as a result of effects on Athabasca River levels, especially during ice free periods of low flow, and increased perceived contamination of traditional resources and foods, including plants and animals, leading to lost or reduced use. Also see non-site-specific effects below.

6.3.1.2 Site-specific Habitation Values

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will destroy and/or render unusable preferred MCFN habitation values within the LSA and RSA, including past, current, and planned future use areas. This effect is anticipated with a high degree of confidence.
Within the LSA, up to 82 documented MCFN site-specific subsistence values will be impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, perceived increases in contamination of traditional resources or foods, including plants and animals, upon which habitation areas rely, leading to increased scope and intensity of avoidance or reduced use, as well as other disturbance. 20 documented MCFN site-specific habitation values are inside or within 250 m of the project footprint and are anticipated to be destroyed and/or rendered un-useable by the project. These include currently use cabin sites, as well as camp sites.

Within the RSA, and including the LSA, 1324 MCFN site-specific habitation values have been documented. Beyond the LSA, but within the RSA, values most at risk of project effects are those downstream of the project along the Muskeg and the Athabasca Rivers. These include regularly used cabins, village sites (Snowbird’s Camp) and MCFN Indian Reserve lands. As with subsistence values noted above, MCFN member’s observations that oil sands related water withdrawals are adversely affecting the flow of the Athabasca River suggest that these habitation values are likely to be impacted by the project through anticipated seasonal or intermittent effects on Athabasca River levels during ice free low flow periods, and increased perceived contamination of traditional resources and foods, including plants and animals, upon which use of habitation areas rely, likely leading to lost or reduced use.

6.3.1.3 Site-specific Cultural/ Spiritual Values

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects of the PRM may disturb site-specific MCFN cultural/spiritual values within the LSA and RSA, including ceremonial areas, burials and medicine collection areas, including past, current, and planned future use areas. This effect is anticipated with a high degree of confidence.

Figure 16: Reported MCFN Site-Specific Use Values in relation to the PRM Project footprint, LSA and RSA

Within the PRM LSA, up to five documented MCFN site-specific cultural / spiritual values are likely to be impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, or other disturbances. These include medicinal plant collection areas and one reported burial. One of these sites, a medicinal plant collection area, is within 250m of the JPME footprint and is expected to be destroyed or rendered unusable.

Within the RSA, and including the LSA, almost 400 MCFN site-specific cultural / spiritual values are documented. These include ceremonial places, medicine collection places,
and burials sensitive to a variety of effects, including water level and water quality changes. At least some of these cultural / spiritual values are likely to be impacted by the project as a result of anticipated effects on Athabasca River levels, especially during low flow, and increased perceived contamination of traditional resources and foods, including plants and animals, leading to avoidance or reduced use. See non-site-specific concerns below.

**6.3.1.4 Site-specific Transportation Values**

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will destroy and/or render unusable MCFN transportation values within the LSA and RSA. This effect is anticipated with a high degree of confidence.

Within the PRM LSA, one documented MCFN transportation values (a mapped water route) as well as non-site specific transportation values along Redclay and Big Creek, will be destroyed or rendered unusable by the PRM Project.

Water based navigation, downstream of the project along the Muskeg and the Athabasca Rivers, is especially vulnerable to impact during ice-free low water periods. See non-site-specific concerns below.

**6.3.1.5 Site-specific Environmental Feature Values**

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects are likely to destroy and/or disturb site-specific MCFN environmental feature values including past, current, and planned future habitat areas and drinking water sources. This effect is anticipated with a high degree of confidence.

Within the PRM LSA, MCFN site-specific environmental features include drinking water sources. These values will be impacted by direct disturbance, reduced MCFN access, increased industry and recreational access, perceived increases in contamination of traditional resources or foods, including plants and animals, leading to increased scope and intensity of avoidance or reduced use, as well as other disturbances.

Beyond the LSA, but within the RSA, the values most at risk of project effects are areas of wood bison habitat, as well as areas downstream of the project along the Athabasca Rivers. Some or all of these environmental feature values are likely to be impacted by the project as a result of increased perceived contamination of traditional resources and foods, including plants and animals, leading to avoidance or reduced use. See non-site-specific concerns below.
6.3.2 Anticipated PRM Effects on Non-Site-specific VCs

6.3.2.1 PRM Effects on Water and River Values – Quantity

MCFN members have identified water levels, and particularly water levels on the Athabasca River, to be of concern within the RSA. Based on reported MCFN knowledge, and review of project information, it is anticipated that construction, operation, closure and post-closure project effects will destroy or disturb large areas of muskeg, wetlands, and stretches of rivers and streams within the footprint, and is likely to impede the practice of MCFN use downstream of the project by reducing water levels in the Athabasca Rivers during low flow periods. The project will increase the intensity, scope and area of existing patterns of MCFN loss of use due to low water levels. This effect will be most pronounced during ice free low water periods and is likely to result in impediments to access to past, current, and planned future use areas, documented areas of traditional use, and MCFN Indian Reserves. This effect is anticipated with a high degree of confidence.

Based on Candler et al. 2010, reported effects of sand bars and hazards include:

- Lost access to side channels and streams adjoining the River (see Figure 16);
- Increased travel time and expense due to reduced speed and need for increased care;
- Increased travel time and expense due to getting stuck on sand bars (including occasional inability to find a channel through);
- Increased travel time and expense due to avoidance of sand bar areas (including large areas where the Athabasca delta joins Lake Athabasca);
- Damage to boats, engines, and equipment; and
- Safety concerns related to collisions with sand bars or other hazards.

Figure 16 also shows that at least portions of Redclay Creek and Big Creek are reported to be navigable at adequate flow levels, and to be water routes used by MCFN members for accessing resources. The PRM project footprint would involve diversion and impoundment of portions of Big Creek, thereby removing it as a resource for future meaningful practice of MCFN use.

Beyond the LSA, but within the RSA, values most at risk are those downstream of the project along the Athabasca River. These include water transportation routes, including access to reserve lands critical to MCFN use and rights practice in the Athabasca Delta, on the Athabasca River, and in adjacent rivers and streams. MCFN member’s observations that oil sands related water withdrawals are adversely affecting the flow of the Athabasca River suggest that some or all of these are likely to be impacted by the project as a result of anticipated effects on Athabasca River levels, especially during ice-free low water periods. See non-site-specific concerns below.
6.3.2.2 PRM Effects on Water and River Values – Quality

MCFN members have identified the quality of water, particularly water of Athabasca River, to be a major concern within the RSA. Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will contribute to already high perceived levels of industrial contaminants within the MCFN environment. Currently perceived levels of water and air borne contaminants, in combination with other changes, are having serious psycho-social effects and resulting in wide spread avoidance and loss of use by MCFN members in the region (Candler et al. 2010). The project is likely to result in increased intensity, scope and area of MCFN avoidance and loss of use, particularly downstream of the project along the Athabasca River and including past, current, and planned future use areas, documented areas of traditional use, and MCFN Indian Reserves. This effect is anticipated with a high degree of confidence.

As shown in Figure 8, current avoidance patterns related to existing industrial development indicate that, for MCFN members, the waters of the Athabasca Rivers downstream of the project, and much of the project footprint and LSA, have already reached or surpassed thresholds where widespread MCFN avoidance or loss of use is taking place. While these thresholds of practice/avoidance have not been quantified, existing patterns indicate that the project is likely to expand existing MCFN traditional use avoidance patterns, including increased intensity, scope and area of avoidance by MCFN members.

Documented existing impacts to MCFN knowledge, use and rights practice related to water quality (Candler et al. 2010) include observed adverse changes (including changes in taste, odor, and observed sheen) in traditional drinking water sources, and observed adverse changes in traditionally relied upon aquatic resources (abnormal fish, tainted aquatic medicines and moose meat). These are directly related to patterns of general avoidance of subsistence resources (aquatic and terrestrial) south of the Firebag River, and leading to increased avoidance, reduced use, and loss of knowledge transmission opportunities. MCFN avoidance patterns related to the LSA are widespread. Project related avoidance and loss of use due to concerns regarding contaminants are likely to be most pronounced downstream of the project in the area of the Firebag River, and in the Athabasca delta area where the greatest intensity of MCFN use values occurs. See Appendix 2 for additional detail.

6.3.2.3 PRM Effects on Culturally Important Species – Wood Bison, Woodland Caribou and Migratory Birds

MCFN members have identified important wood bison within the LSA and RSA. Based on reported MCFN knowledge, and review of project information, the construction, operation, closure and post-closure of the PRM Project is likely to disturb or destroy the
range, and possibly core habitat, of culturally important populations of bison resident west of the Athabasca River.

In addition to footprint effects on wood bison habitat, MCFN participants indicate that, due to lack of provincial recognition and a lack of legal protections, bison in the PRM LSA are especially vulnerable to, unregulated hunting. Creation of road access to the PRM area, including a bridge across the Athabasca River, is expected to result in increased non-aboriginal hunting pressure. Based on reported MCFN expectations, in the absence of legal protections, the elimination of the Ronald Lake herd, and so the species, from MCFN use is likely.

Subject to a lack of available information regarding project interactions with bison, woodland caribou, and migratory birds, this effect is anticipated with a moderate degree of confidence. It is unclear from the proponent’s application whether or not potential project effects on woodland bison were evaluated. Based on the precautionary principle, in the absence of information regarding the likely effect of the project on culturally important and unique wood bison habitat, caution should be applied.

6.3.2.4 PRM Effects on Culturally Important Species – Plants

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will disturb culturally important plant species and communities including berries and medicine plants. This effect is anticipated with a high degree of confidence.

6.3.2.5 PRM Effects on Access and Enjoyment of MCFN Lands

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will contribute to the disturbance or elimination of MCFN access and enjoyment of lands associated with proposed MCFN protection areas within the LSA, as well as MCFN proposed protection areas, Indian Reserves and traplines downstream of the project.

These effects are anticipated with a high degree of confidence.

6.3.3 PRM Effects on Intangible Cultural Resources including MCFN Knowledge, Language and sakaw pimaciihiwin

Based on reported MCFN knowledge, and review of project information, construction, operation, closure and post-closure project effects will reduce or eliminate opportunities for the transmission of MCFN knowledge specific to areas within the LSA, or within the project footprint, and contribute to the disturbance or elimination of MCFN knowledge.
and language specific to the PRM area, and potentially extending to the RSA as a result of potential impediments to access and travel by water related to low flow levels on the Muskeg and Athabasca Rivers, and potential expansion of loss of use areas associated with contamination and perceived effects of industrial oil sands mining. Practice of sakaw pimacihiwin within portions of the LSA is anticipated to be eliminated for multiple MCFN generations. Project contributions to perceived contamination of wild foods and water are anticipated to be particularly important to the future persistence of MCFN sakaw pimacihiwin in the RSA.

These effects are anticipated with a high degree of confidence.

### 6.4 Existing PRM Mitigations

The proponent’s applications identify five mitigations specific to First Nations TEK and land use (p. 8-48, 49). The mitigations are:

- Compensation for directly affected trapline holders;
- Continued consultation with key aboriginal groups;
- Access to traplines;
- Employee/contractor education; and
- Reclamation.

Appendix 3 contains a summary of other mitigations committed to by the proponent within the applications and associated documents.

At best, these constitute partial mitigations to the anticipated effects of the project for the following reasons:

- As noted in 2.2.1 above, compensation to trapline holders may be a mitigation for loss of commercial trapping rights, but is not a mitigation for impacts to aboriginal use or treaty rights;
- Regarding reclamation, as discussed in 5.4.1 below, the proponent’s assumptions regarding the ability to restore landscapes consistent with MCFN tangible and intangible cultural values is considered unreasonably optimistic by MCFN elders and knowledge holders;
- While supported access to traplines through the mine footprint is useful, based on past experience in the region, and reports from MCFN members, it is unlikely to provide an effective mitigation to avoidance of areas due to larger access and disturbance issues;
- Cultural education of Shell employees and contractors is positive, but it is unclear what anticipated project effect this is a mitigation for; and
• Continued consultation with key aboriginal groups is also positive, but consultation with aboriginal groups is generally a responsibility delegated to the proponent by the Crown (and so is not a mitigation). In the absence of a formal shared decision making process, or PRM project co-management arrangements, it is unclear how the proponent could structure ongoing consultation in a manner that could provide reliable mitigation of anticipated project effects.

6.4.1 Oil Sands Mine Reclamation and MCFN Knowledge and Use

While the technology of reclamation continues to improve, and proponents in the region have shown slow progress in reclamation, there is little evidence that the proponent’s reclamation plan can reasonably be expected to re-create cultural or ecological landscapes consistent with aboriginal traditions of knowledge and use. The practice of MCFN use and treaty rights involves access to subsistence resources, but also requires the ability to practice and transmit place-based cultural knowledge which is essential to the ‘mode of life’.

Even if perfect reclamation of the physical and cultural landscape was possible, in the case of both JPME and PRM, the affected area will be removed from MCFN use for at least fifty years and potentially much longer, depending on the length of time closure and reclamation requires. Where an area has been removed from aboriginal use for one generation (approximately 22 years)\textsuperscript{24} or more, impacts to the transmission of knowledge regarding that area are considered permanent and irreversible. Where disturbance involves removal of landforms and where areas relied on for teaching are fundamentally altered or made inaccessible, then the role of landscape in transmitting knowledge (Basso 1996) is fundamentally and irrevocably changed through development.

Several MCFN participants expressed clear skepticism regarding the ability of proponents to reclaim lands in a manner consistent with MCFN knowledge and use values:

But how are they going to fix this water now they pollute? how are they going to do it? there’s no way they could fix it. It’s even affected now, in Fort Smith now, their water and their fish. Same thing what’s happening right here. It will go down, down, down, I don’t know how far it’s going to go…(M29 2011).

…How in the hell do you expect wildlife to grow there, it will take a long time for the growth of the land to come to natural, it wouldn’t come back overnight. A lot of times I went to the meetings, they said, okay, we’re going to use the guy’s land, we’re going to put it back like the way it is. I

\textsuperscript{24} The numeric definition of a generation varies, but is generally estimated as the average age at which a woman has her first child. While accurate demographic data for the MCFN is not available, 22 years is taken as a reasonable estimate.
mean how in the hell are you going to put it back the way it is, you drove all the moose away and everything away from there, all the animals, you’re going to bring the animals back now? they’re not going to survive in that area, you know what I mean? even foxes like there was a time when you saw a burned trapline, everyone knew that that trapline would be no good because there’s nothing for animals to eat, they move away. So that change in the land when you destroy it like that, the nature, it don’t come back just like that (M18 2011).

Based on MCFN experience, even the best and most sensitive reclamation techniques cannot be expected to reverse or fully mitigate impacts to MCFN use values.

### 6.5 PRM Residual Project Effects

Given anticipated project effects on MCFN knowledge, use and rights practice, and considering existing mitigations proposed in the applications (described above and in Appendix 3), the residual (post-mitigation) effects of the PRM project on MCFN Knowledge and Use are anticipated to range from moderate to very high.

Figure 17 provides a characterization of the residual effects, and a rating of environmental consequence for each VC.

**Figure 17: Environmental Consequence of Residual Impacts**

<table>
<thead>
<tr>
<th>Value</th>
<th>Direction</th>
<th>Magnitude</th>
<th>Geographic extent</th>
<th>Duration</th>
<th>Reversibility</th>
<th>Frequency</th>
<th>Environmental Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site-specific Subsistence Values</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Site-specific Habitation Values</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Site-specific Cultural/Spiritual Values</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Site-specific Transportation Values</td>
<td>Negative</td>
<td>moderate (+10)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>moderate (+1): intermittent</td>
<td>High (17)</td>
</tr>
<tr>
<td>Site-specific</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1):</td>
<td>long-term</td>
<td>irreversible</td>
<td>high (+2):</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Environmental Features</td>
<td>Impact</td>
<td>Duration</td>
<td>Recovery</td>
<td>Ecosystem Value</td>
<td>Impact Type</td>
<td>Duration</td>
<td>Recovery</td>
</tr>
<tr>
<td>------------------------</td>
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<td>----------</td>
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<td>-------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Water and River values (quantity, including access)</td>
<td>Negative</td>
<td>moderate (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>regional (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>moderate (+1): intermittent</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Water and River values (quality, including wild foods)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Culturally Important Species (Wood Bison and moose)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Culturally Important Species (migratory birds)</td>
<td>Negative</td>
<td>moderate (+10)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>High (18)</td>
</tr>
<tr>
<td>Culturally Important Species (plants)</td>
<td>Negative</td>
<td>Low (+5)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Access and Enjoyment of MCFN lands (MCFN traplines and IRs)</td>
<td>Negative</td>
<td>moderate (+10)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>High (18)</td>
</tr>
<tr>
<td>Access and Enjoyment of MCFN lands (cultural and protection areas)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
</tbody>
</table>
6.6 Significance of Residual PRM Effects

Based on available information, residual project effects (separate from effects of other projects) of the PRM on MCFN knowledge and use would be adverse and of moderate to very high environmental consequence. They are likely to result in serious adverse changes in the knowledge and use practice of MCFN members. The most serious adverse effects associated with PRM are likely to occur in the following areas:

- Disturbance or destruction of unique subsistence values, habitation values, environmental features, and other site specific values historically and currently practiced along the Athabasca River. The project is likely to result in complete or near complete MCFN loss of use in the LSA for multiple generations. This change is attributable to the Project, is likely to result in strong concern by MCFN members affected, including members resident in the Fort McMurray area, and will be a clearly discernable (measurable or perceivable) change to the preferred location of exercise of a culturally important practice, land use or right. As such, this is considered a significant adverse effect on (i) the use of lands and resources by MCFN members, and (ii) unique heritage resources (tangible) of value or concern to MCFN members.

- Given the baseline of pre-existing impact along the Athabasca River, the project is likely to disturb or destroy non-site specific values within the LSA included unique and important areas associated with culturally important resources including wood bison and moose, and expand and intensify MCFN loss of use areas by increasing perceived contamination of water and river values, including wild foods, and impacting water and river quantity at low flow levels, including access and transportation issues extending downstream to the Athabasca Delta. The Project will result in loss of use of preferred hunting, fishing and plant collecting areas, and culturally important camps and habitation values in the vicinity of the project and downstream along the Athabasca River, and is likely to contribute to cascading intergenerational effects on Mikisew knowledge and lifestyle, health and quality of life. Loss of use is likely to result in strong concern or interest by MCFN members affected, and be a clearly discernable (measurable or perceivable) change to the preferred exercise of a culturally important practice, land use or right. As such, this is considered a significant adverse effect on (i) the use of lands and resources by MCFN members, and (ii) unique heritage resources (intangible) of value or concern to MCFN members.

The primary finding of this assessment is that the PRM project (not in combination with other projects) is likely to have significant adverse residual effects on MCFN knowledge and use, particularly in relation to effects to MCFN use along portions of the Athabasca River within the LSA, as well as downstream loss of use due to perceived contaminants and effects on the Athabasca River at low flow levels.

The primary recommendation of this assessment is that the proponent and the Federal and Provincial Crown undertake a process, agreeable to and involving the MCFN, to ensure that adequate quantity and quality of resources exist for the continuation of
MCFN knowledge and use into the future. This process should prioritize avoiding and reducing impacts over mitigating them. Where impacts to MCFN knowledge and use cannot be avoided then they should be mitigated to below a significant level, as defined in this report, using effective strategies agreeable to the MCFN.
Section 7: RCL Project Baseline and Assessment

The RCL Project is proposed on the west side of Athabasca River within the Redclay Creek watershed. This section provides baseline and assessment specific to the likely effects of the RCL Project on MCFN Knowledge and Use\(^{25}\).

7.1 Baseline for Site Specific VCs within the RCL LSA and RSA

Figure 19 provides a map of MCFN site-specific data reported within the RCL project LSA including 18 site-specific use values inside, or within 250 m, of the proposed project footprint. 220 site-specific use values were identified within the LSA (5 km of the proposed RCL project footprint), including 161 subsistence values, and 49 habitation values clustered primarily along the Athabasca River, and especially at the confluence of the Athabasca and Firebag Rivers. While not every site-specific value includes time information, reported time of last use for habitation values within the LSA range from the 1960’s to fall 2010. Almost 6,000 MCFN use values were identified in the RSA, the majority of them along the Athabasca River and in the Athabasca Delta. All mapped values are based on the use and knowledge of MCFN members.

Due to the density of reported transportation features and navigational hazards along the Athabasca River, river-based transportation is not shown and is analyzed as a simplified transportation ‘corridor.’ All MCFN data (points, lines and polygons) are shown with a 1 km buffer. Points were randomized by 250 m, then 1 km buffers were generated around all points, lines, and polygons in order to account for margin of error, and to protect confidential information.

Figure 18 provides an account of reported MCFN site-specific values inside or within the 250 m of the RCL footprint, within the LSA, and within the RSA.

\(^{25}\) Several relevant figures and quotes that also apply to and are presented in the JPME and PRM baselines and assessments are reproduced here to support independent review.
Figure 18: Reported MCFN Site-Specific Use Values in relation to the RCL Project footprint, LSA and RSA

<table>
<thead>
<tr>
<th>Activity Class</th>
<th>Within 250m of RCL Footprint</th>
<th>Within 5km of RCL Footprint (LSA)</th>
<th>Within Regional Study Area (RSA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of values</td>
<td># of values</td>
<td># of values</td>
</tr>
<tr>
<td>Subsistence</td>
<td>16</td>
<td>161</td>
<td>4254</td>
</tr>
<tr>
<td>Habitation</td>
<td>2</td>
<td>49</td>
<td>1324</td>
</tr>
<tr>
<td>Cultural/Spiritual</td>
<td>0</td>
<td>6</td>
<td>399</td>
</tr>
<tr>
<td>Transportation</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Environmental Features</td>
<td>0</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>18</strong></td>
<td><strong>220</strong></td>
<td><strong>5992</strong></td>
</tr>
</tbody>
</table>

Specific traditional use activities reported by MCFN members inside or within 250 m of the proposed RCL footprint include:

- Multiple moose and buffalo kill sites, as well as a bear kill site;
- Small game kill sites (rabbits, beaver, ducks, geese, and other birds);
- Habitation values including a cabin and a seasonal camp site.

Beyond 250 m of the project footprint, and within the RCL LSA there are:

- Multiple reported MCFN hunting and kill sites, particularly for moose, along the Athabasca River and in the vicinity of its confluence with the Firebag River.
- Multiple subsistence fishing areas, particularly at the confluence of the Athabasca and Firebag Rivers.
- Multiple permanent and temporary habitation values (cabins and camps) used by MCFN members along the Athabasca River.
- Multiple instances of medicinal plant harvesting.
Figure 19: Reported MCFN Use Values within the RCL Project Local Study Area
Use of habitation areas by MCFN members within the RCL footprint and LSA is ongoing and current, and relies upon confidence in the quantity and quality of resources in surrounding areas (including the footprint and LSA). The RCL Project area, and associated LSA, is just north of a large area extending south from the Firebag River towards Fort McMurray that multiple MCFN members have reported is no longer considered safe for hunting and other resource procurement use due to access restrictions, disturbance, and concerns regarding contaminants from existing oil sands developments. This area is shown on Figure 21.

In most, if not all cases, general avoidance practices in the area of the proposed RCL by MCFN members has developed recently (within the past five to ten years) as a result of exploration activity and upstream oil sands developments. This loss of use is due largely to concerns regarding the quality of resources, including water and meat, from the area, and because of disturbance from traffic, noise, and other industry related activities. Effects from existing industry in the area has already resulted in shifts in land use by some MCFN members to north of the Firebag River. As discussed in the assessment below, construction of the RCL is likely to flood important habitat for wood bison and other culturally important resources.

Figure 20 provides a map of MCFN site-specific use data reported within the RCL Project RSA and shows the relative density of site-specific use values downstream of the RCL project. The RSA includes almost 6,000 reported site-specific use values, including 1,325 habitation values, the majority of which are located in the Athabasca delta.

Figure 21 shows areas of general loss of use due to industrial impacts reported by MCFN members in the RSA, as well as instances of lost use due to resource or water quality (perceived contamination), and low water levels along the Athabasca River. Current general loss of use extends beyond the LSA and into the RSA, and is related to extensive industrial development to the south of the proposed RCL footprint. Loss of use within the RSA is due to factors including terrestrial disturbance, concerns regarding industrial contaminants, and loss of access due to reduced water levels (especially in Lake Mamawi), fencing, gated roads, and other oil sands activities:

Due to the pollution, you’re scared of everything nowadays, they’re scared of the animals, like before when you knock a moose off, you’re cooking a side of ribs right there in the fire, right at the site, now you’re a little hesitant, you know, is this a good area? are we safe eating this animal? (M24 2011)

It’s not only the pollution thing, it’s the animals have moved back farther from where you could get at them, they were more easily accessible before and they’ve moved or were eliminated, one or the other and industry just shuts you down, you go down any one of these roads and there’s big gates there and they just say you’re not allowed down here anymore and you can’t come in and that’s that. (M24 2011)
Figure 20: Reported MCFN Site Specific Use Values within the RCL Regional Study Area

Reported MCFN site specific values within the regional study area (RSA) by activity class

Legend
- Cultural
- Environmental
- Habitual
- Subsistence
- Transportation
- MCFN reserves
- Regional study area
- Local study areas (5km)
- Proposed Shell footprints (250m)
- Proposed Shell max footprints
- Existing Shell mines

Map produced by Steven DeRuy of the Firelight Group on October 20, 2011. MCFN use values derived from the MCFN 2008-2010 Use and Occupancy Map Survey and Resource Data. Data from the Indigenous Knowledge Study (Firelight Group). Base map data originates from the National Topographic System and Natural Resources Canada, and footprint areas provided by Shell.

This map does not capture the complexity of MCFN’s relationship to their traditional lands or the extent of the practice of treaty and aboriginal rights. This map is a living document and is intended to be an amended and refined loving time. The data used to produce this map originates from multiple sources. This map is property of the Mikisew Cree First Nation and may only be reprinted with written permission.
Figure 21: Reported Current (Winter 2011) Loss of Use Areas in the RSA including Reported Specific Loss of Use due to Water Level and Quality Downstream of the Muskeg River
Gates, they have a lot of gates, they say they don’t have gates but I’ve heard hunters saying there’s gates that they have to go through or there’s gates or there’s moose on the other side of the gate, they can’t get at it. So no access plus pollution, those are the things that are preventing people from getting hunting. There’s always a road there that somebody has blocked off (M27 2011).

7.2 Baseline Summary for Non-Site-specific VCs within the RCL LSA and RSA

Key non-site-specific VCs associated with the RCL Project LSA and RSA include:

- Water and river values (including quality and quantity of water, fish, and aquatic resources), particularly associated with the Birch Mountains and including the Athabasca River;
- Culturally important species (including quality and quantity of high value moose, wood bison, and migratory bird habitat);
- Access and enjoyment of MCFN lands (especially Snowbird’s camp, MCFN reserves, traplines, and cultural and protection areas including the Athabasca River corridor);
- Intangible cultural resources including intergenerational transmission of MCFN language, knowledge and sense of place, opportunities for social and cultural cohesion across communities, and ability of current and future MCFN members to practice sakaw pimacihiwin.

7.2.1 Water and River values – Quantity

While not mapped as a site-specific transportation value, data from the MCFN Athabasca River Use Knowledge and Change Study (Candler et al. 2010) highlights the Athabasca River and adjacent streams as resources integral to the culture and economy of the MCFN. They are critical to the ability of MCFN members to hunt, trap, fish, and otherwise practice treaty rights in a preferred manner. Appendix 2 contains a summary of existing information regarding downstream effects of existing oil sands development on MCFN use and rights. MCFN river-based transportation routes at risk during low water have been documented downstream from the RCL within the LSA and RSA.

As shown in Figure 22, in addition to the Athabasca River, portions of Redclay Creek are reported to be used by MCFN members as water transportation routes to access resources. Even in the absence of the Project, Redclay Creek is reported to become too low to travel on at low flow levels. The RCL Project is proposed along a stretch of the Athabasca River, extending downstream to Poplar Point, that is reported to be particularly difficult to navigate at low water levels due to sand bars and other hazards.
Figure 22: MCFN Navigation and Navigable Hazards in relation to the RCL Project
Reductions in flow in streams flowing into the Athabasca River also contribute to low flows, and resulting navigational hazards, especially towards the Athabasca delta where the majority of MCFN use, including important seasonal village areas, are located, and where all use depends on water access. As shown on Figure 22, the RCL project is proposed along a stretch of the Athabasca River, extending downstream from the RCL, that is reported to be particularly difficult to navigate at low water levels due to sand bars and other hazards.

The following quotes from oral history interviews provide a sense of the effects water level changes have on MCFN use within the RSA.

You know that river used to be a nice big mighty river. You can go all through the channels like shortcuts. If you’re going down, instead of going this way, you could just go that way. You could go straight all the way. Now I hear that all these little places, like shortcuts, they’re all dried out, people have to turn around, from Fort Chip, going up to Fort McMurray, had to go back because the water was too low. It never used to be that way. It used to be big, deep and nice water, you could just go anywhere, there was hardly no sandbars. (M15 2011)

Yeah, yeah, one time there used to be a lot of water, not like now, now there’s lots of rapids, lots of rocks now, you won’t be able to go up there. Me and my partner tried to go there about four years ago, banged up our canoe, you have to come by foot, carry our canoe. Never going to go down there again. (M18 2011)

Oh, it [low water] would affect us in all kind of ways, my friend, yes. The way we live, we like to go to places, you can’t go anywhere, Quatre Forche is the only place we could go now. Our area anyway, that’s about all. Now it would be worse, you can’t even cross Lake Mamawi, not this year, just mud flat there. (M29 2011)

7.2.2 Water and River values – Quality

You know, up until fifteen years ago, we used to take the cup and scoop it out of the Athabasca River. You’ll never do that now but scoop it out of the river and have a shot. (M24 2011)

[translated from Cree at time of interview] He said the water is poison [in the Athabasca River] so at least here [in Edmonton] the water is clean over here and there’s doctors here too. He said he can move back and get a house he said [in Fort Chipewyan], but the water’s no good. He said at least here the water’s good … He said he’s been worried about it for a long time, he said, the water must have been starting to get polluted, he said, when he left Fort
Chip. He said now it’s even worse. He said like the water quality is no good over there, even the animals and ducks and stuff like that, they don’t even land over there any more, they just fly right through. He said they’re even getting sick, even the animals, like there’s hardly any little animals, like rabbit, muskrat, beaver, moose, so he’s worried about the water back there after he moved. Already the water was starting to be polluted then, so he moved. He says you ask the people, like Syncrude and all that, about the water quality, oh, there’s nothing wrong, there’s nothing wrong, we clean the water good but he said, they’re only lying. People are really sick, it’s like poison he said, and his friend [named individual], he used to work that tailings pond in a barge, I guess, he used to scrape that stuff up, he said, still that stuff still seeps in the little creeks and rivers and ends up on the river. People are poisoned, and they say that they clean the water but they don’t, they don’t clean it. He said it still goes in the water.

Contamination, or perceived contamination, of water, and through it, wild foods, is perhaps the most important pathway of industrial impact on MCFN knowledge and use in the RSA. As documented in the MCFN Athabasca River Use and Knowledge Study (Candler et al. 2010), MCFN members have observed important changes in the quality of water and aquatic resources (including perceived abnormalities in fish and contamination of medicinal plants) on the Athabasca River system since the arrival of large scale oil sand mining in the late 1960’s. These perceived changes in quality are attributed by MCFN members to oil sands development and have led to widespread loss of confidence in wild foods, especially fish and moose, as well as fear and other psycho-social impacts26 associated with contaminants. See Appendix 2 for a summary of existing information regarding downstream effects of existing oil sands development on MCFN use and rights. MCFN participants noted that the Athabasca River, and the confluence of the Firebag and Athabasca Rivers in particular, are preferred fishing areas, but that avoidance of fishing in the Athabasca River is now very wide spread due to concerns regarding pollution.

I mean it doesn’t take a smart person to realize that it’s affecting all our livelihood up there and the river goes all the way down to the Lake Athabasca and they’re affecting all the animals, there’s no muskrat anymore up there. And the fish, nobody wants to eat fish anymore because they’re all getting contaminated. Moose and stuff they’re getting sick. (M15 2011)

For hunting or whatever, stay away from that area. Because it affects animals, like what moose eat, what comes out of the [industrial] plant, it falls on the plants and that’s what affects the animals. Animals, we shoot moose around that area, it’s no good, it don’t taste like moose meat, it’s got a

26 Health Canada (2005) identifies the following psycho-social factors associated with contamination – at least some of which are clearly affecting ACFNMCFN use of lands and waters: fear; feelings of vulnerability and powerlessness; anger; distrust; Grief; Guilt; Sense of depersonalization; Frustration; Isolation; Depression.
different taste and they’re not as healthy as the ones you would find near Birch Mountain and stuff like that, about a fifty mile area. That’s how that [industrial] plant affects animals, wildlife...

And even fish we catch here now, some of them are deformed, what caused that? It’s got to be something. I don’t know how they could prevent it, now they’ve gone too far, you know, you can’t erase all that poison they put already in the waters, now we can’t even drink the water. One time we tried drinking water in the Athabasca River, took water and we boil it, after it settled it was just like oil. You can’t drink it, you can’t drink that. Water is polluted. (M29 2011)

As shown in Figure 21, MCFN participants consistently indicated an area of general loss of use in the vicinity of existing oil sands activity south of the Firebag River – this is an area within which they would not feel comfortable practicing harvesting rights – extending south from approximately the Firebag River and the southern extent of the proposed RCL footprint.

### 7.2.3 Culturally Important Species

#### – Moose and Bison

Based on reported MCFN knowledge, the RCL is proposed within an important moose hunting corridor along the Athabasca River. The area is also reported to be important and rare habitat for wood bison which are integral to MCFN cultural practices. The wood bison population west of the Athabasca River, and within the RCL LSA, is reported to be the only healthy wild herd of wood bison in MCFN territory outside of Wood Buffalo National Park, and as such, is the only herd that MCFN members can freely hunt and rely upon. MCFN hunting of wood bison has been documented within the LSA on the west side of the Athabasca River, across from the confluence with the Firebag River, and within the footprint of the proposed RCL. Multiple MCFN bison kill sites are included in the subsistence activity class shown in Figures 19 and 20.

### 7.2.4 Culturally Important Species – Migratory Birds

The air is no good for them ... Like now, these birds, like waveys and geese, stuff like that, most of them they’re flying more on the west side than they used to fly right here. Not much flying over right here, you notice that, I don’t know, but we notice that. Unlike before, before there’s millions, now there’s just a few, more on the west side. (Interviewer: Over towards Lake Claire?) Yeah, past it. That’s where they fly. Going a different route now, on account of the air, I guess, I don’t know. And the grass are not as good like before for them. Grass don’t grow as good as before, that’s what they eat, those roots

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27 Wood bison have largely not been addressed within the proponent’s EIA, though some additional information was submitted to the JRP in November 2011.
and now everything is all dried up, that's why they're flying different places. And what about the muskrats? Nothing. They're all gone, you don't see any muskrats but of course that's water, I know. The problem is water, that's what's killing them, no water, the water is not moving in the little lakes are just dying, that's what's killing them, not like before, used to be high water, used to be a lot of rats, now there's nothing. (M29 2011)

MCFN members have reported changes in migratory bird patterns, including ducks and geese, and overall declines in the availability of migratory birds as a result of oil sands development. These changes are reported to have impacted the quantity of birds available for the MCFN spring and fall bird hunt, particularly in the area of the Athabasca delta. Effects on the quality of migratory birds were also noted:

My whole diet is wild meat or vegetables. It is scary because now like a lot of people see the lesions on fish and they see bears with worms in them or you could see these poor ducks that still have tar in them, it's pretty scary. (M38 2011)

MCFN hunting of migratory birds has been documented within the RSA and LSA, and is included in the subsistence activity class shown in Figure 19 and 20. Migratory birds are of key cultural importance to the MCFN. The spring and fall bird hunt is a core component of the MCFN’s past and present seasonal round.

7.2.5 Access and Enjoyment of MCFN lands – MCFN Traplines, Reserves, and Protected Areas

As shown in Figure 14, MCFN members indicate that access and enjoyment has been lost to a large area immediately south of the proposed RCL footprint and south of the Firebag River, suggesting that a tacit, or implied threshold of disturbance has already been reached within the RSA, resulting in widespread loss of use by MCFN members due to oil sands related impacts including: road controls, traffic, noise, dust, smell, ground disturbance, perceived contamination, and disturbance by recreational users. The majority of these impacts are reported to have accumulated in the RCL LSA over the past decade (since approximately 2000).

As shown on Figure 1, two known MCFN traplines (RFMA #1570, and RFMA #2892) intersect with the RSA. Both are located on the west side of the Athabasca River north of the Firebag River and downstream of the RCL footprint. One MCFN Indian Reserve (Old Fort #217) is located within the RSA, on the east side of the Athabasca River. As shown in Figure 2, large portions of the LSA, and the footprints of the Shell Projects, are within areas identified for protection by the MCFN in land use planning processes because of their cultural and ecological value. These include a large area adjacent to the Athabasca River that would be directly effected by the RCL footprint.
As documented in the MCFN and MCFN Athabasca River Use and Knowledge Study (Candler et al. 2010), and as reported by MCFN member, impacts of existing oil sands operations on MCFN reserve lands include:

- Perceived impacts on Athabasca River water quality (due to contaminant concerns) resulting in loss of confidence in fish and other wild foods and resources; and
- The impact of water withdrawals on river flow during ice free low flow periods resulting in impediments to river travel and navigation required to access MCFN’s reserve lands.

7.2.6 Intangible Cultural Resources – MCFN Knowledge, Language and sakaw pimacihewin

In additional to concerns regarding impact to more concrete values, many MCFN participants also identified concerns regarding the potential impact of oil sands developments on intangible cultural resources, including language and the transmission of knowledge regarding areas lost due to industrial effects, as well as the ability to practice sakaw pimacihewin more broadly.

Particular kinds of knowledge, in the form of place based stories, place names, and histories, are associated with particular places (Basso 1996), and the cultural practices, or uses, that take place there. Actions that destroy a place, or cause the use of a place to be lost (for example, because of fear of contaminants), especially over long periods of time, frequently result in a gap in the transmission of place based knowledge, and eliminate the place as a cultural resource for remembering, teaching, and learning the knowledge associated with it.

Well, I started living in McMurray close to about twenty years now. Ever since 20 years, and now, now I won’t hunt around the plants because I know what their stuff can do, what falls around the plants, everyone says the worst plant to work for is Suncor, smelly and a lot of stuff and I see a lot of those white people who moved to McMurray here, I don’t know how they do it, they pick berries close to the plant, I would never do it, even moose out here, I’m not starving to shoot a moose close the plant, I go quite aways to the Birch River or I go towards Slave Lake… There used to be something here, it’s hard to show them something that is not there any more, they just have to listen to stories, the history, a lot of the things that I saw in my time, my grandchildren will never see. It’s not going to be the same. Areas that are identified in my time and my father’s time are not going to be there. So that’s going to be lost too, except the stories, the history books. It’s pretty sad. (M18 2011)

…I wouldn’t go to my trapping, my hunting, that’s all gone now. That’s on account of those companies. Where are you going to go hunting, everytime...
you stop somewhere along the river, what do you hear? You hear equipment going, you can’t hunt along the river any more, it’s gone. There’s a lot of times you go up, you get off the boat and maybe walk over, check it out, and all of a sudden you come to a big clearing, where in the hell am I supposed to hunt here? (M25 2011)

Other kinds of knowledge may not be associated with a particular place, but with an aesthetic feeling, or sense associated with particular kinds of places, especially ones that are considered ‘natural.’ With increased urbanization, and the increasing rarity of places that are ‘natural’ or ‘wild’ for MCFN members living in urban areas, places that offer this sense, but that are still accessible from urban areas, can be a very valuable and rare cultural resource.

For me it was continuing the lifestyle, continuing enjoying the air, just to be outside, fishing at the Bridge to Nowhere, that’s where I used to go to when I was in McMurray, it’s continuing the lifestyle. Like I could easily have ended up like a zombie in Syncrude, I could have easily done that, it was all there, but I don’t like that lifestyle, I don’t like working 24/7 and get up, go to work, go to sleep, get up, go to work, go to sleep, for me it’s the continuing of the lifestyle and teach my kids to learn more. I learned from the McKay boys, I learn from you, you take me, I’ll learn something, so it’s just the continuance of it and getting better at it. And then we’re going to need it, we’re going to need our survival skills, that’s all there is to it, I’m a believer of that… (M32 2011).

Pollution, they’ve got to slow that down, there will be nothing for our children’s children’s children. They’ll wipe us out, like a genocide, slow but effective, I guess. Who knows what they put in our water? been trying to put something in the water to wipe us out, you never know. Get rid of that Indian problem. That’s what we were. And they just take, take, take, they don’t give nothing back. There’s no balance, everything is off balance. (M15 2011)

The effects of Industrial development along the Athabasca River are already having far reaching, and multi-generational effects on Mikisew Cree First Nation knowledge and use. One MCFN member who lives in Fort Chipewyan, but who’s children and grand children choose to live away from Fort Chipewyan because of concerns regarding pollution, provides an indication of the cascading effects that concerns regarding wild foods and environmental contaminants can have, in this case influencing health decisions, out-migration decisions, and ultimately creating a barrier, even within families, for the transmission of cultural knowledge to younger generations.

Because all the pollution comes up here, that’s why I’m missing out on my daughter, I’m missing out on my grandson, the interactions we could have. I’m happy for Skype, it’s the closest thing we have for interacting with each other … I can talk to him every day but I don’t get to interact with him, I don’t get to show him all the traditional things that he could be doing in Fort Chip.
He could be going setting rabbit snares and setting a net, he could be going
on a job for the camp, we could be making all kinds of different crafts, we
could be walking out in the forest, and there’s so much learning for a child
and we miss out on that because my daughter chooses not to move back to
Fort Chip. She doesn’t want to get her cancer again, I don’t want her to get
her cancer, there’s not too much we can do...

My grandchildren and my children, they’ll never come back to Fort Chip. And
because everything is being polluted, what do we have to pass onto them?
there’s absolutely nothing. Once they poison all our water, like that old
saying, once they poison everything, there’s nothing to pass on to our
children. We won’t be eating wild meat pretty soon, like there’s less and less
waterfowl coming. It’s spring time now, we should see tons and tons of them
flying overhead. They’re stopping at all those tailing ponds over there for a
drink and then they just don’t come back up. They could hide the facts from
everybody, Industry could because they could, and we know. We know
because we see them ... But there’s really nothing to pass onto our children.
Maybe my generation, may the next generation, but that’s it. Because
everything, our delta is drying up, they’re going to build another dam there in
B.C. and that’s going to dry up our delta more. And then our water’s going to
go down and so pollution is going to be more concentrated and it’s going to
be lower, you won’t even be able to go out by boat. There’s so many things
that are just terrible, but I still love this place. I’m still going to stay here. So
I’m kind of caught. (M38, interview transcript 2011)

7.3 Assessment of RCL Project Effects

Details from the Proponent regarding the construction, operation, closure and post-
closure of the RCL project are limited. In estimating the effects of the RCL Project, the
following assumptions have been made:

- Construction of the RCL is assumed to involve clearing of lands, increased traffic,
  new road access to the LSA, use of machinery, ground disturbance, and removal
  of waters from the Athabasca River either directly, or through diversion or
  impoundment of streams, and flooding of the RCL area.
- Operation of the RCL is assumed to involve occasional traffic, maintenance of
  new road access, use of machinery, seasonal removal of waters from the
  Athabasca River either directly, or through diversion or impoundment of streams,
  and flooding of the RCL area. No emissions or contamination is assumed.
- The RCL project is assumed to result in creation of a reservoir resulting in some
  reduction in waters reaching the Athabasca River and Redclay Creek, and is
  assumed to flood and eliminate habitat for terrestrial animals including moose
  and wood bison.

The RCL structure is assumed to be permanent with no closure or post closure
anticipated, and an operating lifespan greater than that of the PRM and JPME mines
(more than 50 years). The RCL structure may have effects on any or all of the categories of site specific and non-site-specific traditional use values identified in the LSA and RSA through direct disturbance and flooding of lands, increased industry and recreational access, and reduced flow levels in Redclay Creek and on the Athabsca River.

The following are anticipated RCL Project effects on site-specific VCs.

7.3.1 Anticipated PRM Project Effects on Site-specific VCs within the LSA and RSA

7.3.1.1 Site-specific Subsistence Values

Based on reported MCFN knowledge, and review of Project information, the RCL footprint will destroy and/or render unusable preferred hunting areas and important moose and wood bison habitat. As discussed below, it is unlikely to create effective or preferred fishing areas for the practice of MCFN use, and the net effect on MCFN subsistence values is likely to be negative. This effect is anticipated with a high degree of confidence.

The proposed location of the RCL is in a key preferred corridor for moose and bison hunting, as well as for fishing (on the Firebag River). Within the LSA, up to 161 documented MCFN site specific subsistence values, most along the Athabasca River and related to fishing or moose hunting, have potential to be adversely impacted by direct disturbance / flooding of lands, increased industry and recreational access, and reductions in water flow related to impoundment of waters, leading to increased scope and intensity of avoidance or reduced use by MCFN members. Of those, 16 are within 250m of the Project footprint, including multiple bison, moose, and other subsistence hunting sites. Given the rarity of bison hunting areas in MCFN lands, the presence of multiple bison kill sites within the RCL footprint is exceptional.

Within the RSA, and including the LSA, more than 4,250 MCFN site-specific subsistence values have been documented including a large concentration of values in the Athabasca delta. Beyond the LSA, but within the RSA, and including MCFN values in the Athabasca Delta, the values most at risk of Project effects (reduced flows in Redclay Creek and the Athabsca River) are downstream of the Project along the Athabasca River.

7.3.1.2 Site-specific Habitation Values

Two reported habitation values are inside or within 250m of the proposed RCL footprint. These are likely to be impacted by direct disturbance or flooding of lands relied upon (within 5km of habitation values), increased industry and recreational access, and
reduced water flow in the Athabasca River and Redclay Creek, upon which use of habitation areas rely. This is likely to increase the scope and intensity of avoidance or reduced use by MCFN members in the LSA. This effect is anticipated with a high degree of confidence.

Within the RSA, and including the LSA, 1324 MCFN site-specific habitation values have been documented. Beyond the LSA, but within the RSA, values most at risk of project effects are those downstream of the project along the Athabasca Rivers. These include regularly used cabins, village sites (Snowbird’s Camp) and MCFN Indian Reserve lands. As with subsistence values noted above, MCFN member’s observations that oil sands related water withdrawals are adversely affecting the flow of the Athabasca River suggest that these habitation values are likely to be impacted by the project through anticipated seasonal or intermittent effects on Athabasca River levels during ice free low flow periods, likely leading to lost or reduced use.

### 7.3.1.3 Site-specific Cultural/ Spiritual Values

Based on reported MCFN knowledge, no site-specific cultural/spiritual values are reported within 250m of the RCL footprint. Six values, primarily associated with medicinal plant gathering, are located in the LSA. Effects of the RCL project on these values are anticipated to be minor, intermittent, and related to reduced flow rates into the Athabasca River. This effect is anticipated with a high degree of confidence.

Within the RSA, and including the LSA, almost 400 MCFN site-specific cultural/spiritual values are documented. These include ceremonial places, medicine collection places, and burials sensitive to a variety of effects, including water level and water quality changes. At least some of these cultural/spiritual values are likely to be impacted by the project as a result of anticipated effects on Athabasca River levels, especially during low flow leading to avoidance or reduced use. See non-site-specific concerns below.

### 7.3.1.4 Site-specific Transportation Values

Based on reported MCFN knowledge, no site-specific transportation values were identified within 250m of the RCL Project. Within the LSA, the water route provided by the Athabasca River was identified. Water based navigation, downstream of the project along the Athabasca Rivers is especially vulnerable to impact during ice-free low water periods. See non-site specific values below.

### 7.3.1.5 Site-specific Environmental Feature Values

Based on reported MCFN knowledge, no site-specific environmental feature values were reported within 250m of the RCL footprint. Four environment features, primarily
associated with the Firebag River as a drinking water source, were reported within the LSA. Effects of the RCL Project on these values are anticipated to be negligible. This effect is anticipated with a moderate degree of confidence.

Beyond the LSA, but within the RSA, the values most at risk of project effects are areas downstream of the project along the Athabasca River. See non-site-specific concerns below.

7.3.2 Anticipated PRM Effects on Non-Site-specific VCs

7.3.2.1 RCL Effects on Water and River Values – Quantity

MCFN members have identified water levels, and particularly water levels on the Athabasca River, to be of concern within the RSA. Based on reported MCFN knowledge, and review of available Project information, the RCL project has the potential to reduce seasonal flows into the Athabasca River, particularly during low flow periods. This effect will be most pronounced during ice-free low water periods and is likely to result in impediments to access to use areas downstream of the RCL. This effect is anticipated with a high degree of confidence.

Based on Candler et al. 2010, reported effects of sand bars and hazards include:

- Lost access to side channels and streams adjoining the River;
- Increased travel time and expense due to reduced speed and need for increased care;
- Increased travel time and expense due to getting stuck on sand bars (including occasional inability to find a channel through);
- Increased travel time and expense due to avoidance of sand bar areas (including large areas where the Athabasca delta joins Lake Athabasca);
- Damage to boats, engines, and equipment; and
- Safety concerns related to collisions with sand bars or other hazards.

Figure 22 shows that at least portions of Redclay Creek and Big Creek are reported to be navigable at adequate flow levels, and to be water routes used by MCFN members for accessing resources. The Project would involve diversion and impoundment of portions of Red Clay Creek, thereby removing it as a resource for future meaningful practice of MCFN use.

Beyond the LSA, but within the RSA, values most at risk are those downstream of the project along the Athabasca River. These include water transportation routes, including access to reserve lands critical to MCFN use and rights practice in the Athabasca Delta, on the Athabasca River, and in adjacent rivers and streams. MCFN member’s
observations that oil sands related water withdrawals are adversely affecting the flow of the Athabasca River suggest that some or all of these are likely to be impacted by the project as a result of anticipated effects on Athabasca River levels, especially during ice-free low water periods.

### 7.3.2.2 RCL Effects on Water and River Values – Quality

MCFN members have identified the quality of water, particularly water of Athabasca River, to be a major concern within the RSA. Currently perceived levels of water and air borne contaminants, in combination with other changes, are having serious psycho-social effects and resulting in wide spread avoidance and loss of use by MCFN members in the region (Candler et al. 2010). Should the JPME and PRM projects proceed, as proposed, likely increases in perceived contamination of water and plant resources (either directly, or by air) will make the RCL Project unlikely to be used by MCFN members as a source of fish, or medicinal plant collection. As such, the RCL Project is unlikely to be effective as a mitigation for impacts to MCFN fishing use.

### 7.3.2.3 RCL Effects on Culturally Important Species – Wood Bison, Moose

Based on reported MCFN knowledge, and review of available Project information, the RCL project is likely to disturb or destroy the range, and possibly core habitat, of culturally important populations of bison resident west of the Athabasca River, as well as moose along the Athabasca corridor.

In addition to footprint effects on wood bison habitat, MCFN participants indicate that, due to lack of provincial recognition and a lack of legal protections, bison in the PRM LSA are especially vulnerable to, unregulated hunting. Creation of road access to the PRM area, including a potential bridge across the Athabasca River, is expected to result in increased non-aboriginal hunting pressure. Based on reported MCFN expectations, in the absence of legal protections, increased access is likely to result in the extirpation of the bison population from MCFN use.

Subject to a lack of available information regarding project interactions with bison, this effect is anticipated with a moderate degree of confidence. It is unclear from the proponent’s application whether or not potential project effects on woodland bison were evaluated. Based on the precautionary principle, in the absence of information regarding the likely effect of the project on culturally important and unique wood bison habitat, caution should be applied.
7.3.2.4 RCL Effects on Culturally Important Species – Migratory Birds

Based on reported MCFN knowledge, and review of available Project information, the RCL project is likely to improve habitat for culturally important populations of migratory birds including various species of duck, geese, cranes, and other birds.

MCFN knowledge holders have reported a downward trend in the number of migratory birds transiting the RCL LSA and RSA in recent decades. Project effects related to removal of muskeg, drying of upland lakes, reduced water levels downstream of the Project (including in the Athabasca Delta), as well as intentional disturbance of birds and flyways through use of cannons, may further adversely impact the current or potential availability of migratory birds as preferred and culturally important resources for MCFN knowledge and use practice. This effect is anticipated with a medium degree of confidence due to lack of detailed MCFN knowledge and use studies focused on migratory birds.

7.3.2.5 RCL Effects on Culturally Important Species – Plants

Based on reported MCFN knowledge, and review of Project information, RCL Project effects will disturb and flood an area of natural vegetation. Should the JPME and PRM projects proceed, as proposed, likely increases in perceived contamination of water and plant resources (either directly, or by air) will make the RCL Project unlikely to be used by MCFN members as a source for food or medicinal plant collection. This effect is anticipated with a moderate degree of confidence.

7.3.2.6 RCL Effects on Access and Enjoyment of MCFN Lands – Traplines

Based on reported MCFN knowledge, and review of Project information, RCL Project effects will flood or eliminate MCFN access and enjoyment of lands associated with a historic trapline west of the Athabasca River and associated with an MCFN family group. Project effects within the LSA would include loss of access and enjoyment due to Project related flooding. Effects, including disturbance as a result of increased access, are also likely to be experienced in relation to RFMA #2892. This effect is anticipated with a high degree of confidence.

7.3.2.7 RCL Effects on Access and Enjoyment of MCFN Lands – MCFN Indian Reserves and Cultural Protection Areas

Based on reported MCFN knowledge, and review of Project information, RCL Project Project effects may contribute to impacts on MCFN access and enjoyment of lands associated with MCFN Indian Reserves downstream of the Project. Portions of the Athabasca River located away from the main channel are particularly vulnerable to loss of access due to declining water levels.
7.3.2.8 RCL Effects on Intangible Cultural Resources including MCFN Knowledge, Language and sakaw pimachihiwin

Based on reported MCFN knowledge, and review of Project information, RCL Project effects are likely to reduce or eliminate opportunities for the transmission of MCFN knowledge and language, including place based knowledge (Basso 1996), specific to the LSA. This would contribute to the erosion and, over time, loss of MCFN knowledge and language specific to the RCL footprint and LSA, and potentially extending to other portions of the RSA as a result of loss of use due to impediments to access and travel by water related to low flow levels on the Athabasca River. The project is also likely to adversely affect MCFN member’s ‘sense of place’ through disruption of the cultural landscape and replacement of natural habitat with a human-made construction. These effects are anticipated with a high degree of confidence.

7.4 Existing RCL Mitigations

At the time of writing, it is not known if the Proponent has committed to mitigations for the adverse effects of the RCL Project. Appendix 3 provides mitigations contained within the JPME and PRM applications.

7.4.1 Oil Sands Mine Reclamation and MCFN Knowledge and Use

While the technology of reclamation and creation of aquatic habitats continues to improve, and while it is beyond the scope of this report to comment on the ability of the Proponent to create new habitat for fish, MCFN participants indicated clearly that creating fish habitat does little or nothing to mitigate for impacts on MCFN knowledge and use. Based on the accounts of MCFN elders and land users, meaningful practice of use involves reliance on the quality and quantity of necessary resources, such as fish, but also on the intangible aspects and relationships associated with those resources.

While the RCL Project may be able to create physical fish habitat in the Redclay area, the project will not create a cultural landscapes consistent with MCFN traditions of knowledge and use. While the biological conditions for fish, plants, or animals may be successfully introduced, the landscape in the vicinity of the RCL will be converted from a natural one, to a manufactured one. Evidence from MCFN elders and land users suggests that this will permanently alter the cultural, historic, and sacred relationships that make the current landscape of Redclay Creek a living thing within MCFN oral tradition.

Several MCFN participants expressed clear skepticism regarding the ability of proponents to reclaim lands in a manner consistent with MCFN knowledge and use values:
But how are they going to fix this water now they pollute? how are they going to do it? there’s no way they could fix it. It’s even affected now, in Fort Smith now, their water and their fish. Same thing what’s happening right here. It will go down, down, down, I don’t know how far it’s going to go...(M29 2011).

…How in the hell do you expect wildlife to grow there, it will take a long time for the growth of the land to come to natural, it wouldn’t come back overnight. A lot of times I went to the meetings, they said, okay, we’re going to use the guy’s land, we’re going to put it back like the way it is. I mean how in the hell are you going to put it back the way it is, you drove all the moose away and everything away from there, all the animals, you’re going to bring the animals back now? they’re not going to survive in that area, you know what I mean? even foxes like there was a time when you saw a burned tralpline, everyone knew that that tralpline would be no good because there’s nothing for animals to eat, they move away. So that change in the land when you destroy it like that, the nature, it don’t come back just like that (M18 2011).

Based on MCFN experience, even the best and most sensitive reclamation techniques cannot be expected to reverse or fully mitigate impacts to MCFN use values.

7.5 RCL Residual Project Effects

Given anticipated project effects on MCFN knowledge, use and rights practice, and considering existing mitigations proposed in the applications (described above and in Appendix 3), the residual (post-mitigation) effects of the RCL project on MCFN Knowledge and Use are anticipated to range from low to very high.

Figure 23 provides a characterization of the residual effects, and a rating of environmental consequence for each VC:

Figure 23: Environmental Consequence of RCL

<table>
<thead>
<tr>
<th>Value</th>
<th>Direction</th>
<th>Magnitude</th>
<th>Geographic extent</th>
<th>Duration</th>
<th>Reversibility</th>
<th>Frequency</th>
<th>Environmental Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site-specific Subsistence Values</td>
<td>Negative</td>
<td>moderate (+10)</td>
<td>regional (+1): extends beyond RSA into LSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>High (18)</td>
</tr>
<tr>
<td>Site-specific Habitation Values</td>
<td>Negative</td>
<td>moderate (+10)</td>
<td>regional (+1): extends beyond LSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>High (18)</td>
</tr>
<tr>
<td>Site-specific Cultural/Spiritual Values</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>---------------------------------------</td>
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<td>----------</td>
<td>----------------------------------------------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td>------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Site-specific Transportation Values</td>
<td>Negative</td>
<td>low(+5)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>moderate (+2): intermittent</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Site-specific Environmental Features</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Water and River values (quantity)</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1): extends beyond LSA into RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>moderate (+1): intermittent</td>
<td>Moderate (12)</td>
</tr>
<tr>
<td>Water and River values (quality)</td>
<td>Negative</td>
<td>negligible (+0)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>low (8)</td>
</tr>
<tr>
<td>Culturally Important Species (Wood Bison)</td>
<td>Negative</td>
<td>high (+15)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Very High (23)</td>
</tr>
<tr>
<td>Culturally Important Species (Woodland and Barren Ground Caribou)</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Culturally Important Species (migratory birds)</td>
<td>Positive</td>
<td>low (+5)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Culturally Important Species (plants)</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1): effect extends beyond the LSA into the RSA</td>
<td>long-term (+2): &gt;20 years</td>
<td>irreversible (+3)</td>
<td>high (+2): continuous</td>
<td>Moderate (13)</td>
</tr>
<tr>
<td>Access and</td>
<td>Negative</td>
<td>low (+5)</td>
<td>regional (+1):</td>
<td>long-term</td>
<td>irreversible</td>
<td>high (+2):</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Enjoyment of MCFN lands (MCFN trap lines)

| Access and Enjoyment of MCFN lands (MCFN IRs and cultural protection areas) | Negative | low (+5) | regional (+1): effect extends beyond the LSA into the RSA | long-term (+2): >20 years | irreversible (+3) | continuous | (13) |

7.6 Significance of Residual RCL Effects

Based on available information, residual Project effects (separate from effects of other projects) of the RCL on MCFN Knowledge and Use are anticipated to be generally adverse and of low to moderate environmental consequence, except for effects on site-specific environmental features and wood bison which are potentially of high to very high environmental consequence. The RCL Project would:

- Disturb or destroy (through flooding) important environmental values in the LSA, primarily related to moose and bison hunting. The bison resident in the area are rare, vulnerable, and culturally important. Given the baseline context of minimal pre-existing impact, and in the absence of effective provincial and First Nations legislative protection and enforcement, the footprint disturbance of the RCL, combined with increased access by sport hunters to what is likely Bison core habitat is considered likely to impact or destroy the last remaining viable and accessible wood bison within MCFN’s traditional lands, and result in complete or near complete MCFN loss of access\(^{28}\) to wood bison for multiple generations, except as regulated through Wood Buffalo National Park. This effect would likely result in strong concern or interest from MCFN members affected, and would be a clearly discernable (measurable or perceivable) change to their preferred exercise of a culturally important practice, land use or right. As such, this would be a significant adverse effect the use of lands and resources by MCFN members.

The primary finding of this assessment is that, depending on wood bison interactions with the RCL through construction and operations, the RCL Project (not in combination with other projects), is likely to have **significant adverse residual effects** on MCFN Knowledge and Use, particularly in relation to effects on wood bison.

Given that the primary issue is the inundation of important habitat, mitigating the effects

\(^{28}\) This is a precautionary assessment of effect due to the lack of information available on likely project interactions with Wood Bison.
of the RCL Project on wood bison is likely to be challenging, and may be impossible. At its core, the RCL Project proposes the destruction (by flooding) of a preferred MCFN hunting area and high value habitat for culturally important species like moose and wood bison, in favor an artificial lake for fish habitat that may, or may not be successful, and that MCFN members are highly unlikely to use in the future due to interruption of the natural landscape, and perceived contamination of fish from nearby oil sands mines.

To optimize benefits and minimize impacts, the Proponent may wish to abandon plans for RCL, and instead engage with the MCFN and DFO regarding opportunities for augmenting, protecting and improving existing fish habitat threatened by changing river levels in the Athabasca River delta. Augmentation of existing natural fish habitat is less likely to be seen as an interruption of the natural landscape, does not require sacrifice of high value terrestrial habitat, and is more likely to be used by First Nations as a result of historic connection, and distance from perceived oil sands impacts.

Should the Proponent choose to proceed with the RCL Project, then the primary recommendation of this assessment is that the proponent and the Federal and Provincial Crown undertake a process, agreeable to and involving the MCFN, to ensure that adequate quantity and quality of resources exist for the continuation of MCFN knowledge and use into the future. This process should prioritize avoiding and reducing impacts over mitigating them. Where impacts to MCFN knowledge and use cannot be avoided then they should be mitigated to below a significant level, as defined in this report, using effective strategies agreeable to the MCFN.
Section 8: Summary and Conclusion

8.1 JPME, PRM, and RCL Combined Summary of Baseline and Cumulative Impact Assessment

The proposed Shell projects are all within the Treaty 8 area and within lands historically and currently relied upon by MCFN members for the practice of knowledge, use and rights under Treaty 8, including hunting, trapping, gathering, fishing, and associated cultural and livelihood practices. Currently operating or permitted oil sands mines in the immediate area of the Shell Projects include the Jackpine Mine (Phase 1), the Kearl Oil Sands project (operated by Imperial Oil), the Muskeg River Mine (operated by Albian Sands), the Joslyn North Mine Project, the Fort Hills Oil Sands project, and others. Accumulation of effects in the region from oil sands and related industrial change have resulted in widespread partial or complete loss of use by MCFN members in the area of oil sands operations, and downstream in Fort Chipewyan and elsewhere, continued out-migration from Fort Chipewyan and MCFN on-reserve communities due to perceived or observed contaminants, human health impacts linked by Mikisew members to existing industrial pollution, and declines in the quantity and quality of lands and waters available for Mikisew practice of rights. Existing cumulative industrial effects have already resulted in significant changes in Mikisew knowledge, use and way of life.

MCFN land users will not experience Project specific residual effects in isolation from already existing effects. Current changes, including effects from environmental change and industrial projects, are experienced on top of ongoing legacies from past impacts on MCFN lands and waters – the full history of industrial and developmental change, combined with environmental change, will provide the context for any future practice of MCFN knowledge and use in the area.

Figure 24 layers reported existing MCFN loss of use areas with reported use values in the RSA. It shows the overlap between reported areas of reported general loss of use (transparent grey), with reported MCFN site-specific knowledge and use values. The overlap between the two provides some sense of what has already been effectively lost to MCFN use, and the context to which any residual effects from the Shell Projects would contribute.
Figure 24: Reported MCFN Site-specific Use Values within the PRM Regional Study Area
Taken together, the proposed Shell projects:

- Would result in alterations to MCFN use of lands and resources, including rare and culturally important species (wood bison and woodland caribou), that would be adverse, long term, high magnitude, regional, and irreversible.

- Are within the Muskeg River and larger Athabasca River watersheds, both of which are already subject to extensive industrial effects resulting in MCFN loss of use as a result of concerns regarding contaminants in wild foods, and low water levels resulting in barriers to navigation and access to traditional resources (Candler et al. 2010); and

- Include diversion of Muskeg River, Pemmican Creek, Green Stockings Creek, Blackfly Creek, Wesukemina Creek, Linyinim Creek, Pierre River, Eymundson Creek, Asphalt Creek and Big Creek. The projects will remove water totaling approximately 73 million m$^3$ per year$^{29}$ from the Athabasca River, roughly the amount of water, every year, in 29,200 Olympic swimming pools$^{30}$ or a lake 2m deep, 6 km long and 6 km wide$^{31}$. Additional water will be removed from streams and ground water sources that, in the absence of the projects, would otherwise contribute to the Athabasca River.

Based on the concurrent timelines described in the project descriptions, the effects of the PRM, JPME and RCL projects would be experienced together, along with the effects of other industrial projects, by MCFN members and land users. Where all three projects are likely to have significant impacts on their own, taken together, these effects would be compounded. In particular, fear of contaminants and other psycho-social effects, and reduced water levels during ice free low flow periods, are likely to result in expanded and intensified loss of use areas, and are likely to be subject to synergistic effects between the projects.

Based on existing information, and in the absence of additional effective mitigations, the projects together are likely to result in significant adverse residual project effects in multiple areas (see Sections 5, 6, and 7), and to have effects of high to very high environmental consequence on the following VCs:

- Access and Enjoyment of MCFN lands (MCFN IRs, traplines and cultural protection areas);

- Culturally Important Species (Woodland Bison, Woodland caribou, and Moose);

- Water and River values (quality, including confidence in wild foods);

- Water and River values (quantity, including navigation and access);

$^{29}$ Estimate is based on water license amounts indicated in the project descriptions (V.1:10-9 and V.2: 10-10 of the EIA).

$^{30}$ This assumes a pool volume of 2500 m$^3$ (a 25m x 50m x 2m pool).

$^{31}$ An area of approximately 3650 ha.
8.2 Monitoring and Accountability

Due to the nature and extent of project effects, and uncertainties caused by their duration and interaction with other elements, it is likely that full mitigation will not be possible. Should the project be approved, a robust program of monitoring and accountability measures agreeable to the MCFN should be established. The goal of these should be to develop a community-based monitoring, and accountability program that MCFN members trust, and that communicates effectively regarding actual risks and effects, and what they should mean for how MCFN members use their lands.

8.3 Recommendations

The primary recommendation of this assessment is that the proponent and the Federal and Provincial Crown undertake a process, agreeable to and involving the MCFN, to ensure that adequate quantity and quality of resources exist for the continuation of MCFN knowledge and use into the future. This process should prioritize repairing already existing impacts and avoiding and reducing new impacts. Where impacts to MCFN knowledge and use cannot be avoided then they should be mitigated to below a significant level, as defined in this report, using effective strategies, subject to monitoring agreeable to the MCFN.
8.4 Closure

Should there be questions or clarification required regarding this report and assessment, please email requests to craig.candler@thefirelightgroup.com.


**ORIGINAL SIGNED**

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Section 9: References Cited


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Laird, David, J.H Ross, and J.A.J. McKenna, *Report of Commissioners to Clifford Sifton, Superintendent General, Department of Indian Affairs*, Ottawa, September 22, 1899, in
Copy of Treaty No. 8 Made June 21, 1899, and Adhesions, Reports, etc. Ottawa: Queen’s Printer, 1966.

McCormack, P.


## Appendix 1: Select MCFN Interview Exerpts by Theme

### Air and Water Quality/Quantity

<table>
<thead>
<tr>
<th>ID</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>M15</td>
<td>I remember going down the Embarass, in the morning when we woke up, the whole river was … yellow stuff in the river, so can’t drink the water no more. We used to get it from Pine Creek, that’s at the Embarass there, and I think now that water is all infected right now. Because up here where [named individual] used to live, there’s a new channel that broke through there, underneath this sluice, and that’s where it came out, where the Embarass is now.</td>
</tr>
<tr>
<td>M15</td>
<td>There’s a lot of gravel along the river. It’s probably already affected. Somebody was telling me there’s not much water coming out from underground any more, a lot of sand. That’s where the water comes out.</td>
</tr>
<tr>
<td>M15</td>
<td>You know that river used to be a nice big mighty river. You can go all through the channels like shortcuts. If you’re going down, instead of going this way, you could just go that way. You could go straight all the way. Now I hear that all these little places, like shortcuts, they’re all dried out, people have to turn around, from Fort Chip, going up to Fort McMurray, had to go back because the water was too low. It never used to be that way. It used to be big, deep and nice water, you could just go anywhere, there was hardly no sandbars.</td>
</tr>
<tr>
<td>M15</td>
<td>This [area around a family cabin near the Athabasca delta] is a spiritual burial grounds. That’s where my brother wants his ashes taken. We’re going to take them there. Look at all these sloughs, they look all dry now. That used to be all water.</td>
</tr>
<tr>
<td>M15</td>
<td>And through the eighties, like in the seventies, eighties, nobody really paid attention to what they [industry] were doing so they would dump any time. I think about it, like, where’s all the tailings going. It’s got to be seeping into the ground, because underneath there’s ground water, it’s probably in there already like, where does it go, like every time, you know how much water they use, don’t you think those things would have been overfilled by now. So I don’t know it’s got to be going somewhere. You know that one little creek there as you’re going past Syncrude, you go over towards Fort McKay, there’s a little creek comes out there, do you ever look at the water there? how it looks, someone should take a sample of that water, you know, they’d probably find that there’s pollution in there. Just a little creek that comes out, empties into the river.</td>
</tr>
<tr>
<td>M24</td>
<td>You know, up until fifteen years ago, we used to take the cup and scoop it out of the Athabasca River. You’ll never do that now but scoop it out of the river and have a shot.</td>
</tr>
<tr>
<td>M18</td>
<td>Yeah, yeah, one time there used to be a lot of water, not like now, now there's lots of rapids, lots of rocks now, you won't be able to go up there. Me and my partner tried to go there about four years ago, banged up our canoe, you have to come by foot, carry our canoe. Never going to go down there again.</td>
</tr>
<tr>
<td>M29</td>
<td>They're getting worse. They're putting, like for instance, waste water, and they say that waste, they have a pond. That's no good water, that's what goes in there. Actually, it sinks through the ground and the water flows under, so many feet underground, the streams of water that comes out to the river and that thing, actually in a year's time, it's got to come out in the river. Unless they have some kind of stuff in the bottom so that that water won't go through. And even one time we travelled by river, there's one pipe coming out from the plant to the river and that water didn’t look good, what comes out of there. And that's what we're drinking from out here, all the way. And even fish we catch here now, some of them are deformed, what caused that? It's got to be something. I don't know how they could prevent it, now they've gone too far, you know, you can't erase all that poison they put already in the waters, now we can't even drink the water. One time we tried drinking water in the Athabasca River, took water and we boil it, after it settled it was just like oil. You can't drink it, you can't drink that. Water is polluted.</td>
</tr>
<tr>
<td>M29</td>
<td>Oh, it [low water] would affect us in all kind of ways, my friend, yes. The way we live, we like to go to places, you can't go anyplace, Quatre Forche is the only place we could go now. Our area anyway, that's about all. Now it would be worse, you can't even cross Lake Mamawi, not this year, just mud flat there.</td>
</tr>
<tr>
<td>M29</td>
<td>It [spring ice break-up] should have been nice and thick, flowing, break up. Now it just rots away. See the difference in water now, what's in the water, got to be some kind of chemical in the water, that's how ice, around Syncrude, Suncor, all winter you'll never go across there, you'll fall right through. Some places wide open all winter, what's causing that? Not like before, before you could go anyplace. Now Athabasca River is wide open already, usually it wouldn't be open till really water is high and there's a lot of ice, good ice, now it's all rotten ice, it just breaks in one day, it's all gone. See, you can tell all that difference going on.</td>
</tr>
<tr>
<td>M29</td>
<td>But how are they going to fix this water now they pollute? how are they going to do it? there's no way they could fix it. It's even affected now, in Fort Smith now, their water and their fish. Same thing what's happening right here. It will go down, down, down, I don't know how far it's going to go…</td>
</tr>
<tr>
<td>M39</td>
<td>[translated from Cree at time of interview] He said the water is poison [in the Athabasca River] so at least here [in Edmonton] the water is clean over here and there's doctors here too. He said he can move back and get a house he said [in Fort Chipewyan], but the water's no good. He said at least here the water's good.</td>
</tr>
<tr>
<td>M39</td>
<td>[translated from Cree at time of interview] He said he's been worried about it for a long time, he said, the water must have been starting to get polluted, he said, when he left Fort Chip. He said now it's even worse. He said like the water quality is no good over there, even the animals and ducks and stuff like that, they don't even land over there any more, they just fly right through. He said they're even getting sick, even the</td>
</tr>
</tbody>
</table>
animals, like there’s hardly any little animals, like rabbit, muskrat, beaver, moose, so he’s worried about the water back there after he moved. Already the water was starting to be polluted then, so he moved. He says you ask the people, like Syncrude and all that, about the water quality, oh, there’s nothing wrong, there’s nothing wrong, we clean the water good but he said, they’re only lying. People are really sick, it’s like poison he said, and his friend [named individual], he used to work that tailings pond in a barge, I guess, he used to scrape that stuff up, he said, still that stuff still seeps in the little creeks and rivers and ends up on the river. People are poisoned, and they say that they clean the water but they don’t, they don’t clean it. He said it still goes in the water.

M15 Yeah, like when we took my sister’s ashes down there to Embarass but my mum wanted to go to the slough there, to see. She almost cried once she seen all the dry in the slough, just the little willows down the middle, just dry, no water. She was shocked because it used to be just nice, there used to be a lot of grass, in the back over there there used to be lake, it’s all willows now.

M15 I remember one morning we woke up [at Snowbird’s Camp] and the water was kind of high, it was flooding and there was this bunch of foam on the water. Can’t drink this water. (Interviewer: What colour was the foam?) Like yellowish, brown. This would be like in ’79. So we had to start getting water from the side of the creek, there was a creek there and the water used to come from underground, nice clear water, used to drink that, we had to drink that.

M39 [translated from Cree at time of interview] Every year, he says, it’s changing. Every year it’s changing to the worse he says. He says it’s natural for the land to change every year but this water now that’s bad and he doesn’t mean no offence, every year it changes, that’s natural for it to change every year, it’s nobody’s fault he says, it’s natural. He says you go there next year it’s already different he said, more or less water. He says they’re speeding up that process now, the natural occurrences and the changes and stuff, he says, naturally, but now, they’re speeding that up, all the changes, it’s man made, not natural any more, it’s man made now.

M15 For me, anyways, I think it’s a bad idea where they’re going to dig all that ground up because like I said, there is underground caverns, rivers under there and a lot of them, there’s one that comes out on Big Slough, that’s where we get the fresh water, it comes out from underground, the water never goes down and it’s nice, clear, pure water and that all comes up from under there somewhere too where they’re going to dig and they’re going to ruin it all and they’re going to pollute it all. Once they start doing that, that Big Slough, the water is going to dry up because it’s underground water, that’s where we take the water from. And the same with Gull River, it comes from underground too and it’s flowing. You’d be cruising down that Gull River, you’d be going by boat, you come around the corner and there’s a portage road that goes up this way, all you see is trees like this and the water comes out from underneath the ground there, that’s good water too. There’s a lot of, like even around Whitefish Lake there, there’s a lot of muskeg in there and that’s good land in there. They’re going to ruin all that, it’s all going to dry. There will be less water. I wouldn’t think it’s a good
| M18 | Yeah, well you can’t get in there no more. Not like before, you can’t even build a house close to the water, otherwise you would always been under water, some days we used to have lots of water, used to be barges, a big barge going from here to Chip, back and forth, used to be freight … and now going into Chip is by air. |
| M18 | I was born and raised in the bush, even at 30, when it’s cold, 30 or 40 below, I sleep outside, like to see the stars, you know and nowadays how many people do that? the trapping is going down because there’s nothing to hunt anymore because of the oil companies destroying all the land. I used to live off the fish and stuff, like all these inland lakes, like, there used to be lots of water, you can get in there with a boat and nowadays, you need a quad or something, you got to make a road to get there. So that’s why the tougher it is for guys, a long time ago… So nowadays young guys, they won’t go 20, 30 miles in the bush, there’s no water no more, even dangerous to go fire fighting any more. Those guys know what they’re doing, them days when you step out from the Highway 63 here, you can’t use your boots, you need hip waders and now you go hunting, you never get your feet wet, no water, because the companies are taking all the water. Them plants, you should see how much water they take, steady going, in a minute, the water that comes out of there. Where the water is going, it’s going into the pond, nothing. Fort Chip want water? no water. |
| M18 | Yeah, that’s when in the late seventies there, used to be high water, the water used to be right to the bank and now the water is so low, only in the winter time you get to those lakes now and some of them have lots of fish, nobody puts a net in anymore, so some of these lakes, like you see in the spring time, you know, sometimes you go over there with a plane or something like that, land on these lakes, you could tell these fish are floating on the shore, because they have no air and stuff and they went to the bottom. So pretty soon we won’t be having any fish on these lakes anymore if there’s no water. They’ve got no air to live on. |
| M27 | I saw the change on the ice, the ice flow and freeze up, break up, because when we lived on the Embarass, we’d stay on the Embarass, the flow of the water, the ice was thicker. From where we stayed at the cabin, there would be, sandbars were starting, I could remember that, sandbars are starting, jet boats used to get stuck in front of the cabin, that’s in the early seventies. … Thick ice and it would jam the river and the water would come over that, I guess that’s how we would get the creeks and the sleughs filled up, that was like in the seventies. And it doesn’t happen any more, like the ice is not as thick. |
| M24 | Yes, once you get to smell the odors, if you’ve got the right wind, even in Fort McMurray here, I lived in Fort MacKay there and I’ve always hung around with people from Fort McKay and I know them all, I know a lot of them, and before you would only get the smells when the wind was coming from the south, south east a little bit, because there was only Syncrude and Suncor, now every different day you get an odor in Fort MacKay because you’ve got CNRL north of there now. |

**Use of Project Areas**
| M15 | We used to go up in there, used to go out and my brother’s mother-in-law used to have a cabin up there in Muskeg Lake… That’s Kearl Lake, we used to call it Muskeg Lake but ….they’ve changed a lot of names of the lakes, traditional names. |
| M15 | Around the lake there [Kearl Lake] and up this way, you could hunt moose all along there, used to be nice, there used to be berries along there and stuff, I don’t know if [named individual]’s still picking… All this [area south of Kearl Lake] has been developed now, eh, there’s no way to get there. |
| M15 | Around ‘86, ‘87 around there, my brother started staying with [named individual]’s daughter. I started going around the traplines, pick berries, go hunting, go hunt chickens, go hunt ducks, moose, whatever. (Interviewer: So when you started staying over there, was all the industry there already?) No, but I think there were already roads in there, they were already travelling, drillings and stuff, seeing if there was a way in, stuff like that, because there were all kinds of cut lines in that area. |
| M24 | Like you know that they opened that mine up in the early eighties and then it just froze and they built the bridge that time, well all of that was wide open places and as soon as we had vehicles, and even with the old man, we used to go in there [Kearl Lake and Muskeg River area] and we used to go hunting in there all the time. There’s old cut leases, logging leases and there’s roads all through that area and it was all high ground, so I spent a lot of time in there, we took a lot of moose out of there, we took deer out of there, we took wood, ducks, yeah, used to be driving along in the truck and I’d shoot ducks in the ditch with a shotgun. Even up to a couple of years ago. Now it’s so busy that you can’t, you pretty much can’t go in there. Like we used to go to the first little lake down the Canterra road, onto the left there. |
| M24 | When you turn off to the right to go to Jackpine, this one, there’s a little lake, it’s not very far I know … This little lake right here [pointing at map] I do believe it is, there’s a little road, we used to go and do a lot of hunting right in here, calling and everything else, this was a good moose area, this whole area. Actually this whole road. Right in there there’s a little road that goes in there … This is just a short little road, it takes minutes to get up here. Right in here we used to call and hunt moose there all the time. |
| M24 | I was working for [named individual], I was running on his barge, and that would have been 1985. Anyways we used to go and get our water out of the Muskeg, we’d go down this road, where would we go in, I’m sure we would go down this road and we would drive to here I think. We’d drive right into the water and we’d fill our water barrels for the barge. (Interviewer: For the barge, where you would actually drink water?) Yes, that was our drinking water. Muskeg was nice and clear. The Albion site wasn’t there yet but Shell was open and the drainage ditches were on, but we used to drive right into the river with the half-ton truck and we’d fill two big barrels full of water, fresh water, and that was our water for the boat, I worked for [named individual], I was a deck hand on his boat for a fall. |
| M24 | This is where we did a lot of our stuff, like we took a lot of moose out of here, lots of everything, we cut wood in here, this is like our church, everything, this is where we
grew up. All in here. Me and my mother actually spent a spring there one time. What happened is my dad and Michael, Mike quit school young, he quit school in Grade 7, so anyways, if you’re not going to go to school, you’re going to go to work, go trapping or something, me and my mother went down there and he came back and he was going to come back the next weekend but a shut down happened so he ended up meeting us there for like a month which was all right. We did a spring hunt and we killed beaver, got to bond with my mother, it was pretty good, you know, she was born in the bush, knew more than I did, which was pretty cool.

You know, a lot of it was it was summer time and it was easily accessible by vehicle, because of the Canterra Road and we always knew it was good hunting there once they put the Bridge to Nowhere in and we just started going in there, we used to go in every direction in the Fort McMurray area here, down all these roads, like we were brought up in the bush basically so I mean you covered all the areas and that was a pretty popular place, it was only, it was close to town, it’s an hour or an hour and a half away. You could go and spend a day there and do whatever, even have a weiner roast whatever and we always carry guns, I mean that’s just the way it was and if you seen a duck, you shot a duck, if you seen a moose, if it was that time of the year, the proper time of the year, you shot the moose and you took him home and I have a lot of family here so I mean we’d all split it up and it was all good.

The Athabasca River the same thing, when we had the boats and everything else and going down in that area, we have a trapline a hundred miles down the Athabasca River at Poplar Point and so we would travel the river and the river was the same thing, if you seen, sometimes we would even camp on the river, it’d get late or whatever or if you killed a moose, you’d do a little bit of smoking or just spend the time right there so you don’t have to cut it all up and rush home, you could just spend time right there on the river, there’s many times I’ve just laid on the ground in a tarp and sleeping bag and that was our night on the river or in the bush.

When I was twenty something years old, I was born in 1952, so them days in the seventies, earlier seventies, maybe ’74 or ’76, in between there, we used to come hunting all the way from Fort Chip to the Muskeg River and Kearl Lake area] with a dog team sometimes you know, come all the way down there just to come hunting for moose or something in that area.

And sometimes when it was summer time, when we used to come up from Fort Chip, we’d come to McMurray, September before school starts, we used to go hunting, used to make some dried fish, some of those areas, down a creek and you’d come to a big lake [Kearl Lake or McClelland Lake], spent our time picking berries and my mum, all our family used to spend all our time making dried fish and dried meat if we killed a moose. See a lot of moose some days.

It’s a long way from Chip but on the way up we’d hunt because them days, we used to stay in the mission, we’d never see our family to maybe Christmas time, September or something, sometime we used to go to the mission, we don’t come over there to the 26th of December to see our family in the bush, we stay with them till after New Year’s, we go back in the mission again. So the reason why we come hunting all the way down there is groceries in McMurray. So all the way up we hunt and dried fish and
dried meat and on the way, going back now, when we get up here we hunt and then we go grocery shopping, that’s fall time, people going in the bush and stuff. A lot of people on the river, some days, and now only one boat, used to be lots of boats, just coming here in September for hunting and stuff, used to be a lot of moose up here.

M18

I was hunting in the area, I wasn’t trapping …, just go there [Kearl Lake area] hunting moose, come all the way from Fort Chip, I know I’m going to kill a moose there, so it’s all clear to hunting, it’s a real good place, so that’s why I always come up there.

M18

And Kearl Lake has stuff like that, you know, right around the spring time, March something, you go down there, you’ve just got to sit by the lake there with your dogs and moose they used to come to that lake, drink that salty, spring water that comes out, right at the overflow. You know that overflow [water flowing onto ice surface from cracks in the ice], … I found that out like I thought to myself oh, I’m going to drink water, there’s lots of water here, I drank some water and it just taste like salt. From Kearl Lake. You go towards Clearwater here, there’s one lake in the back here, you can go alongside, lot of cabins alongside there and if you ever drink from one of those lakes that have water on top of the ice, I see moose there all the time, even when you’re driving with the truck, you see them all the time, maybe ten, fifteen moose you see in that lake, just drinking that stuff. Same thing with Kearl Lake like that, it’s not the kind of water that tastes like that, it’s just that overflow.

M32

There was no indication, we just passed there today like, right around the mouth on the winter road, two days later, we didn’t know, not enough people now, say in Embarass, there was some kind of a little jam there, the water came out this way, Cree Creek this way and influenced our coming home, all these tributaries and creeks, we didn’t know the water was rushing in. So now we come home, poof, right in the water, ice break, poof, in the water and every skidoo, me and buddy in the water and everything but we didn’t know that it was rotted, the ice, we didn’t know that water was coming, because there’s not enough people on the land, nobody over there now to say hey, you guys, there’s a jam over here, I just come from there, watch the water, like there was warnings before. Now, poof, in the water, now we come out, we dry off, now to leave and all of a suddenly, the creeks are open and the older guys say it’s coming from over here. Overnight it could just flood like that, got me learning just watching all this stuff.

So it’s harder to get with change, even climate change, without industry influence, like industry just adds to it tenfold, but just in the normal time it changed like, condition of water, no indications of what’s coming, all of a sudden everything’s rotted, like travelling is hazardous, the indications are not there anymore, the norm, but without industry, it’s nature and then constantly to be out there to read the change, every year you’re ready for it but with industry now, boom, it just adds to it, they’re taking everything away, it’s almost like nature is good, this is natural water depletion and stuff because I’ve been watching it ever since I was a kid and I believe in nature too and the climate change and the ten thousand cycle and all this and that, but industry is just like another nature, like it’s a bad nature, you throw it in with the natural stuff, boy, it just messes everything up so it confuses us too now, the water, like somebody said there’s a big pipe, big as this road, they seen there.
| M32  | …I used to like going hunting over there, as soon as they open the road, Kearl lake was my favourite place to go hunting. Kearl Lake, not too long ago. See, I've been home ten years, eleven, twelve years, say eleven years ago. Nobody goes in there, just these surveyors and these guys looking for stuff. I can’t going in there now, I like going over there, it’s one of my favourite spots since I’ve been around McMurray ... |
| M35  | Yeah, always go to McClelland Lake, from MacKay, and we would just go through there and that’s before the industry got there. Go hunting and stuff, lots of berries and stuff, my son-in-law used to bring me over there, his grandfather and his uncle used to go with him and stuff like that, that’s how I got to know the place, go with him all the time. So after everything’s been cut down, … you know, my son-in-law he asked me and no, I said, all I see is cut lines, wide open spaces. |
| M32  | In the early eighties, when I was younger, like 1987, everything was going good and we had boats, motors, those days we used to travel lots and a lot of it those days was for fun, like we would go to McMurray to have fun for a weekend, that sort of thing. We would go right to Shell [Landing] and I haven't been to Shell Landing now, twenty, twenty-five years, we used to go into Shell with our boats, not Shell Landing, the Snye. And we used to park right there where the planes parked and then leave our boats under the docks and it was good, now you can’t do that. |
| M15  | He (Snowbird) moved there, there used to be an old portage road there, that’s why you call it Embarass Portage, people used to come and there used to be a store right across the river from there and they used to come there and trade their furs and stuff like that, buy food. There’s an old portage road there but when my grandfather first moved there, he used to stay down …, a long portage by Cree Creek. That’s where he stayed first time and then after awhile the people he was staying with told him to move up there, go set your camp up there, there’s a nice creek in there and good water, a lot of fish. So that’s what he did, he moved there and him and his boy, my granny, they started building their cabins there, so after he moved there and … Martin moved there and Big Windy, Val McKay, Ernie Couterie, Charlie Tucker, they all built cabins in there. So there was about seven cabins there, then the Rangers built their cabin there too. Used to be nice, all these people living around there. A lot of trappers everywhere, I thought that was the only life, I didn’t think about Edmonton here, I didn’t think I would ever be here, I thought I would be over there all my life in the bush, trapping, hunting. |
| M15  | Just like my grandfather Snowbird used to say, the future, he said, when I was young, he said, snow, he said, deep, he said, the moose used to drag their bellies in the snow and the hunters used to chase them with snowshoes he said, use spears and bow and arrows to get them, to catch them up because moose couldn’t move. They just ran with their snowshoes, that’s how deep the snow used to be, lots of water back then, so over here in the future, he said, you guys are going to be in some kind of heat wave, it’s going to be really hot, he said, there will be no more snow, he said. Not much snow now, he said, but even then, this was in the eighties and we used to get nice big snowfalls like that. |
## Cultural Effects

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<th>M15</th>
<th>I would like to go back. Went back to the trapline and it doesn’t look the same anymore. If you look back at the sloughs there it’s all dry. Used to be a nice big slough there, the lake in the back there and everything, it doesn’t flood anymore because the water went down.</th>
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<tr>
<td>M15</td>
<td>Well, I guess, something that’s not natural. In fact, spiritual life, spiritual being, …expecting spiritual ways, …because all this is not natural, it’s taking away from the natural way, it’s polluting everything, same with the spiritual, like everything is spiritual here, the whole bush is spiritual. You walk in the bush there, everything is alive around you, you respect everything, you respect animal life and when you kill an animal you give thanks, put tobacco down… light smudges, that’s how we used to do it. But this other way it takes your mind away from the spiritual way of life. And the water is spiritual and people pray over the water when they drink it. Used to pray over water, water is spiritual, purification, purify your body and stuff. Now the effects of it, because water is contaminated, it effects your spiritual way of life. It’s not pure anymore, it’s contaminated. You pray for that purification, your body, you take it and you’re contaminating your body.</td>
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<td>M15</td>
<td>You can’t live off the land anymore, there’s nothing there, so had to come out here to work. The environment is not very good there, and water and all this and people are all getting cancer, a lot of people with cancer in Chip. (Interviewer: There’s a lot of jobs in Fort McKay and Fort McMurray and areas.) I don’t like it up there, it stinks and when I was working at Fort McKay I could smell that every day. I started to get headaches and the same old feeling like I had from when I was working at Syncrude, you know, stuffy nose, dry throat, it’s no good. Moved out of there. I used to go to work from here [Edmonton], like about two years in a row, from here, back and forth, but I didn’t like that either…. So I gave it up. I don’t like, everything up there is just, I don’t know, that town is corrupted and people are corrupted and the almighty dollar. They have money so they’re snobby, people up there. Same with Fort McKay I found it like that, they’re up here and you’re down there, they look at you like that.</td>
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<td>M15</td>
<td>Till about eighteen. I took off from home the first time, … when I was fifteen, ended up in McMurray, my dad came and picked me up, took me back, trapline. I used to like the traplines anyway … It felt like home, freedom, you just had the laws of nature and that’s it, just got to watch yourself and be careful. You’ve always got to think before you make a move, always be prepared for whatever. I guess the land is sacred for us, it’s like when you take something, you’ve got to give it back, like tobacco and stuff, you pick herbs, like roots and whatever, you’ve got to give back and pay them, put tobacco. That’s number one for Natives is tobacco, we use it for prayer too. We pray with it, smoke it, you don’t inhale it, blow the smoke out, you</td>
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pray with that tobacco. And even water, people pray over the water and try to, they pray for water. Like I’ve been in ceremonies around here, people praying for water, for the future, already thinking about their grandchildren’s children and they’re praying way ahead and they’re asking what’s going to be left for them. With all this activity happening up there at Syncrude, probably just get worse. They’re like a big mafia those guys, they don’t care, as long as they have money, that’s it. They don’t care about nothing else. They’re sitting in their big offices in the States over there, some of them, getting fat off our land. They don’t care what’s happening over here because they’re not here, they’re up there, in the States, most of them, some in Calgary.

M15

Well, I don’t know – I hope they don’t expand like you said they were going to because it is just going to get worse. What happened too was that Greenpeace, they stopped trapping, so I guess the only way to survive now in the bush, if you’re going to go live in the bush, is you got to have some market for the animals so that you can make money to live. Pollution, they’ve got to slow that down, there will be nothing for our children’s children’s children. They’ll wipe us out, like a genocide, slow but effective, I guess. Who knows what they put in our water, been trying to put something in the water to wipe us out, you never know. Get rid of that Indian problem, that’s what we were. And they just take, take, take, they don’t give nothing back. There’s no balance, everything is off balance.

Like Native people when we take, we give back. We only take what we need. We don’t kill a whole bunch of animals for nothing and just leave them to rot. You’ve just got to take what you need and that’s it, to survive. These guys are taking it all. My grandfather used to tell me, bitumen, they used to use it as a medicine, put it on a cut or something that was infected, it would suck all the infection out, he said that. They don’t know that, Syncrude don’t know that. They say, ah, we used to use it for canoes, patching canoes, that’s not all. We respected that, we knew, leave it. You use it when you have to, leave the rest, leave it natural. Now they break it all up and take all these chemicals and other shit out of it, like they create it. But if they just left it naturally, it doesn’t hurt you.

M18

There used to be something here, it’s hard to show them something that is not there any more, they just have to listen to stories, the history, a lot of the things that I saw in my time, my grandchildren will never see. It’s not going to be the same. Areas that are identified in my time and my father’s time are not going to be there. So that’s going to be lost too, except the stories, the history books. It’s pretty sad.

M29

Maybe it will be worse, you never know. With things changing, I don’t know what’s getting deformed, now even the bears are starting acting up now. Long ago, you see a bear, right now he takes off, now you see a bear, he’ll chase you, he’ll go after you. Everything’s changing. You can’t trust a bear now. You have to take a gun. One time … he chased us, at night, came charging us, and I didn’t have no gun. And a bear never bothers people, never, they’ll never go near a camp but now they will just
| M29 | It's my home [bush areas north and south of Fort Chipewyan]. I would never live in Fort McMurray, the reason why I stayed there is I worked from there. But to live in a place like that, never. I love bush life, it's my home. I've been brought up in the bush. |
| M22 | I miss it, it was nice back there. Because there was so much different, like I could go out there and get anything I wanted. And now I can't and it sucks… most of the time I'd bring both my shotgun and rifle with me so I was guaranteed to come back with something. There was a lot of moose back there. Especially before they clear-cutted and everything like that, it was really well grown in before, now it's just so open and it's not the same. The tracks are just crazy. |
| M22 | Mmm, just don't want to go back there. Like I said I haven't been to some of those places in quite awhile just because it's not there anymore, it's just big plants now. |
| M39 | [translated from Cree at time of interview] He said he didn't throw his land away but because of the water quality, that's why he is staying over here [in Edmonton], because nobody ever throws their land away. If the land was good, he would be back there, if the water was good. He said even if he moved back there, nothing to live on on the land, he said, all the animals are gone, even the fish, he said, they're poisoned too he said. So I guess what he's saying is, what's the use to go back? |
| M39 | [translated from Cree at time of interview] He says if he had to talk to the Prime Minister, he would tell him to stop, you're going to ruin the land, you're going to ruin more. I'd tell him to stop, he says, because for me, he says, I'm already just about through my life but you guys now, once they take all that, where are you guys going to live, where are you going to go, he says, do you want to go and live out in the bush? There's nothing there, they're cutting all the trees down too, he said. Where are you going to go, he says, you guys not going to have nowhere to live, probably if you want to go build a house here and they tell you no, where are you going to live? maybe you'll have to live in a little tent. Squatting somewhere. He says the white people are buying it up, they're all buying everything up, he said. They won't let you live there, where are you going to live? There's nothing left. |
| M18 | Right now what's really killing us is those Shell and all those oil companies are moving in now, they have no respect for Mikisew First Nations hunting, they breaking up our hunting grounds. Even right now, that project you're talking about, … People don't hunt there no more because they're having a hard time to even pass through there to get by that, so I think they're driving away all the animals. A lot of times, I used to work there before when they were building it, some of these guys, at the meetings, don't treat the animals, like don't treat the foxes, now if you were to go there, if you had something in your mind, and you go there, there's nothing there, no more for animals to eat, they took away all the food from the animals. How in the hell do you expect wildlife to grow there, it will take a long time for the growth of the land to come to natural, it wouldn't come back overnight. A lot of times I went to the meetings, they said, okay, we're going to use the guy's land, we're going to put it
back like the way it is. I mean how in the hell are you going to put it back the way it is, you drove all the moose away and everything away from there, all the animals, you’re going to bring the animals back now? they’re not going to survive in that area, you know what I mean? even foxes like there was a time when you saw a burned trapline, everyone knew that that trapline would be no good because there's nothing for animals to eat, they move away. So that change in the land when you destroy it like that, the nature, it don’t come back just like that. Wherever the traplines are, it’s all destroyed and now Shell’s taken over someone else’s trapline, it’s a waste of time. It’s hard to live our way right now. I remember them days, a lot of people used to go hunting all over the place with dogs and stuff like that, everybody is starting to give up now because … oil company is taking over.

| M18 | I don’t know because that oil company you have there, it’s taken over everything there, even from there on, on the east side of that Shell Landing, it’s all prairie right to the other side of Firebag, how many companies, about four or five companies there, just that area. There too it’s starting to clear out, you know, eventually we’re not going to have no land where to hunt. Past year, easy going for people that come in from Fort Chip because all the moose, most up the river. Because all the moose had nowhere to go but the river, pretty soon it will be too hot for moose, have to be in the water, so there’s no water even now, they have to be in the river. A long time ago, like I’m telling you, … there used to be lots of little creeks that goes to a big lake, we used to have high water at that time. But now since these oil companies move in, the water is going down and down, even the environment don’t do anything about it, you don’t know how much water the government is using for the [industrial] plants. |
| M38 | Because all the pollution comes up here, that’s why I’m missing out on my daughter, I’m missing out on my grandson, the interactions we could have. I’m happy for Skype, it’s the closest thing we have for interacting with each other but like I can talk to him every day but I don’t get to interact with him, I don’t get to show him all the traditional things that he could be doing in Fort Chip, he could be going setting rabbit snares and setting a net, he could be going on a job for the camp, we could be making all kinds of different crafts, we could be walking out in the forest and there’s so much learning for a child and we miss out on that because my daughter chooses not to move back to Fort Chip, she doesn’t want to get her cancer again, I don’t want her to get her cancer, there’s not too much we can do. |
| M38 | My grandchildren and my children, they’ll never come back to Fort Chip. And because everything is being polluted, what do we have to pass onto them? there’s absolutely nothing. Once they poison all our water, like that old saying, once they poison everything, there’s nothing to pass on to our children. We won’t be eating wild meat pretty soon, like there’s less and less waterfowl coming, it’s spring time now, we should see tons and tons of them flying overhead, they’re stopping at all those tailing ponds over there for a drink and then they just don’t come back up. They could hide the facts from everybody. Industry could because they could, and we know. We know because we see them or we don’t see them, we know the facts. But there’s
really nothing to pass onto our children. Maybe my generation, may the next generation, but that’s it. Because everything, our delta is drying up, they’re going to build another dam there in B.C. and that’s going to dry up our delta more. And then our water’s going to go down and so pollution is going to be more concentrated and it’s going to be lower, you won’t even be able to go out by boat, there’s so many things that are just terrible, but I still love this place. I’m still going to stay here. So I’m kind of caught.

M38  Just looking at Fort Chip, like we love our little community, we love living here, whoever’s here just loves living here. They’re born and raised here and there’s some people that are imports, they love Fort Chip, came here to visit and stayed, but not very many of them. But still, we’re still here and we’re not going to move, you know, so it’ll probably kill us. We’ll probably end up with lots of cancers and all these different things, different diseases but we’re still here. And I just can’t picture, even in the future like I can’t picture a whole village getting up and moving to a different spot, you know, I just can’t picture that, even though the lake is polluted I think we’re all going to be here and we all have to drink bottled water.

My aunt, my mum’s sister, she was a really smart lady. When we were young, she was really poor too. But we were all poor. She said in the future, you’re going to drink water from a bottle and we thought she was crazy, I thought she was silly, I thought, oh, this old lady is talking stupid, that was my mother’s sister. She said, in the future, you’re going to buy water, is what she said and then you could just dip your cup into the lake or the rivers and just drink it like that. So I thought she wasn’t all there, all the time she was smarter than everybody. I’m sixty now, so I was about five, six, about eight years old when she first told me that and I didn’t believe her.

M32  It’s a relief I think, it’s just a break from the hard core industry life there, you know, the grind of it and it’s in the blood, and it’s just a feeling, like I can kill one duck, I give you that duck, man, I feel good, I don’t have to eat that duck but I will, I know, because I’ll get more, but it’s to see your face because nobody else is giving ducks anymore, like the old people, to see them, like I say, I don’t want that duck, I’ll give, but I know I’ll get more, I’m capable, that person can’t, so to see the look on their face, that’s all it is, they’re going to eat and you know, it’s just a feeling and it’s a good feeling. I look forward to that, I look forward to feeding people … and then to get out, like that’s my life to get out so if I can get out and help you out the same time, be it subsistence or whatever, that’s what this is about.

M32  For me it was continuing the lifestyle, continuing enjoying the air, just to be outside, fishing at the Bridge to Nowhere, that’s where I used to go to when I was in McMurray, it’s continuing the lifestyle. Like I could easily have ended up like a zombie in Syncrude, I could have easily done that, it was all there, but I don’t like that lifestyle, I don’t like working 24/7 and get up, go to work, go to sleep, get up, go to work, go to sleep, for me it’s the continuing of the lifestyle and teach my kids to learn more. I learned from the McKay boys, I learn from you, you take me, I’ll learn something, so it’s just the continuance of it and getting better at it. And then we’re going to need it, we’re going to need our survival skills, that’s all there is to it, I’m a believer of that, I believe, it’s not like we’re not going to have no coffee, no tea, no
butter, but we’re going to have to adjust I think, it’s going to be hard to get stuff, the pace the world’s going. The big city is going to take everything, we’re going to end up with maybe flour if we’re lucky. We have to continue to survive, to learn these skills, they might be needed before it all happens, but I want to pass it onto my boy because he’s going to have to learn how to survive … There’s not going to be any industry, there’s not going to be any animals, so how is he going to survive? he’s got to learn to adjust and to accept and to be prepared for a big change. If you want to stay on the land, get away from it all, well, he’s going to be able to…

M32

They’re not getting the opportunity that they used to, it’s up to people like me … these people you’re interviewing, to take them on the land, to teach them, like what was done for me, like I say, in my day we had no choice, we didn’t know anything else, we didn’t have a choice to go in the boat or go to the theatre. So we jumped on the boat, that’s all we know, it’s just a natural thing, it’s just like kids going to play hockey or something, it just comes natural, it’s there for them, they learned that, it’s in their environment to play hockey, so they go play hockey like nothing. Us guys we go and jump in the boat like nothing, go hunting like it’s nothing, it’s like every day. Today, it’s harder for the kids because us older people are dying off and then us older people are working the oil sands, like I say. A good example, my buddy hasn’t taken his kids out in the land and they’re big now and they haven’t been out there, so they lost that opportunity by their dad having an easy life in the oil patch. The guy is doing good in the oil patch but his kids are suffering over here, they’re not learning nothing because they’re dad is working the oil patch and I see his kids today still don’t go out. I take his kids out, with his kid, my kid, I take other kids out all the time, ones that don’t have a chance. Whether they learn something or not, it don’t matter, it’s having them out there, so the kids today don’t have as much chance because I’d say a little bit to do with the oil patch because they want … they want the 16, 17, 18 year old to get out of school in Fort Chip, come to the oil patch. We give you big money, we train you, that kid goes to the oil patch, there’s kids been there 35 years, buddy, I know two people my age, been there thirty years now. They come to town here, they have no desire to go out in the bush. At one time they did, so you see what that does too is oil patch takes my buddy out there, his kids are not learning nothing about the bush, nothing about the bush. And oil patch wins, because they’ve got buddy there, they’re feeding him right out of their hands, just making it easy for him, so five or six kids over here, they eliminate those six kids from having to fly them down the road because this guy’s not taking his kids out.

M35

You know, if there’s a burial site there, I don’t think people want it to be moved or anything. They are very, very strict, you know what I mean? People get together and can’t get in the site, they just about can’t remember. People don’t know what’s there but people from long ago know what’s there. …, no matter who. Just like me, there’s a burial site in Birch River, what if there’s oil underneath there? I’ll say no, you can’t dig there because that’s a burial site, can’t dig around when somebody’s buried there, got to be respect.

M25

There’s no point going into those areas because they’re there now. So the sound, the clear cuttings they got, there’s nothing there anymore.
### Observed Changes in Animals/Food Harvesting

| M29 | The air is no good for them, that’s one thing about it… Like now, these birds, like waveys and geese, stuff like that, most of them they’re flying more on the west side than they used to fly right here. Not much flying over right here, you notice that, I don’t know, but we notice that. Unlike before, before there’s millions, now there’s just a few, more on the west side. (Interviewer: Over towards Lake Claire?) Yeah, past it. That’s where they fly. Going a different route now, on account of the air, I guess, I don’t know. And the grass are not as good like before for them. Grass don’t grow as good as before, that’s what they eat, those roots and now everything is all dried up, that’s why they’re flying different places. And what about the muskrats? Nothing. They’re all gone, you don’t see any muskrats but of course that’s water, I know. The problem is water, that’s what’s killing them, no water, the water is not moving in the little lakes are just dying, that’s what’s killing them, not like before, used to be high water, used to be a lot of rats, now there’s nothing. |
| M18 | And now it’s going north now. You look at it, Kearl Lake, you stay on this side, all the way to Firebag, it’s just mostly a prairie now. Some days I remember we used to be here, as soon as you pass MacKay Bridge there, that Bridge to Nowhere, there used to be thousands of moose at one side, you can’t hunt there, on the right hand side across the bridge, that’s all the way right from there to that landing on the right hand side there, you can’t touch moose, that’s where the moose used to be, there would be about a thousand moose in there. |
| M27 | Like just this past winter my uncle and Teddy got a moose that they couldn’t move. It wasn’t shot, nothing, it was just sitting there, couldn’t move, that was early this fall, that’s around the Gull River area, Birch River. And then they found one, two, three, I think it was three dead, one otter and two fox just dead. It was around the same area, not that close but it was within that big area. |
| M32 | Whether that’s natural change or industry change, it’s a change, so now we buy gas, we go hundred miles to get caribous. We might have to do that, go hundred miles to get hundred ducks. So it’s going to be an expedition now maybe but if this wasn’t here, then I still can stay in my immediate area, birds would be coming for a thousand years, for my kids and kids and kids and kids, but it still going to come but it’s going to be less, if this keeps up, maybe there will be nothing, I don’t know, but I still believe, it’s been here for ten thousand years, the fly way, it’s going to be here for another ten thousand years, so I’m not too afraid of that, it’s just the quantity and stuff, and maybe even quality down the road, maybe birds will be no good to eat down the road at all but you don’t know that yet … No, I believe we’re still going to be doing it and I’m going to be out there, I’m going to be living out there, like I say, I will have the best of both worlds, I’ll work in the bush, work in town, just like always, but more emphasis on the bush. |
| M32 | The biggest thing that I notice, I really notice, is the berries. Gooseberries, I remember any of these hills, big purple gooseberries. I’m not saying what happened to them but now you go look for gooseberries, you’re lucky if you find little scrawny, |
little white, little things on the bare gooseberry bushes, in the rocks and stuff. Saskatoons, I don’t know what it is but you don’t find those big purple lush Saskatoon berries anymore, they’re little dried out little things, it’s almost like sun baked, or something, I don’t know if it’s from the air, I mean every little thing is more sensible to other things, but berries mostly, gooseberries, Saskatoon berries, those are the two that really stand out for me as far as plants go...

### Avoidance (Food Consumption)

| M15 | I mean it doesn’t take a smart person to realize that it’s affecting all our livelihood up there and the river goes all the way down to the Lake Athabasca and they’re affecting all the animals, there’s no muskrat anymore up there. And the fish, nobody wants to eat fish anymore because they’re all getting contaminated. Moose and stuff they’re getting sick. |
| M15 | It’s scary now to eat wild meat because you never know what they might have, if you eat that meat you might catch it. That’s how a lot of these people get sick up there, these older ones, get cancer, stomach cancer and stuff like that from the fish and rabbit, whatever, muskrat, because they live in the water, muskrat, the beaver meat that they eat. I remember this one time this guy gave us some bear meat … I was cutting the meat, this worm came out, it was about this long and had a little black head, it was pointy, and it was going right through the meat like nothing, I don’t know what you call those worms but we couldn’t eat it, we had to turn all that, because we didn’t want the dogs or anything to catch something, so we went and took it out and we went to that guy’s place and he was boiling some, so we told him about it, don’t eat that because there’s worms in there. Even when we were trapping up there, when you cut rabbits, you gut them and stuff, you’ve got the liver and lungs and all that, some had little white spots on their liver already, you know you couldn’t eat them. Burn it up. |
| M24 | Due to the pollution, you’re scared of everything nowadays, they’re scared of the animals, like before when you knock a moose off, you’re cooking a side of ribs right there in the fire, right at the site, now you’re a little hesitant, you know, is this a good area? are we safe eating this animal? |
| M29 | For hunting or whatever, stay away from that area. Because it affects animals, like what moose eat, what comes out of the [industrial] plant, it falls on the plants and that’s what affects the animals. Animals, we shoot moose around that area, it’s no good, it don’t taste like moose meat, it’s got a different taste and they’re not as healthy as the ones you would find near Birch Mountain and stuff like that, about a fifty mile area. That’s how that [industrial] plant affects animals, wildlife. |
| M29 | Well now, a couple of years ago I guess, a couple of years I stopped, all kind of industry and everything, burning brush and all that stuff and now they haul oil, all kinds of chemicals, so wherever they stop, it’s going to drip someplace or whatever, a little spill here and there. |
sometimes you go to boom town and you go to the malls, see old people, they say oh … we come from Chip, have you got any moose meat? have you got any rats or rabbits and stuff, no, they want to go hunting but they can’t go hunting around here. They know that the plants - anything around there, they don’t want to eat it. So I think if the plants are not here, some of these people they would have a little more money because they all would go hunting around here from Chip anyways, everybody would be eating meat and stuff. But with the plants out here, it’s kind of hard, some of these guys go hunting in Chip, so it’s a long ways for you to go hunting especially the price of gas and stuff right now.

No I haven’t taken them since then, last time I was up in Fort Chip, it’s over now, I know I couldn’t make a living off trapping so would have to come to work, even now, I kill a rabbit or a chicken or something, my girls want to know where I kill it from. You know, they’re wondering. A long time ago in Chip, no problems, they kill rats or anything there to eat, even the summer time we see the rats.

Because that’s the food I was raised with and that’s the food that has always kept me alive all these years and my mum and dad were very traditional and they raised us very traditional and if I’m going to die, I’m going to die. And that’s the way I look at it. If I see a fish with lesions on it, I’m not going to eat it, it would be common sense prevails too, but nothing is going to scare me out of here, nothing is going to, I love Fort Chip, Fort Chip is my home and I was born in Dog Head, in the Dog Head Reserve and our homestead is in Peace Point Reserve and so I’m not going to move out of Fort Chip, I have no plans of moving out.

In Firebag, should I kill that moose, I wonder, maybe moose is better back home, a hundred miles away. So you see what I mean about hesitance, I’ll still kill that moose mind you, because that’s the chance I’ve got, I’m not going to miss that chance, but it’s with hesitance and I don’t worry about it once I got the meat and stuff, I don’t worry about arsenic and stuff, I more worry about what you could see, with their diseases, their kidney, visual stuff, you know, if there’s something wrong with the animal, we usually rely on the colour of the meat and kidneys, and lungs, what’s in their lungs, any abnormalities and maybe won’t touch it but if it’s all looking nice and healthy well then probably nothing wrong with it like, it’s what we don’t see.

A sickly animal looks like a sickly animal, you know what I mean, stringy and maybe kind of juice like, it’s not, fish are easier to explain, fish used to be nice and firm, fish, pickerel, all of them, healthy, nice vibrant looking fish. Now, they’re more runny, they don’t taste as good because I’ve eaten them out of the Firebag a year, year and a half ago and they’re just not the same, it’s not the same fish …

Yeah, on every kind of fish, yeah. I think jackfish might be the strongest ones, you don’t see too much of the sores on the outside but on the inside you can see the little puss
sacs on the side of the fish. On the other fish you can see the sores on the outside, jackfish you see the odd one here and there.

M27 It’s watery. I know when fish are skinny from growing up, like it’s watery, but now like in the summertime usually the meat is kind of thick I guess, I don’t know how to name it, it’s not watery but now it’s watery any time of the year.

M38 My whole diet is wild meat or vegetables. It is scary because now like a lot of people see the lesions on fish and they see bears with worms in them or you could see these poor ducks that still have tar in them, it’s pretty scary.

M25 The fish are not as good as they used to be because like in my days, when I used to fish, the meat was nice and hard, now you take them, you cook them, they’re just soggy.

M18 Well, I started living in McMurray close to about twenty years now. Ever since 20 years and now, now I won’t hunt around the plants because I know what their stuff can do, what falls around the plants, everyone says the worst plant to work for is Suncor, smelly and a lot of stuff and I see a lot of those white people who moved to McMurray here, I don’t know how they do it, they pick berries close to the plant, I would never do it, even moose out here, I’m not starving to shoot a moose close the plant, I go quite aways to the Birch River or I go towards Slave Lake, even Slave Lake is getting bad now, there’s a lot of plants that side. All those plants near Slave Lake you see moose, but they don’t even have hair sometimes.

M18 Since I’ve been in McMurray I go and visit MacKay there and a lot of these people want to go hunting but there’s too many plants around there now. All these workers, they know how moose look like, … to the plant, even then they’ll kill them, the meat is different colour or something inside their belly, there’s some kind of worms or something they have, their bellies are white, maybe cancer or something in them.

**Access and Transportation Issues**

M24 We used to go down every road we could because they were all wide open so we could go down any one of them, it wasn’t too busy, and now you can’t.

M24 It’s not only the pollution thing, it’s the animals have moved back farther from where you could get at them, they were more easily accessible before and they’ve moved or were eliminated, one or the other and industry just shuts you down, you go down any one of these roads and there’s big gates there and they just say you’re not allowed down here anymore and you can’t come in and that’s that.

M24 Like we used to hunt all of Aurora and Shell, when they put the drainage ditches in, all that was left wide open, we used to hunt all that area, where these places are now and now, well of course you know they’re being mined and stuff and you can’t go in there but we used to go in from the north end, you go down the Chip Highway and you go in, McClelland, there used to be road going in here. … You go in here and we used to go
back in here and hunt all these cut lines and I think this is it, … I think that’s the one, so we used to travel that quite a bit. And now you can’t get in there at all, all of this is blocked off, they’re making that a tailings pond.

| M24 | No, that was CNRL’s road, like I used to go when I was staying in MacKay with some of the guys from MacKay and we’d go down and we just went as far as we could go because CNRL built that road, they put the gates up, there’s not much we could really do about that, I mean, I went to the Birch Mountains every year, years ago, with my dad and that was about it. But another thing they do is all these little ponds and stuff along the road, they berm them or put barricades so that the plant people can’t go in there and make messes, well that’s what they say, but I mean we used to go in there and have a picnic or shoot ducks and whatever, but they blocked all the roads off, block every cutline off, every road, they put these big concrete barricades just so nobody can go down these roads and I mean, it’s so the camp people aren’t going down there and making a mess, partying and everything else, but I mean it also restricts us from going down shooting a rabbit or a chicken, like I travel with [named individual] a bit myself and I know him well and the family well and I go with them too. |

| M18 | It didn’t have too much fish there, they plant pickerel … , I tell you what, that lake is loaded with pickerel. They’ve got cameras all over that place. I went fishing there about three years ago, me and my buddy, we snuck in there. I was working for ..., that little lake you’re talking about, it’s right across from there, that lake you’re talking about, that plant… It’s some kind of a lake but there’s nothing going on in that lake, you don’t touch it, you just pump water into it. That’s all. I think maybe just for the fish because there’s a lot of fish in there, I’ll tell you guys, there’s cameras on that lake. There’s sensors, the camera will come on if you go on that lake. |

| M18 | Muskeg … There’s lots of moose still in there right now. A lot of people don’t realize that. And you can’t hunt in there. If you were to go in there right now with skidoo, I’ll tell you, if you want to see moose, that’s where to go. But you have to sneak to go in there. There’s a lot of cut lines in there now. I remember I used to work, we used to sneak back there with my partner with a four by four, boy, you would see the moose. There were beddings and moose standing all over, all the willow just chewed, chewed right to the stump even…All that area is cleared out now, the moose have got to go somewhere… |

| M18 | Well only one thing now, around there, according to the Wildlife regulations like even those oil companies and stuff like that, you can’t fire anything close to the plant because you might hurt somebody because people are working all over the place. So that’s the whole trouble, like you get caught there, what they’ll nail you for, they can’t really nail you because your native, you can kill a moose, but they can nail you for, just like in the McMurray area, they’ve got limits for firearms all over the town here. That same thing they have they would nail you in that area. Now these guys, as long as you’re native, you can shoot them right in that door. These oil companies, you can’t do that no more. They would nail you for something. |

| M29 | …I never, probably wouldn’t even find a place now anyways, so many roads built, new roads. That’s like me and my buddy there, his name is [named individual], we used to hunt from MacKay towards Birch Mountains, it was nice hunting, only a few cut lines |
you’ve got to follow, now a few years later, about three or four years later, me and my other buddy went hunting over there, there was just roads cut and everything, cats making openings, you don’t even know where to go, it’s all that different. There used to be a lot of moose in that area, now there’s nothing, all gone. See surveyors all over, that’s all you would see in the bush. They have cut lines just like this.

M24 Like I said, it was accessibility to a point, now it’s not, like there’s so many plants and people working down there, all of the industry, right from rigs to gravel pits and camps, there’s so many people over there, we’re not crazy shooters, crazy hunters, you don’t want to be down there shooting and everything else while all of this activity and people are down there, but yeah, mainly it was accessibility and nice country, it was beautiful over there.

M18 You’ll have a hard time getting through there now, you need a badge or something to go through the plant, otherwise if you want to go hunting there, you’ve got to make a road, to get around the plants. Some places are big area, like I tell you, you don’t want to hunt … that’s how come people don’t hunt around there no more, government is taking over.

M27 Gates, they have a lot of gates, they say they don’t have gates but I’ve heard hunters saying there’s gates that they have to go through or there’s gates or there’s moose on the other side of the gate, they can’t get at it. So no access plus pollution, those are the things that are preventing people from getting hunting. There’s always a road there that somebody has blocked off.

M32 Kearl Lake, Wandering River, anywhere, Tower Road, west of McMurray there, any of those roads and the reason being was virgin country, you see, it’s something new, nobody had been hunting in there and there’s usually moose right there and now, don’t go there, can’t go there, because I’m going to shoot somebody. What if I missed that moose, I’m going to hit a surveyor over there. That’s scary, I can’t hunt there, because what if I miss something, who the hell is in the bush over there, is it a surveyor, somebody looking for something, you don’t want to shoot over there anymore, you don’t even want to shoot that moose right there on the road, what if it goes right through and it hits that guy over there, even though it’s not bush anymore. So that’s a big reason for not going over there, you might kill somebody plus who wants people watching you, pulling you in and stuff. I still like to, actually what I want to do, I just about went there, they said I could, is just right here in UTS Teck, across the river there, it’s just beautiful in there, animals and stuff, and I went for a tour there, my there was some moose tracks galore. They said I could go in there, within reason, but I don’t believe them, I never went. I wanted to go in there for just driving around and catch a moose, but I didn’t bother, and that’s one of the attractions, in the old days, as soon as they open a road, well then it’s a nice place to go. Don’t have to go there all the time but be first one in, get something and then went over here next time, so right now, no I don’t go in there because of the people, might shoot somebody or people are going to get mad.

M32 Like I say today if I was staying there, I’d still go out in these places, I’ll go look for these new roads, I’d just go, deal with whatever comes, because I usually don’t ask
unless there’s big signs but usually don’t ask nobody nothing, just try to exercise your right and deal with the consequences. I’ve been very fortunate, never had problems, some of the buddies got charged though, in town, for hunting there, yeah.

| M25 | Other things, I guess, I wouldn’t go to my trapping, my hunting, that’s all gone now. That’s on account of those companies. Where are you going to go hunting, everytime you stop somewhere along the river, what do you hear? You hear equipment going, you can’t hunt along the river any more, it’s gone. There’s a lot of times you go up, you get off the boat and maybe walk over, check it out, and all of a sudden you come to a big clearing, where in the hell am I supposed to hunt here? |

### Species specific (caribou):

| M15 | Caribou used to come all the way up past Embarrass and all the way up, probably further up into Lac La Biche area, all through there. And then last years all those things started to happen because of industry and stuff, they quit coming this far. Like last time my grandpa said they came through there was in ‘62 or something like that he said … The whole river was just full. All in the Lac La Biche, Beaver Lake and all that area up here, that’s as far as they used to come a long time ago. There’s probably some stayed back because there’s caribou around Lac La Biche … A lot stayed back because there’s caribou around there. We used to go up to … we used to go on a caribou hunt there. That’s as far as they came, as far as the Athabasca Lake. Before that they used to come all the way up but when all this stuff started happening, it kind of scared them away. |

| M29 | Oh, there’s no caribous now, there’s Woodland but not, there used to be some around Birch River but now lately there’s none. But towards McMurray, west side McMurray towards Chipewyan Lakes, do you know where is at, around that area there’s a lot of Woodland caribous, I don’t know if it’s still now, that was about 15 years ago I went down there, there was lots, lots of Woodland. Yeah, there used to be a little herd around my traline there, we would see them but we don’t shoot them or anything, we don’t bother them, we’re not allowed to kill Woodland caribou in Wood Buffalo, no. And there used to be some elks around Birch Mountains, now I don’t know if there’s any more left. |

| M22 | We were out hunting. We were out for a ride out there in the winter time and actually got some Woodland caribou … That’s actually the first time I’ve tracked them, I’ve hunted buffalo and stuff back home but I’ve never really tracked Woodland caribou. I was with my mum’s ex and his brother in law and we got out and I said, there’s a bunch of young buffalo out here. My uncle got out and looked and he said, there’s caribou here. Sure enough we walked over, we followed this little trail, over this little prairie and there was a bunch standing around there so we took them home… Because I remember it was quite a ways off the road we got those caribou and I was thinking gee, how are we going to carry this back and my uncle came over and said oh these things come with their own sleigh, he said. Makes a slit on the sides and a rope, cut up all the meat, put it back in their hides and they slide nice. He said they come with their own sleighs. Because I thought we were going to have to make trips back and forth, and he said, no, no. I would say about fifteen years ago. |
Appendix 2: Summary of Existing Downstream Effects of Oil Sands Developments on MCFN Rights

This Appendix summarizes potential effects of oil sands development on the ability of MCFN to meaningfully practice treaty rights downstream. An analysis of existing data collected through the 2010 MCFN Athabasca River Use, Knowledge and Change study was conducted to identify existing dynamics affecting MCFN’s ability to hunt, fish, and navigate in the Athabasca watershed north of the Muskeg River. Particular attention was paid to existing adverse effects observed river changes have had on MCFN access to lands within Wood Buffalo Nation Park, including Lake Claire, via Lake Mamawi.

Additional oil sands development along the Athabasca River was reported likely to exacerbate existing impacts on water level and quality and contribute additional impacts to MCFN’s ability to exercise rights on and around the Athabasca River, and within Wood Buffalo National Park.

Downstream Effects on Water Levels

Decreasing water levels of the Athabasca River are of great concern to the MCFN. Boating and water based access is essential to the maintenance of MCFN mode of life. In Spring, Summer and Fall (the primary seasons for hunting, fishing, and subsistence procurement), boat access is the only option for moving between Fort Chipewyan and seasonal camps and villages, Indian Reserves, and core MCFN territories along the Athabasca delta, the river itself, its tributaries, and large areas of MCFN territory within Wood Buffalo National Park that are only accessibly by boat via Lake Mamawi.

Water-based boat access is the preferred means, and often the only possible means (in the absence of roads) by which many MCFN members choose to exercise rights such as hunting, trapping, and fishing, even where road access is possible. The Athabasca River’s delta ecology, and MCFN members’ familiarity with water navigation for subsistence, means that at adequate water levels, a web of interconnected waterways exists that can be used to ‘go anywhere’ in the delta area, and tributaries to the Athabasca River allow access deep into adjacent watersheds. Moose, the preferred game sought by most MCFN hunters, tend to congregate near water in summer months, so boats make for an ideal means of locating, shooting, and carrying the many hundreds of pounds of meat that results from a successful kill. Boats also allow for procurement of fish or terrestrial resources adjacent to river banks, and allow MCFN members residing in Fort McMurray or other southern areas to access areas without disturbance – and increased safety risks – from industrial traffic associated with many of the roads closer to Fort McMurray and the oil sands developments.
In the Athabasca Use, Knowledge and Change Study, areas of lost use and access due to inadequate water levels were documented. The majority of these recorded instances occurred between 2005 and 2010. Loss of use due to low water levels was associated with subsistence values (including hunting and trapping and food gathering areas), habitation values (including camps, cabins), transportation values (including water transportation routes), and cultural / spiritual values (including an important village site at Snowbird’s Camp).

**Downstream Effects on Water Quality**

In interviews for the Athabasca River Use, Knowledge, and Change study, MCFN members expressed perceptions of declining environmental quality, concurrent with industrial development, that were explicitly connected by participants to oil sands mining related emissions, and linked to both risk knowledge communicated by government authorities and other ‘experts,’ as well as local or traditional ecological knowledge related to perceived environmental change.

Frequently reported water quality indicators which MCFN members have reported observing change in include:

- changes in the taste and smell of Athabasca River water,
- presence of unusual foams or films on the water visible on boats or in cooking vessels, and
- the absence or decline of particular species, including insects, along the Athabasca River.

Observed abnormalities in fish, moose, and other game, particularly in the Athabasca delta and Lake Mamawi area, but also upstream along the Athabasca River, are linked by MCFN members to perceived oil sands related contamination and have been observed, and related to important changes in MCFN land and water use since at least the mid-1980’s. Examples of loss of use due to quality include places MCFN members used to live at, permanently or temporarily, and where they not longer feel they can due, at least in part, to perceived contamination of the Athabasca River. Other examples include areas where moose were shot but the meat was left on the land because of abnormalities in the meat, or where fish was caught, but thrown back or fed to dogs because of perceived quality issue (e.g. deformities, loss of colour, excessive slime).

In conjunction with other interview findings, instances of avoidance due to concerns regarding quality suggest that, at least amongst some MCFN land users, a lack of confidence regarding the quality of resources, largely related to perceived oil sands emissions, is having a significant adverse effect on subsistence use and the practice of treaty rights in and around the Athabasca River and downstream of operating oil sands operations. It seems clear that psychosocial factors, consistent with Health Canada guidance (Health Canada 2005) and related to fear of contaminants from oil sands
development on the Athabasca River and surrounding areas, are resulting in avoidance of traditional foods and resources by MCFN members, especially fish and drinking water. This, in turn, is resulting in adverse effects on the meaningful practice of rights by MCFN members along the Athabasca, in the delta, and adjoining tributaries.

Downstream Effects on MCFN Reserve Lands

Issues of water level and quality are of particular importance when the geography of MCFN land use is considered, particularly in relation to MCFN’s access to Wood Buffalo National Park and nearby MCFN reserve lands. Multiple instances of lost use due to water level were reported within Wood Buffalo National Park, including loss of access to cabins, and at least one instance where a cabin site within the park was permanently abandoned, in part due to consistent difficulty in accessing it in recent years.
Appendix 3: Summary of Existing Proponent Mitigations and Commitments of potential Relevance to MCFN Knowledge and Use Practice

The following table was compiled as a list of existing mitigations and commitments that may be relevant to MCFN issues and concerns. It is drawn from the following documents, and may not be complete:

- Selections from the EIA, Volume 3: Air Quality, Noise and Environmental Health. Application for Approval of the Jackpine Mine Expansion Project and the Pierre River Mine Project. (Did not include full review of every page, was a selection including mitigations);
- Golder Technical Memorandum, August 5, 2010 on Shell Canada, Jackpine Expansion, Navigability Assessment, Information Requests;
- Jackpine Mine Expansion, Supplemental Information, Round 1, December 2009;
- Jackpine Mine Expansion, Supplemental Information, Round 2, June 2010; and
## Impact area

### Air quality

<table>
<thead>
<tr>
<th>Proposed mitigation</th>
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</thead>
<tbody>
<tr>
<td>Dust control through road watering at dry times. EIA 2-12 (Summary of EIA)</td>
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<tr>
<td>All air quality parameters were rated as negligible or low environmental consequence.</td>
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<tr>
<td>There are many specific air quality mitigation measures.</td>
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### Noise

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<th>Proposed mitigation</th>
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<tbody>
<tr>
<td>Bird activated cannons fired when birds in area (EIA 2-15), Section 2.3.2</td>
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<tr>
<td>Consultation with parties during construction and operations about noise levels (EIA 2-15), Section 2.3.2</td>
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### Water management

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<th>Proposed mitigation</th>
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<tbody>
<tr>
<td>Operations: Return of groundwater dewatered from overburden materials and PAC to surface water bodies (EIA 2-29, Section 2.5.2.4)</td>
</tr>
<tr>
<td>Closure: topography and drainage system constructed to achieve equivalent capability to similar natural systems … seepage from capped and reclaimed ETDAs will be intercepted and routed through wetlands before being released into environment (EIA 2-29, Section 2.5.2.4)</td>
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### Water withdrawal

<table>
<thead>
<tr>
<th>Proposed mitigation</th>
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<tbody>
<tr>
<td>Operations: All water from plant site in contact with oil sands will be contained within project development areas.</td>
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<tr>
<td>Minimize sediment loading to receiving streams and lakes by routing muskeg drainage, overburden dewatering, to polishing ponds, equipped with oil separation capability (where required) before released to receiving streams. (EIA 2-33, 2.5.3.4)</td>
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<tr>
<td>Closure: erosion protection measures for minimal erosion of embankments and storage facilities during floods. (EIA 2-33, 2.5.3.4)</td>
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<tr>
<td>Research: Surface Water Working Group working on in stream flow needs (EIA 2-33, 2.5.3.4)</td>
</tr>
<tr>
<td>There are specific withdrawal levels discussed with respect to each river and each mine expansion: Jackpine refers to Jackpine Creek, Muskeg River, Kearl Lake; Pierre River Mining Area refers to Big Creek and Eymundson Creek, and Athabasca River EIA 6-12)</td>
</tr>
<tr>
<td>Minimize raw water withdrawal requirements from the Athabasca River by recycling tailings and consolidated tailings porewater release…( EIA 6-340)</td>
</tr>
<tr>
<td>Use staged diversion, drainage and dewatering systems to minimize effects on flows of the Athabasca tributary streams and Athabasca River (EIA 6-340)</td>
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### Water quality

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<th>Proposed mitigation</th>
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<tbody>
<tr>
<td>Polishing ponds: musket drainage and overburden dewatering waters will be directed to polishing ponds equipped with oil removal capabilities to trap eroded soil material, reduce suspended particulates, organics and oxygen-consuming constituents, and allow waters to approach ambient water temperatures, prior to release to the environment. (EIA 2-43, 2.5.4.3)</td>
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<tr>
<td>Closed-circuit water recycling during operations: process-affected waters, runoff and or seepage to be captured and recycled. (EIA 2-43, 2.5.4.3)</td>
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<tr>
<td>Perimeter ditches and wells: tailings pond water to be pumped back into the tailing pond, and at closure to be directed to wetlands, pit lakes or Treatment Lake. These have to be big enough that outflow from reclaimed landscape will be non-toxic before released into natural watercourses and waterbodies. (EIA 2-43, 2.5.4.3)</td>
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<td>Impact area</td>
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<td>Impact area</td>
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<td>Leaving remnant forested</td>
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<td>Impact area</td>
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| Design feature: roads               | Construct straight roads with long sight lines where feasible (EIA 7-10, 7.1.3)  

The pit lakes by the Muskeg River will have a minimum 100-m offset intact adjacent to the river valley. Following mining, Shell will backfill the portions of the mine pit adjacent to the valley. In total, a minimum 200 m offset from the valley crest will be created…slope stability will be critical. (EIA 6-331) |
| Design features: pits by Musket River | Providing for wildlife passage under the Athabasca River bridge on both the east and west banks of the river (EIA 7-11)  
Will be constructed to leave space for potential navigation of the River (Supplemental Information, Round 3, Section 4) |
| Design feature: bridge over Athabasca | The loss of navigation along the Muskeg River over the period of 2041 to closure—Shell proposes to provide land transportation through the project area for river users.  
Will also require the yearly transportation of fish in spring (capture and fish transport) (See response 335a in Shell Canada Limited 22-28, CR020), Jackpine Expansion Supplemental Information, Volume 1, part 3. |
| Design feature: Muskeg River diversion channel | Expected construction between 2024 and 2029—with no design plans or mitigation measures at this time. |
| Continued Consultation              | Shell will continue to consult with all aboriginal stakeholders including FMFN, MCFN and MCFN. |
| Trappers satisfaction with trapping and access to traplines | Shell will facilitate access across the project area by trappers to their traplines. (EIA 2-85, 2.6.3)  
According to industry standards Shell will provide compensations to trappers directly-affect by the project. (EIA 8-5) |
| Employee or contractor education    | Shell is committed to providing a system for cultural diversity awareness training for their employees and contractors regarding respect for traditional resource users, traplines, cabins, trails and equipment. (EIA 2-85, 2.6.3) |
| Reclamation                         | Shell’s approach to reclamation involves direct consultation with First Nations and Métis groups. There are two different reclamation groups that are referred to in the commitments, including one with the FMFN and CEMA (EIA 2-85, 2.6.3) |
| Resource use                        | Remnant corridor between Athabasca River and the PRMA will be at a minimum 250 m wide, while the setback on other watercourses will be 100 m.  
Access to the development area will be managed by Shell”  
Impacts to fish and wildlife, as they affect fishing, hunting and trapping, will be mitigated as described in the Fish and Fish Habitat and Wildlife assessments, including off-site compensation, and  
Reclamation plans will incorporate use values, such as recreational, fishing, hunting, trapping and berry picking capabilities. |
<table>
<thead>
<tr>
<th>Impact area</th>
<th>Proposed mitigation</th>
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<tr>
<td>Monitoring of resource use is not required or planned. However, Shell will report to ASRD if discoveries of new aggregate resources or changes in anticipated aggregate requirements occur. (EIA 2-67, 2.7.2.3)</td>
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<tr>
<td>Visual Aesthetics</td>
<td>Treed buffers will be maintained between road routes, and along the Athabasca river. (EIA 2-68. 2.7.3.3)</td>
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<tr>
<td>(There are other specific visual aesthetic mitigation measures that seem less directly applicable)</td>
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<tr>
<td>Historical resources</td>
<td>Twelve pre contact sites were identified. The report recommends two sites for excavation, or additional shovel testing leading to possible excavation, and then sites are recommended as requiring no further work. (EIA 2-70, 2.7.4.3)</td>
</tr>
<tr>
<td>Socio-Economics: Transportation</td>
<td>Increase of population to be mitigated by:</td>
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<tr>
<td>(EIA 6-13-14)</td>
<td>A camp-based model for housing workers, including recreation, health care and leisure facilities and services; (EIA 6-13-14)</td>
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<tr>
<td>(EIA 6-13-14)</td>
<td>A fly-in-fly out approach for transportation (EIA 6-13-14)</td>
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<tr>
<td>(EIA 6-13-14)</td>
<td>Use of buses (EIA 6-13-14)</td>
</tr>
<tr>
<td>Housing</td>
<td>Use full-service on-site construction camps (EIA 6-13-14)</td>
</tr>
<tr>
<td>(EIA 6-13-14)</td>
<td>Adopt extended work schedules (EIA 6-13-14)</td>
</tr>
<tr>
<td>(EIA 6-13-14)</td>
<td>Provide workers with time off so they can travel home to their place of residence (EIA 6-13-14)</td>
</tr>
<tr>
<td>(EIA 6-13-14)</td>
<td>Complement regional resources with in-camp security and on-site health services (EIA 6-13-14)</td>
</tr>
<tr>
<td>First Nations TEK and Land Use</td>
<td>Compensation for Directly Affected Trapline Holders, Continued Consultation With Key Aboriginal Groups, Access to Traplines, Employee/Contractor Education, and Reclamation (EIA 8-48, 49)</td>
</tr>
</tbody>
</table>
Appendix 4: Informed Consent Documentation

MCFN Indigenous Knowledge (IK) study for the Athabasca oil sands region

Declaration of Informed Consent and Permission to use Information

I (name) _______________________, on this day (complete date) __________________ give permission for __________________ to interview me for the Indigenous Knowledge (IK) study for the Athabasca oil sands region.

I understand that the study is being conducted by the Mikisew Cree First Nation (MCFN). The purpose of this study is to plan for and document the rights and interests of MCFN in areas between the Muskeg River and the Firebag River, on both sides of the Athabasca River, including areas around McLellan Lake and Kearl Lake, and to inform provincial and federal government decisions regarding industrial development in the region. By signing below, I indicate my understanding that:

(a) I give my consent to have my words and responses regarding my land use knowledge and my past and current traditional ecological knowledge recorded on maps, in notes, and using audio and video recording equipment.

(b) I am free to not respond to questions that may be asked, without penalty.

(c) I am free to end the interview at any time that I wish, without penalty.

(d) The MCFN will maintain intellectual property rights over information and recordings collected through my participation in this interview.

(e) The MCFN may use the information collected, including audio, video, or pictures, in pursuit of its claims, and for defending and communicating the rights, interests, and titles of its members. This will include, but is not limited to, sharing information for the purposes of environmental assessment.

(f) The MCFN will make reasonable efforts to consult me, or my descendants, before using my information for purposes not indicated above.

For more information, please contact Matthew Whitehead @ (780) 714-6500.

I would like my name included in reports: yes ______  no ______

Signature of participant ___________________________  Witness ___________________________

__________________________  ___________________________
PIN #:
Appendix 5: Interview Guide

Interview Introduction

(read with RECORDER ON before every session)

Today is _______ 2011. We are sitting here interviewing _________ for the MCFN Indigenous Knowledge Study. Thank you for coming.

My name is _________ and my co-researchers are _______. We’re here at the _______ building in _______. We have read and signed the consent forms and we have assigned interview ID # _______. We are going to be recording this interview on a digital video recorder, digital voice recorder, and with notes [on this questionnaire / in this note book]. We will be mapping digitally using Google Earth Imagery at 1:50,000 or better, projected on the wall. _________ will be doing the digital mapping using points, lines or polygons, and will be entering the site codes and other data as we go. Other existing TUS data already collected from _________ through previous projects, may be projected where useful. The project area we are focussing on today includes areas between the Muskeg River and the Firebag River, on both sides of the Athabasca River, including areas around McLellan Lake and Kears Lake.

A PDF file of the map, as well as the GIS files, will be saved to hard drive, and on a portable storage device (memory key). Two hard copies will be printed for signature and filing. Another copy will be provided to _______. All files will be stored and managed by the MCFN GIR.

Building on information collected in past projects, the MCFN GIR is working to document detailed community knowledge and use (including avoidance of use) by...
Mikisew Cree members, in particular, in the area of the proposed Shell Jackpine Mine, Redclay Compensation Lake and Pierre River Mine footprints [show project footprints on maps with 25km buffers]. We will refer to these areas as the Muskeg and Pierre River areas throughout the interview. If you want to discuss other places that are connected to the Muskeg and Pierre River areas, we’d like to hear that as well. The information is needed so that the MCFN can provide a strong response to industry proposals in the area. For the first phase of this study, we are especially interested in how land use, and avoidance, by MCFN members is shaped by current oil sands developments, and related population shifts, so that we can better predict what more developments may mean.

The interview will take about 3 hours to complete and we’ll take a break about half way through.

There are 5 main sections or types of questions:

- The first section (about 15 minutes) focuses on your experiences in the Muskeg and Pierre River areas.

- The second section (up to one hour) will focus on reviewing, confirming and adding to the information you have previously shared in other studies within 25km of the Muskeg and Pierre River areas.

- The third section (about half an hour), special resources or places found within ACFN territory, and how, and when, you’ve used lands and resources in the southern areas, including reasons for use, and how use has changed in response to increasing industrial development.

- The fourth section (about half an hour) focuses on whether or not you avoid using particular portions of the southern territories, what you avoid, when you started avoiding the areas, and why.

- In the last section, we’ll want to hear about how you think three proposed oil sands related developments in the southern territories could be improved: Shell’s Jackpine Mine, Pierre River Mine, and Redclay Compensation Lake.

Some questions are very broad, and others are very detailed. The reason for the detailed questions is so that the MCFN can be in a better position to defend information, if needed, in court or elsewhere.

Finally, if there are things we don’t ask about, but you think we should be raising in our reports to leadership regarding MCFN use and avoidance in the southern territories, please let us know.
1.0 BIOGRAPHICAL AND BACKGROUND QUESTIONS

| 1.1 | What is your full name? |
| 1.2 | Where were you born? |
| 1.3 | How old are you? |
| 1.4 | Where were you raised? |
| 1.5 | Who were you raised by? |
| 1.6 | Are you a member of the MCFN? |
| 1.7 | Do you speak Cree or Dene? |

If so, how would you translate the term 'traditional knowledge' in Cree/Dene? What does the Cree term mean to you?

1.8 Have you ever spent time in the Muskeg and Pierre River areas?

PROMPTS:
- Have you ever lived near the Muskeg and Pierre River areas? When?
- Have you ever hunted in the Muskeg and
### Pierre River areas? When was the last time?

- Trapped?
- Fished?
- Collected berries, plants, or medicine?
- Other cultural practices? (describe)

1.9 When did you first spend time in the **Muskeg and Pierre River areas**? Why did you spend time there?

1.10 Before industry arrived, could you hunt, trap, fish, or collect resources, or practice your culture as freely in the **Muskeg and Pierre River areas** as you could in other areas?

1.11 Since industry arrived, have you been able to hunt, trap, fish, or collect resources, or practice your culture as freely in the **Muskeg and Pierre River areas** as you could in other areas?

1.12 If no, why not? What are the biggest barriers to your ability to hunt, trap, fish, collect resources, or to practice your culture in the area?

1.13 How did you learn to use the **Muskeg and Pierre River areas**?

1.14 Have you been able to pass on your traditional knowledge regarding the area to younger people in a similar way?

1.15 Why or Why not?
## 2.0 PREVIOUS DATA

2.1 We would like to review the information recorded for you in previous studies, confirm that it is correct, and add more details if possible.

Begin reviewing existing map data, stopping at each site to confirm the following information:

1) Is the location approximately correct?

2) Approximately what year was your a) earliest remembered use of the site, b) most recent use of the site, and c) earliest known use by MCFN people of the site if earlier than a)?

3) Do you or your family members still use the location in the same way you used to? If not, why not and when did the use change?

4) To your knowledge, have other MCFN members ever used the location? If so, who?

[Use notes on back of questionnaire to record a table with unique ID or site number for each site based on previous study, and]
3.0 COMPARISON AND CHANGE

3.1 To your knowledge, before the first oil sands (Suncor 1967) or other developments, how did MCFN families use the **Muskeg and Pierre River areas**? Who were the families? Where did they live? Travel? Hunt, trap, fish and gather?

3.2 Before 1967, did MCFN people interact with people from other First Nations in the **Muskeg and Pierre River areas**? What were those interactions like? **Have things changed?**

3.3 Have you ever heard of disputes between MCFN people and other First Nations over lands or resources in the **Muskeg and Pierre River areas**? If so, when did these take place? how were they resolved?

3.4 How has your or your family's **use** of lands or resources in the **Muskeg and Pierre River areas** changed since the first oil sands projects (1967)? (USE THESE AS BENCHMARKS)

3.5 About when did the change take place?

3.6 What caused the change?
3.7. Related to oil sands or other developments, and in the **Muskeg and Pierre River areas**, have you ever seen any problems or negative changes in: *(please provide examples)*

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7.1 Air quality?</td>
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<td></td>
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<tr>
<td>3.7.2 Noise, traffic, or other disturbance?</td>
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<tr>
<td>3.7.3 Water quality or quantity?</td>
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<tr>
<td>3.7.4 Quality or quantity of berries, or plants?</td>
<td></td>
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<td></td>
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<tr>
<td>3.7.5 Quality or quantity of meat (moose or other) hunted?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7.6 Quantity or quality of fur trapped?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7.7 Quality for cultural or spiritual practices?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.7.8 Quality for teaching kids?</td>
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</tbody>
</table>

3.8 Are there any other changes, positive or negative, that have affected your use of the **Muskeg and Pierre River areas**?
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9 Have changes in the <strong>Muskeg and Pierre River areas</strong> affected how you or your family feel about living in, or spending time in the areas? If so, how?</td>
<td></td>
</tr>
<tr>
<td>3.10 Have changes in the <strong>Muskeg and Pierre River areas</strong> or other areas had an effect on what you and your family eat? If so, when did the changes in what you and your family eat happen? Why?</td>
<td></td>
</tr>
<tr>
<td>3.11 If there were no oil sands or other developments, would you and your family use the <strong>Muskeg and Pierre River areas</strong> more? What would you do more of?</td>
<td></td>
</tr>
</tbody>
</table>

**TIME CHECK!** Interview should be at about 30-35 min.
4.0 USE

In the previous section, we focused on background information, changes you have seen in the Muskeg and Pierre River areas and the effects they have had on the community. In the next section, we are going to be asking more general questions about how changes have affected you and your use of important resources.

4.1 When you were 20, how many people lived in your household? How many adults (over 15)? How many kids (under 15)?

4.2 Where did you live?

4.3 When you were 20, in an average year with no scarcity of animals or fish, about what percent of the meat (including birds) or fish eaten in your household came from hunting or fishing within Treaty 8? (Do not include store bought or domestically raised animals)

4.4 When you were 20, in an average year, with no scarcity of animals or fish, how many of each of the following animals were used to support your family's cultural and subsistence needs?

<table>
<thead>
<tr>
<th>Animal</th>
<th>Yes/No (use check)</th>
<th>Approx. number</th>
<th>% subsistence / % cultural purposes (including sharing) (ex: 80/20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moose</td>
<td></td>
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<tr>
<td>Buffalo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal</td>
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<tr>
<td>Deer</td>
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<td></td>
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<tr>
<td>Bear</td>
<td></td>
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<td></td>
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<tr>
<td>Caribou (Woodland)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Caribou (Barrenland)</td>
<td></td>
<td></td>
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<tr>
<td>Other Mammals</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Geese</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ducks</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other birds</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Whitefish</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pickerel</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Goldeye</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Jackfish</td>
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<td></td>
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<tr>
<td>Sucker</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lake Trout</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other fish</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.5 When you were 20, in an average year with no scarcity of berries, about what percent of the **berries (all kinds)** eaten in your household came from collecting within Treaty 8? (do not include store bought or domestically raised berries)

<table>
<thead>
<tr>
<th>Plant</th>
<th>Yes/No (use check)</th>
<th>Approx. number/year (in weight)</th>
<th>% subsistence / % cultural purposes (including sharing) (ex: 80/20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berries (all kinds)</td>
<td></td>
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<td></td>
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<tr>
<td>Other food plants</td>
<td></td>
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<tr>
<td>Medicine / Ceremony Plants</td>
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<tr>
<td>Timber (firewood)</td>
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<tr>
<td>Other</td>
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</tbody>
</table>
Other than those already mapped, are there any other places used by you or your family that you would like to record?

<table>
<thead>
<tr>
<th>4.5.1</th>
<th>Places where you have camped overnight in a tent, lean-to, or other temporary structure.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAP using point and code <strong>TX</strong></td>
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</table>

<table>
<thead>
<tr>
<th>4.5.2</th>
<th>Places where you have built or used cabins or other permanent structures.</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>MAP using point and code <strong>PX</strong></td>
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</table>

<table>
<thead>
<tr>
<th>4.5.3</th>
<th>Places where you access trails or other travel routes.</th>
</tr>
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<td>MAP using line and point and code <strong>TR</strong></td>
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<table>
<thead>
<tr>
<th>4.5.4</th>
<th>Places where people are buried</th>
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<tbody>
<tr>
<td></td>
<td>MAP using point and code <strong>BU</strong> = Burials</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>4.5.5</th>
<th>Places where spirit beings live</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAP using point and code <strong>SP</strong></td>
</tr>
</tbody>
</table>
4.5.6 Special places used for ceremonies (drum dances, sweat lodges).

MAP using point and code CP = ceremonial place.

4.5.7 Places where you have hunted, fished, or collected hard to find animal, fish, plant foods, medicines, fur or other resources that are hard to find.

MAP using point and code KS= kill site, FS= fishing site, FP= food plant, MP= medicine plant, TL= trapline.

4.5.8 Teaching areas, or places that have special knowledge or stories associated with them.

MAP using point and code TA.

4.5.9 Salt licks, or other unique environmental features.

MAP using point and code.

TIME CHECK! Interview should be at about 2hrs.

Congrats, we made it this far! Take a 10 Min Break.
### 5.0 AVOIDANCE

**Mapping Note:** Mark extent of access via river using a large, transparent polygon labelled with letter code and a number, followed by the community code and the participant ID. **PZ1-M01** should be the first area mentioned by the Wikwemikong member with FN #01. **PZ2-M01** the second, etc. In most cases, there should only be one PAL per ID.

| PAL01-M02 |

#### 5.1 Hunting?

- For each avoidance area, what are the main reasons for avoidance?
- When did the avoidance begin?
- What kinds of species or resources would likely be available in the absence of industry?
- Are there any specific instances of avoidance associated with the area?

**MAP using Controlled Polygon, and code GAH (General Avoidance Hunting)**

- Are there different areas you avoid for:

#### 5.2 Fishing? (GAF)

#### 5.3 Collecting berries or other plant foods?
<table>
<thead>
<tr>
<th>(GAP)</th>
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<tbody>
<tr>
<td>5.4 Collecting medicines? (GAM)</td>
</tr>
<tr>
<td>5.5 Trapping? (GAT)</td>
</tr>
<tr>
<td>5.6 Camping or building habitations like cabins? (GAX)</td>
</tr>
<tr>
<td>5.7 Sacred or cultural practices? (GAC)</td>
</tr>
</tbody>
</table>

**Interview Conclusion**

*(read after every tape session)*

Today is ___________ 2010.

We have just finished interviewing ___________ for the MCFN Indigenous Knowledge Study. Thank you for coming here today.

My name is ___________ and I’m here in the ___________ building with ___________. We’ve given him/her TUS ID # ___________. We’ve used ___________ and ___________ maps at 1:50,000 (or other?) scale and a total of ___________ tracks on the digital recorder. Notes are recorded in ___________ note book.
### Additional information added to existing datasets

<table>
<thead>
<tr>
<th>Study name</th>
<th>Code (unique site identifier)</th>
<th>Notes</th>
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<tbody>
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Appendix 6: Direct to Digital Capture Method

The methods for spatial data capture (direct to digital mapping) for the study were developed by Dr. Craig Candler and Steven DeRoy of the Firelight Group and were designed to reliably document detailed MCFN community use, knowledge, and avoidance in relation to the Shell Projects.

Interview Team and Materials

Interviews were conducted with at least two team members, plus the participant, present. One team member was primarily responsible for conducting the interview and taking hard copy notes. The second member was primarily responsible for managing the mapping software and recording data within the mapping software used, in this case Google Earth or Google Earth Pro. The majority of interviews were mapped using Google Earth Pro version 6.0.1.2032 running on a windows based laptop with a tablet pen, necessary for drawing lines and areas. A digital projector and laser pointer, digital video camera and tripod were also used as part of the mapping kit.

Study Area

The study area was defined generally as an area south of Wood Buffalo National Park and north of Fort McMurray, with a focus on the area of the proposed projects. The study area, and the ability to navigate in Google Earth was explained to each participant at the beginning of the interview through reference to maps projected on the wall.

Base Maps

Due to the size of the study area, and the need for both detail and flexibility, Google Earth imagery was chosen as the digital base map for mapping sites. Using a projector, the map image was projected onto a clear wall or screen. In order to improve readability and help the participant orient themselves, other geographic information system (GIS) shape files were overlaid on top of the Google Earth image. Where conversion from other formats was required, a licensed version of Google Earth Pro was used. Supplemental GIS data originated from the following Government of Canada online GIS data repositories or other sources:


• National Framework Canada Lands Administrative Boundary (CLAB) Level 1 (First Nation reserves):
  http://www.geogratis.gc.ca/download/frameworkdata/Cda_Lands_Adm_L1/

• National Topographic System 1:50,000 reference grid:
  ftp://ftp2.cits.rncan.gc.ca/pub/index/

• Data regarding the footprint of the JPME and PRM, as well as existing Shell mine infrastructure, received by the MCFN from the proponent.

**Interview Process**

Prior to commencing the interview, informed consent to participate in the interview was documented through signing a consent form. Interviews were recorded using an external digital audio recorder, or the built-in microphone and sound recorder on the laptop for audio files. A digital video camera mounted on a tripod and pointing at the maps projected on the wall recorded the mapping of sites throughout each interview, and provided back up audio. All interviews followed a semi-structured interview guide, and notes were written directly onto the guide or in the interviewer’s notebook.

In Google Earth, a folder called “TEK” was created to store all new mapped data. Each participant was given a folder named by their participant code (e.g. A01). Within the participants’ folder, three folders were created to store newly mapped data. For example, participant “M01” had points stored in the M01_points folder, lines in the M01_lines folder, and areas in the M01_areas folder. Each participant’s mapped data (points, lines and areas) were saved as a Keyhole Markup Language (KML) file. The entire database was stored as a KMZ file (KML files are often distributed as KMZ files, which are zipped KML files with a .kmz extension).

We mapped new sites using Google Earth at a scale of 1:50,000 or better. That being said, most sites were mapped at a scale of 1:5,000 or better, increasing the accuracy of the location of sites identified. Where possible, we added timestamps to include month or season, and the year the activity occurred. In some cases, people were able to identify specific dates or the beginning, middle or end of a month.

At the end of the interview, audio files were saved in an audio folder and all video files in the video folder on the computer. Names for audio and digital files were saved in the following format:

[Participant ID]_[Participant Name]_[Interview Date MMMDDYYYY][file#].[file type]

For example, M01_JOHNDOE_FEB282011_1.mp3
Post-Interview Data Processing

After the interviews were completed, the data was backed up onto a portable hard drive. All data was mapped using a standardized Universal Transverse Mercator, Zone 12 projection. We downloaded a GIS conversion tool developed by the Department of Natural Resources for the State of Minnesota called DNR Garmin (http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html). DNR Garmin is a reliable tool to convert points, lines and areas collected in Google Earth KML format to ESRI Shape file format. KML files (e.g. M01_points.kml) from the “KML” folder were converted into Shape files (M01_points.shp) and stored in a folder called “Shape.” Each dataset was checked for consistency and accuracy before converting new data files.

Once the data was converted into ESRI Shape Files, we applied a geomasking process to protect the confidentiality of the data. Points were randomized using Hawth’s “Generate Random Points” tool. This process involved buffering the original points by 250 metres, generating a new random point location within the 250 metre buffered area, and then buffering the new randomized point by 1 kilometre. Hawth’s tools were downloaded from ESRI’s support pages (www.support.esri.com). Lines and areas were not randomized, but were buffered by 1 kilometre using ArcGIS.
Appendix 7: Curriculum Vitae, Dr. Craig Candler

Education

Ph.D. Cultural Anthropology, University of British Columbia, Vancouver, BC, 2009
M.A. Anthropology, University of Alberta, Edmonton, AB, 1999
B.A. (First Class Honours Anthropology, University of Alberta, Edmonton, AB, 1996

Craig Candler, Ph.D. (anthropology)
Director, Community Studies and First Nations Consultation

Employment History

The Firelight Group Research Cooperative, Victoria, BC
Director/Community Studies and First Nations Consultation Specialist (2009 to date)
Responsible, as a founding member and director, for helping establish The Firelight Group, a group of aboriginal and non-aboriginal research professionals providing respectful and responsive environmental and social science research, consulting, and support services in processes where aboriginal and non-aboriginal interests interact, and where good relationships and quality research tools are desired by all sides. Currently serving as the president of the Firelight Group, tasks include business and organizational development, as well as design, development, and delivery of technical services including community-based traditional knowledge research and documentation systems, environmental and socio-cultural impact assessments and monitoring programs, indigenous land use mapping, archival research, community involvement processes, and First Nations consultation support services.

Golder Associates Ltd. – Victoria, BC
Senior Anthropologist/Traditional Studies and Community Consultation Specialist (2005 to 2009)
As Senior Anthropologist, provided technical leadership to the cultural sciences division of Golder in the fields of traditional studies and First Nations consultation, particularly within the context of environmental impact assessment. Responsible for design, development, and oversight of community-based traditional knowledge research and documentation systems, capacity building initiatives, environmental and socio-cultural impact assessments and monitoring, indigenous land use mapping, public involvement processes, archival research, and First Nations consultation support services. Tasks included leading baseline data collection, environmental assessment, and community involvement components related to community-based traditional use studies and First Nations consultation support, including projects with estimated capital costs in excess of one billion dollars. Projects included mines, wind and other energy developments, dewatering infrastructure, environmental remediation, and linear energy transmission projects. Key clients and partners included First Nations across BC and western Canada, private industry, and government agencies.

www.thefirelightgroup.com
University of British Columbia, PhD Researcher – Vancouver, BC
Lead Researcher – Changing Land Use and Children’s Health in Mae Chaeen, Northern Thailand (2000 to 2006)
Responsibility for designing, grant writing, coordinating, and conducting anthropological research within a multi-method (qualitative and quantitative) and community-based research project on oral histories of land use and child health change in Northern Thailand since the 1950s.

Third Stone Community Research – Edmonton, AB
Anthropological Consultant (1995 to 2005)
Founder and Principal of a private consulting company offering applied anthropological, community-based research and consultation services, specializing in First Nations land use documentation and mapping, and comprehensive socio-cultural and community impact assessment and mitigation. Projects included leading a large multi-year traditional use study for the Treaty 6 Tribal Association of BC, as well as smaller projects for communities and research agencies based in Alberta, BC, Manitoba, and the Northwest Territories.

National Centre for Excellence in Sustainable Forest Management, University of Alberta – Edmonton, AB
Research Coordinator (2000)
Research and funding coordinator for socio-economic, community sustainability, and integrated cumulative effects related projects supported through the NCE-SFM.

Centre for the Cross-Cultural Study of Health and Healing, University of Alberta – Edmonton, AB
Coordinator and Consultant Liaison (1995 to 1999)
Coordinator of office activities including development of a consulting program for academic and contract research, project proposal development, grant applications, reporting, financial administration, marketing and managing a publishing series, organizing public workshops and lectures, and coordinating volunteer involvement.

Project Experience – Traditional Ecological Knowledge (TEK) and Traditional Use Studies (TUS)

- Mikisew Cree First Nation and Athabasca
- Chipewyan First Nation
- Northwest Alberta
Primary Researcher and Project Manager for a TEK/TUS project involving documentation of community use and knowledge along the Athabasca River to inform decisions regarding water withdrawals and oil sands production. Jointly funded through two First Nations, the project involves documentation of First Nations use and interest through interviews and mapping, and understanding the effects water quality and water level changes on the practice of aboriginal and treaty rights along a major river and within an ecologically sensitive delta and lake area.
<table>
<thead>
<tr>
<th>Role/Position</th>
<th>Region/Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia Transmission Corporation</td>
<td>Southwest British Columbia</td>
<td>Component Lead for an overview-level TUS for planning of a linear transmission project involving archival review, field interviews, and coordinated research with more than forty First Nations with traditional territories in the Fraser Valley, Fraser Canyon, and in the area of Nicola Lake. Tasks included methodology development, interview protocols, First Nations liaison, supervising and participating in mapping interviews and archival review, and leading analysis and reporting.</td>
</tr>
<tr>
<td>Kwoiek Creek Hydroelectric Project</td>
<td>Northeast British Columbia</td>
<td>Component Lead for community-based TUS conducted for environmental assessment of a run-of-river project including transmission line, proposed by a First Nation joint venture. The project involved generation of energy and transmission through multiple First Nations territories. Tasks included methodology review, supporting First Nations interviewers to complete baseline and leading community-based impact assessment and reporting.</td>
</tr>
<tr>
<td>Western Canadian Gas Assessment (EA)</td>
<td>Northeast British Columbia</td>
<td>Project Manager for the completion of Socio-Economic and Aboriginal Interests and Use chapters for an Environmental Assessment (EA) application to the BC Environmental Assessment Office (BC EAO) regarding a proposed coal development in northeast BC. The project involved working with First Nations and Metsis groups and included methodology review, First Nations and aboriginal liaison, and reporting.</td>
</tr>
<tr>
<td>Peace River Goal</td>
<td>Northeast British Columbia</td>
<td>Component Lead for overview-level TUS and TEK work conducted for EA purposes for two coal mines and related developments. The project involved working with six First Nations and Metsis groups. Tasks have included methodology development, First Nations liaison, archival review, community-based mapping, focus group interviews, and reporting.</td>
</tr>
<tr>
<td>North Coast Wind Energy</td>
<td>Northwest British Columbia</td>
<td>Component Lead for overview and operational-level TUS proposed within a harmonized BC Environmental Assessment Act (BC EAA)-Canadian Environmental Assessment Act (CEAA) process on the north coast of BC. The project involved a large generation area and more than 106 km of linear transmission corridor involving the traditional territories of three First Nations. Tasks included methodology development, archival review, First Nations liaison, and preliminary coordination of overview-level TUS interviews.</td>
</tr>
<tr>
<td>Asemuwe Winewak Nation</td>
<td>Grande Cache, AB</td>
<td>Project Manager and lead researcher for a gap analysis of TUS data used for First Nations consultation purposes, providing support for the optimization of an internal First Nations consultation and referral system, and providing research services in support of oral history interviews and document preparation related to a comprehensive claim.</td>
</tr>
<tr>
<td>Treaty 8 Tribal Association</td>
<td>Northeast British Columbia</td>
<td>Project Coordinator for all aspects of a large multi-community, multi-year traditional use study (TUS) with a budget in excess of one million dollars, including mapping and TEK interview components, training, project management, site visits, GPS data collection, archival review, GIS and database design, digitization, Indigenous topography, and oral history. Facilitated negotiation of community consultation and information protection protocols.</td>
</tr>
<tr>
<td>Sawridge First Nation and Kaspe'no First Nation Traditional Use Study</td>
<td>Central Alberta</td>
<td>Methodology development, interview protocols, First Nations liaison, and proposal development.</td>
</tr>
</tbody>
</table>
Bigstone Cree Nation  
TUS Gap Analysis  
Northwest Alberta

Beaver First Nation  
Northwest Alberta

Traditional Use Study  
Traditional Use Study  
Northwest Alberta

Deh Tsi' Consultation Pilot  
Northwest Alberta

Project  
Halfway River First Nation  
Traditional Use Study  
Northeast British Columbia

Designed and delivered TUS methodology, field work, training, and capacity building in mapping and land use research.

Deh Tsa7 Tse K'inal (Prophecy River) First Nation Traditional Use Study  
Northeast British Columbia

Designed and delivered TUS methodology, field work, interviews, design of field recording and GIS strategies, coordination of field visits, training, reporting and capacity building.

Canadian Circumpolar Institute  
Edmonton, AB

Archeological research in the Hudson's Bay Archives, archival documentation and report writing on historic environmental change and resource use along the Mackenzie Delta.

Socio-Economic and Cultural Impact Assessment

Western Canadian Coal  
Northeast British Columbia

Project Manager for the compilation of Socio-Economic and TUS reports for an Environmental Assessment (EA) application to the BC Environmental Assessment Office (BC EAO) regarding a proposed coal development in northeast BC. The project has involved working with First Nations and Métis groups. Tasks have included methodology review, First Nations liaison, and reporting.

Public Works and Government Services  
Victoria, BC

Treaty 8 Tribal Association  
Northwest British Columbia

Design and implementation of public and First Nations involvement, including social studies, related to a risk assessment of contaminants in a heavily used urban industrial waterway.

World Agroforestry Centre  
Chiang Mai, Thailand

Design and delivery of a two-year study working within a multidisciplinary team to develop community-based methods for tracing environmental and community health changes over time, particularly with regards to pesticide use and early child health.

Methodology development, training, field interviews, analysis, reporting.
Project Experience – First Nation Consultation and Negotiation

**BC Hydro Aboriginal Relations and Negotiations, Northwest BC**

Assisted in leading a consultation team providing specialist First Nations consultation services in relation to the environmental permitting of a large transmission line project in northwestern BC. The project involved multiple First Nations in the area of Terrace, BC, as well as the Nisga’a Nation. Tasks included procedural consultation support, acting as point of contact for First Nation consultation, coordination and documentation of consultations within the Environmental Assessment Process, supporting negotiations regarding memoranda of understanding and provision of capacity funding, as well as support where appropriate, for negotiation of long-term impact and benefits agreements (IBAs) or other agreements related to project construction and operation.

**Mount Hayes Wind Energy, Northwest BC**

Component Lead for First Nations consultation services in relation to permitting of a proposed development through provincial and federal processes. The project involved three First Nations and traditional territory interests within an existing municipal boundary. Tasks included procedural consultation support, acting as point of contact for First Nation consultation, coordination and documentation of consultations, facilitation of negotiation regarding letters of understanding and development of accommodation packages including non-financial and financial accommodations, and support for negotiation of a long-term impact and benefits agreement (IBA).

**North Coast Wind Energy, Northwest British Columbia**

Component Lead for First Nations consultation services in relation to a multi-billion dollar project being processed through a harmonized provincial-federal process. The project involved supporting consultation and accommodation discussions involving three First Nations and related traditional territory interests south of Prince Rupert, BC. Tasks included procedural consultation advice, acting as point of contact for First Nation consultation, coordination and documentation of consultations, facilitation of negotiation regarding letters of understanding and development of accommodation packages including non-financial and financial accommodations, and negotiation of long-term impact and benefits agreements (IBAs).

**Catalyst Paper Corp., Vancouver Island, BC**

Project Manager for provision of public and First Nations consultation support, including analysis of First Nations consultation requirements.
and strategic advice. Tasks included delivery of consultation tools, including letters, contact matrices, project website development, and open house coordination.

**Project Experience – Training and Capacity Building**

- **North Coast Wind Energy**
  - Designed and delivered a week-long training workshop to three north coast First Nations on community-based TUS/TEK research. Including traditional use mapping, for environmental assessment purposes. Training included classroom and field components and was taught in collaboration with four community Elder instructors.

- **Treaty 8 Tribal Association**
  - Design and development (including fundraising) for a community-based and First Nations-endorsed centre for cumulative impact assessment utilizing both traditional and scientific knowledge and criteria for evaluating and monitoring environmental, socio-economic, and health changes.

- **University of British Columbia**
  - Design and delivery of a senior university-level course on the ethnography of Southeast Asia.

- **University of Alberta**
  - Design and delivery of senior university-level courses in the School of Comparative and Religious Studies, and Department of Anthropology.

- **Northern Lights College**
  - Design and delivery of a college-level course on anthropology, community research, and resource management for post-secondary Gwich’in and Inuvialuit students.
Professional Affiliations

Canadian Anthropological Society (CASCA) – Member of the CASCA Executive, effective June 2010, representing applied and practicing anthropologists in Canada at the national level.

Canadian Asian Studies Association—Canadian Council for Southeast Asian Studies (CASACCCSEAS)

American Anthropological Association (AAA)

Society for Applied Anthropology (SAAA)

Selected Publications

Peer Reviewed Publications, Journal Articles, and Proceedings


Books and Theses


Scholarly Conference Presentations


Incorporating TEK and Aquatic Toxicity Science: Interactive Workshop Presentation for the Aquatic Toxicity Workshop, Jasper, Canada (2006).

Transcendent Life (and Science, Medicine, Ecology, and Flexible Biotechnical Citizenship in a Northern Thai Valley. Presented at the...
Resumed  Craig Candler, PhD  January, 2010


Globalization in a PH: Opium, Yaa baa, and Addictive Modernity in Northern Thailand. Presented at the joint meetings of the Canadian Council for Southeast Asian Studies (CCSEAS) and the Canadian Asian Studies Association East Asian Council (CASA-EAC), Université de Montreal, Canada (2003).


Reviews and Other  Craig Candler has provided external and/or internal peer review on specialist technical reports, academic articles, and book length works, including peer review of chapters and contributions to Terry Tobias’ (2010) landmark work, Living Proof: the Essential Data-Collection Guide for Indigenous Use-and-Occupancy Map Surveys.
Appendix 8: Curriculum Vitae, Steven DeRoy

Steven DeRoy
Vice President and Director

The Firelight Group – Winnipeg, MB
Vice President and Director (2009 to date)

Responsible, as co-founder and director, for helping establish The Firelight Group, a firm of aboriginal and non-aboriginal professionals specialized in providing respectful and respected environmental and social science research, consulting, and support services in processes where aboriginal and non-aboriginal interests intersect, and where good relationships are desired by all sides. Tasks include business development, as well as design, development, and delivery of technical services including community-based traditional knowledge research and documentation systems, environmental and socio-cultural impact assessments and monitoring programs, indigenous land use mapping, GIS technical support and training, research, community involvement processes, and First Nations consultation support services.

Centre for Indigenous Environmental Resources – Winnipeg, MB
Research Associate/GIS Specialist (2007 to 2010)

As a Research Associate/GIS Specialist, my primary role was to build a mapping and GIS service at CIER that would support both internal staff and external clients with technical, advisory, and professional support on a variety of projects. Responsible for design, development, and oversight of an Ontario-wide fire assessment inventory of fuel systems and wildfire risk assessment and data entry project, managed, researched, and documented best practices for setting up GIS offices in aboriginal communities across Canada (this resulted in publication of ‘Good Practices Guide: Setting up and maintaining an Aboriginal Mapping Program’), conducted an assessment of land use planning issues for First Nations in Ontario, coordinated an indigenous place names mapping initiative for the Little Grand Rapids First Nation. GIS data manager for the Pimachiowin Aki world heritage site nomination, development of environmental monitoring tools for the Mikisew Cree First Nation, species at risk tool development using CyberTracker software, delivery of comprehensive community planning services, advisory support to Clean Energy and Community Adaptation Program; and internal IT liaison. Clients included First Nations, Ivey Foundation, BCC Blue Water Foundation, INAC, Parks Canada, and GasConnections Natural Resources Canada.

Treaty 8 Tribal Association – Fort St. John, BC
GIS Advisor (2005 to 2006)

Provided mapping and GIS advisory support to six member First Nation communities (Fort Nelson, Prophet River, Halfway River, Doig River, Sahtu, and the West McElroy First Nations), chiefs and councils, internal staff, and to the Treaty 8 negotiations team. Aided in the storing and mapping of traditional use information and maintained a comprehensive digital data library containing numerous datasets from diverse government agencies, conservationists & industry. Promoted the consultation referral and permitting process through ongoing training.

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technical support for Treaty 8 land use offices, researched and wrote proposals and secured funding for an online mapping application, participated in joint planning and management activities involving government agencies, industry and Treaty 8 First Nations, and acted as Information Technology manager for 25 client users.

Red Road HIV/AIDS Network – West Vancouver, BC
GIS Technician/Consultant (2004 to 2007)
Managed the web-based mapping system, utilizing ESRI’s ArcIMS software, to map the locations of HIV and AIDS service organizations throughout the province of British Columbia. Also designed and developed 30,000 map guides highlighting HIV/AIDS and health services for both the city of Vancouver and northern British Columbia, represented the Red Road interactive mapping project at various conferences, workshops and meetings, and coordinated the redesign and maintenance of www.reddroad.org.

Ecotrust Canada – Vancouver, BC
Manager for the Aboriginal Mapping Network, with responsibilities including management of program initiatives, presentation of the program to funders, members and organizations at various conferences and workshops, and co-facilitation of two workshops with national and international participation addressing issues of concern to aboriginal mappers. Supported identification of funding sources relating to land use and occupancy research (this resulted in publication of “A New Trail Fundraising for Cultural Research and Land Use and Occupancy Studies – A Reference Guide For Securing Funds”), provided mapping and GIS training and technical support to First Nation communities involved with developing land use plans and (bio)regional atlas, and maintained the Ecotrust Canada and Aboriginal Mapping Network websites (www.nativeres.org).

DrakeGIS & Mapping Ltd. – Kelowna, BC
Marketing Manager (2000 to 2002)
Assisted in the development of the company in response to the increasing need for mapping and GIS services in BC. Cultivated strategic affiliations and joint ventures with small consulting companies and First Nation bands, researched, identified and wrote proposals for contract opportunities, project leader for a traditional use study for the Nlaka’pamux First Nation Government, responsible for the completion of all mapping phases for fish & turtle habitat inventory mapping projects and watershed assessment maps for various clients as well as administrative duties.

Urban Systems Ltd. – Kelowna, BC
GIS/Cartographic Technologist (1999)
Performed tasks for the Digital Information Management and Resource Systems (DIMS) project including editing watermain, sanitary sewer, and storm sewer drawings using AutoCAD 14, setting up databases for each drawing in ArcView, and linking data to scanned drawings in PDF.
Computer Master – Mississauga, ON  
MicroStation Operator (1999)

A cted as a consultant for the Regional Municipality Of Peel by adding, updating and editing watermain plans and files using MicroStation SE. Involved recording and updating changes made to waterpains into graphic conversion databases using Excel.

Toronto Hydro Electric Commission – Scarborough, ON  
CAD Operator (1999)

Produced and created aerial site plans, single line diagrams, and updated and revised landbase files strip maps and subdivision maps using IRAS IS within MicroStation SE. Also assisted in training MicroStation SE to co-op students.

Project Experience – Traditional Ecological Knowledge (TEK) and Traditional Use Studies (TUS)

Saulteau First Nation  
Northeast British Columbia

Technical support and GIS Manager for the Saulteau First Nation Knowledge and Use Study of the proposed Windfarm. The project involved methodology development, facilitate training in Google Earth, support field interviewers using direct-to-digital mapping, data analysis and final map production.

Treaty 8 Tribal Association  
Northwest Territories

Researcher and GIS Manager for a Traditional Knowledge, Use and Occupancy Study for the proposed Site C Area along the Peace River. The project involved work planning, gap analysis, methodology development, leading field interviews using direct-to-digital mapping, conducting training in Google Earth, data analysis, final map production and reporting.

Fort Nelson First Nation  
Northeast British Columbia

Technical support and training for the Fort Nelson First Nation Traditional Use Study program (2011-2012). The project involved providing high-level technical expertise on an on-going basis, methodology development, development of a training guide, leading a direct-to-digital mapping training session and an on-territory map training session with lands staff.

Mikisew Cree First Nation  
Northern Alberta

Co-researcher and GIS Manager for an Indigenous Knowledge study for assessing Shell-specific oil sands development projects near Fort McMurray. The project involved work planning, data analysis, methodology development, leading and participating in field interviews using direct-to-digital mapping, and First Nations liaison.

Tsleil-Waututh Nation  
Southern British Columbia

Technical support and training for the Tsleil-Waututh Nation Knowledge and Use Project (Marine and Foreshores). The project involved methodology development, development of a training guide and leading a direct-to-digital mapping training session with key staff and youth.

Athabasca Chipewyan First Nation  
Northern Alberta

GIS Manager for a TEK community-based monitoring of Woodland Caribou and Wood Bison herds, funded in part by the Aboriginal Funds for Species at Risk Program (AFSR). The project involves GIS data management, analysis, and final map production.

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Athabasca Chipewyan First Nation Northern Alberta
Co-researcher and GIS Manager for a use and interests assessment for Shell’s Jacolino Mine Expansion project and Pierre River Mine project. Key tasks include methodology development, participating in field interviews using direct-to-digital mapping, data management, GIS analysis, map production, and reporting.

Athabasca Chipewyan First Nation Northern Alberta
Co-researcher and GIS Manager for a TEKTUS project involving documentation of community use and interests assessment for the Total Jocelyn Gil-Sands Mining project near Fort McKay. The project involved methodology development, participating in interviews using direct-to-digital mapping, data management, GIS analysis, map production, and reporting.

Athabasca Chipewyan First Nation and the Mikisew Cree First Nation Northern Alberta
GIS Manager for the development of relevant base maps and digitization of Traditional Ecological Knowledge data for the Athabasca River Use and Traditional Ecological Knowledge Study. The project involved working with researchers, establishing methodologies, GIS pre- and post-processing, final mapping and reporting.

Klinaxa Nation Council Southern British Columbia
GIS Manager and researcher for a TEKTUS component of an environmental impact assessment for Teck Coal's proposed mining project. The project involved working with First Nation researchers and included direct-to-digital mapping interviews, GIS pre- and post-processing, and reporting.

God's Lake First Nation Eastern Manitoba
GIS Manager for the digitization of all Traditional Use Study data collected for the Historical Resources Branch of Manitoba. The project involved working with First Nation researchers and included methodology review, GIS pre- and post-processing, and reporting.

Manto Sipi Cree Nation Eastern Manitoba
GIS Manager for the digitization of all Traditional Use Study data collected for the Historical Resources Branch of Manitoba. The project involved working with First Nation researchers and included methodology review, GIS pre- and post-processing, and reporting.

Wabanong Nakayquum Okimawin Eastern Manitoba
GIS Manager for 13 First Nations involved in the collection of Traditional Use Study data for the Wabanong Nakayquum Okimawin East Side Planning Authority. The project involved working with First Nation researchers and included methodology review, GIS pre- and post-processing, and reporting.

Little Grand Rapids First Nation Eastern Manitoba
Project leader for the development of a Souleaux/Sylisaska place names map for the Little Grand Rapids First Nation. The project involved working with two First Nation researchers to document and verify toponyms. Tasks have included methodology development, First Nations liaison, training, community-based mapping, GIS pre- and post-processing, and reporting.

Mikisew Cree Nation northeast Alberta
Facilitated the development of a community-based, environmental monitoring program using Indigenous Knowledge and Western Science, to record changes in the environment and to create tools to assist in environmental monitoring. Tasks included conducting community-based research to develop traditional knowledge indication of environmental changes.

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health, customization of CyberTracker software to enable the Mikesew Cree First Nation to collect TEF observations in the field, and reporting.

**Keeseekoojeni Ojibway First Nation Southern Manitoba**

Conducted community-based research for the development of an environmental monitoring program using Indigenous Knowledge and scientific monitoring techniques. Tasks included methodology development, First Nation liaison support, training, customization of CyberTracker software, GIS pre- and post-processing, and reporting.

**Coalition of First Nations with Interest in Riding Mountain National Park Southern Manitoba**

Completed a needs assessment for completing an Anishinae Knowledge Study. The report outlined two potential approaches for the Anishinae Knowledge Study, which differed primarily in the technical skills required for data collection and in the nature of the products that would be developed from the study. Tasks included literature reviews, methodology development, technical writing, and reporting.

**Saulteau First Nation and the West Moberly First Nations Northeast British Columbia**

Conducted a cultural values assessment by integrating land use and occupancy research findings from past studies into the Peace Moberly Tract Land Use Plan. The planning committee consisted of representatives from the BC provincial government, industry and First Nations. Tasks included methodology development, gathering data from numerous research studies from both SFN and WMFN, developed maps that showed the distribution of cultural heritage, and created buffered zones for areas of cultural sensitivity. Also facilitated training workshops for land use personnel from the WMFN to create the maps to be used in the land use plan.

**Prophet River First Nation Northeast British Columbia**

Provided technical expertise for the development of maps to be used in a land use planning initiative for a 5 square kilometre area around the PRFN’s reserve lands. Created a series of maps that integrated scientific and cultural heritage data for a planning initiative between the Oil and Gas Commission (OGC) and the PRFN. The maps were produced for community input on issues affecting hunting, fishing, and other activities.

**Doig River First Nation Northeast British Columbia**

Provided technical expertise for integrating land use and occupancy research findings from past studies into the communities Treaty Land Entitlement process. Tasks included facilitating training workshops to land use personnel from DRFN to create maps of cultural heritage, and provide technical support during the community consultation process for identifying potential land parcels that would be added to the DRFN reserve lands.

**Fort Nelson First Nation Northeast British Columbia**

Provided technical and training expertise for the development of a community atlas and mapping of traditional use study research findings. Tasks included facilitating training workshops for community GIS Trainee, and the development of a community atlas that integrates scientific and cultural data and digitizes traditional use study research findings to create deliverables to the OGC on behalf of the community.

**Halfway River First Nation Northeast British Columbia**

Provided technical expertise to land use personnel to identify a RCMP historic trail route involved researching and identifying maps of historic use personnel from HRFN to GPS the exact location of the trail.

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Bigstone Cree Nation
TUS Gap Analysis
Northwest Alberta

Assisted with gap analysis, evaluating community goals and needs, and the potential of existing TUS data set to meet those goals and needs. Assessed community land use and occupancy study (CLUCOS) data and provided GIS training to staff members.

Aboriginal Mapping Network
Vancouver, British Columbia

Interviewed practitioners and researched funding sources that would support Traditional Use Study research activities in First Nation communities that resulted in the development of "A New Trail: Fundraising for Cultural Research and Land Use and Occupancy Studies - A Reference Guide for Securing Funds."

Nazko Band
Government Traditional Use Study
Central British Columbia

Initiated a Traditional Use Study in accordance with the BC Traditional Use Study guidelines. Project leader for the development of a Traditional Use Study for the Nazko Band Government, coordinating literature reviews, and managing budgets and personnel.

Project Experience – Land Use Planning, Atlases and Bioregional Mapping

Treaty Relations Commission of Manitoba

Updated and re-designed a poster entitled "We are all Treaty people" for the Treaty Relations Commission. Involved spatial conversions, cartography, graphic design and layout.

Sembaa K’e First Nation
Northwest Territories

Technical support for the Sembaa K’e First Nation to support on-going land claim negotiations with government. Key tasks include analysis of spatial data, data management, and produced a series of maps.

Navajo Nation / Bioneers
Santa Fe, New Mexico

Co-facilitated a one-day Google Earth training workshop with Google Earth Outreach. Key tasks included work planning, development of training materials, and presenting and facilitating the workshop with youth and membership.

Athabasca Chipewyann First Nation
Northern Alberta

Technical support for the ACFN’s Industry Relations Corporation to support on-going consultation with government and industry. Key tasks include digital mapping, data management and GIS analysis.

Athabasca Chipewyann First Nation
Northern Alberta

Technical support for the ACFN’s Lower Athabasca Region Plan, editing maps and conducting GIS analysis to consider ACFN’s interests and vision for planning.

Fisher River Cree Nation
Manitoba

Facilitated workshops for the development of a community vision for watershed planning. Involved methodology development, community consultations, coordination with First Nation Liaison, mapping, and synthesizing responses for inclusion into a community vision.

Iroy Foundation
Northern Ontario

Conducted an assessment of Ontario-based First Nation land use issues to gain a deeper understanding of community-driven, participatory land use planning priorities. Involved working with First Nations by traveling to and interviewing, synthesizing data and reporting.

Treaty Relations Commission of Manitoba

Produced and designed a 34-page portfolio for the Historical Atlas of First Nations in Manitoba. 2008 Map Portfolio. Involved collaborating with academic researchers and writers, conducting archival and historical research, graphic design and layout, GIS analysis and...
Little Black Bear First Nation
Southern Saskatchewan
Provided advisory, technical and training support to the Little Black Bear First Nation for the development of a comprehensive community plan. Involved designing, implementation strategies for First Nations involvement, including workshop facilitation, mapping, and synthesizing responses for inclusion into a community vision.

Parks Canada
Northwest Territories
In support of the public participation program for the expansion of Nahanni National Park Reserve, developed a 22-layer atlas showing conservation and other values of the area. Prepared relevant data and edited maps for the final production of the Greater Nahanni Ecosystem Atlas. Also prepared satellite imagery suitable for printing on a 3D model.

Whitesand First Nation
Northwest Ontario
Collaborated with the Aboriginal Strategy Group to work with the Whitesand First Nation to develop a land use plan vision in Armstrong, Ontario. Involved workshop facilitation and synthesizing responses for inclusion into a community vision document.

Doig River First Nation
Northwest British Columbia
Collaborated with Herb Hammond to identify forestry resources within DRF's territory to give the community options for economic independence. Involved the creation of a series of maps that highlighted forest data (age, species, site class, etc.) that could be analyzed for the visioning process.

Tahltan First Nation
Northwest British Columbia
Provided technical expertise for the production of maps for the Tahltan First Nation's territory. Involved the creation of a series of maps to support the community's interest in identifying potential economic opportunities and protection from industrial development activities.

Heiltsuk Nation
Central Coast of British Columbia
Provided technical and training expertise for the production of the Heiltsuk Nation's land use plan. Tasks included obtaining, filtering and managing all relevant information (scientific and cultural data), resulting in the production of indicator data spreadsheets and maps. Also involved facilitating training workshops to the land use personnel to identify and filter cultural data from past TUS research for inclusion into the land use plan.

Sencoten Alliance
Southern British Columbia
Provided technical and training expertise for the development of a bioregional atlas for 5 communities of the Sencoten Alliance. Involved researching and gathering information and digital data for inclusion into the bioregional atlas. It also involved facilitating training workshops to support land use staff from 5 communities to create maps for the atlas.

Tsleil Waututh Nation
Southern British Columbia
Provided technical and training expertise for the development of a park atlas for Say Nuth Khaw Yum (Indian Arm Provincial Park). Research and gathered information and digital data for inclusion into the park atlas, resulting in over 45 map layers. It also involved facilitating training workshops with the community GIS technician to create maps for the park atlas.

Hupacasath First Nation
Provided technical and training expertise for the development of the Hupacasath First Nation's land use plan. Obtained, filtered and

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Resume

February 11, 2012

Steven DeRoy

Southern British Columbia

Managed all relevant information (scientific and cultural data), resulting in the production of indicator data, spreadsheets and maps. Also facilitated training workshops with land use personnel to create maps that would be included in the land use plan.

Nazko Band Government

Central British Columbia

Produced a land interest document that provided an overview of the Nlaka’pamux people and their long-term goals and vision. Involved in community-based research, interviews, and synthesizing results into a comprehensive report.

Project Experience – Capital Infrastructure

Indian and Northern Affairs Canada (INAC) – Ontario Region (Ontario)

Development of a risk assessment inventory database tool for fuel tank systems and waste disposal sites on Indian reserves throughout Ontario for Indian and Northern Affairs Canada (awarded the ESRI Canada 2009 Award of Excellence). Involved in developing a comprehensive implementation plan detailing methodology, managing GIS consultants, providing training and technical support to data collectors, conducting quality assurance, developing training manuals, and final reporting.

Swan Lake First Nation

Southern Manitoba

Provided technical expertise for the development of a 5-megawatt wind farm on the Swan Lake First Nation. Involved in the production of mapping products.

Treaty 8 Tribal Association

Northwest United British Columbia

Provided technical expertise for the development of a wind farm tenure application in Treaty 8 territory. Involved laying out the site location using 3D modelling and developing mapping products.

DIMARS - Summerland

Central British Columbia

Conducted GIS data entry and analysis for the Digital Information Management And Resource Systems (DIMARS) project. Involved in editing, watermain, sanitary sewer and storm sewer drawings and setting up databases that were linked to scanned drawings.

Regional Municipality of Peel

Southern Ontario

Conducted GIS data entry and analysis for the adding, updating, and editing of water main plans and files for the entire Regional Municipality of Peel.

Toronto Hydro

Southern Ontario

Conducted GIS data entry and analysis for aerial site plane and single line diagrams and updated and revised land base files, strip maps and subdivision maps.

Project Experience – Health and Social

National Aboriginal Health Organization (Canada-wide)

Technical lead for the production of numerous mapping products designed for use in highlighting Aboriginal midwifery in Canada. Involved in methodology development, pre- and post-GIS analysis, quality assurance, map development, and reporting.

Red Road HIV/AIDS Network

British Columbia

Technical Lead for the development of a comprehensive listing of HIV/AIDS health services available to First Nations for the province of British Columbia. Involved in methodology development, pre- and post-GIS analysis, quality assurance, map development and reporting.

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Red Road HIV/AIDS Network
Northern British Columbia
Technical Lead for the development of 10,000 pocket book guides highlighting HIV/AIDS and health services available to First Nations for the northern region of British Columbia. Involved in methodology development, pre- and post-GIS analysis, quality assurance, map development, managing graphic design consultants, coordination with print shop, and reporting.

Red Road HIV/AIDS Network
Southern British Columbia
Technical Lead for the development of 20,000 pocket book guides highlighting HIV/AIDS and health services available to First Nations for the city of Vancouver. Involved in conceptualizing and planning, methodology development, pre- and post-GIS analysis, quality assurance, map development, managing graphic design consultants, coordination with print shop, and reporting.

Conferences/Workshops
- Presenter, Central Boreal Learning Network, November 4-6, 2009 in Montreal, Quebec;
- Presenter, Indigenous Mapping Network Conference, June 14, 2009 in Green Bay, Wisconsin;
- Presenter, Keepers of the Water III, August 13-17, 2008 in Fort Chipewyan, Alberta;
- Presenter, Weabinong Nakayugum Okimawin Traditional Area Land Use Plan, June 24-25, 2008 in Winnipeg, Manitoba;
- Presenter, Mapping for Change, September 7 – 11, 2005 in Nairobi, Kenya, Africa;
- Presenter, Natural Resource Information Management Forum: Putting Knowledge to Work, 2003 in Kimberley, British Columbia;
- Presenter, Intertribal GIS Council Conference 2003, in Coeur D'Alene, Idaho;
- Presenter, Sto:lo Environment Conference, April 16, 2003 in Chilliwack, British Columbia;
- Presenter, UBCGIS Land Claims Research Conference, 2003 in Vancouver, British Columbia;
- Presenter, Northern British Columbia GIS Conference 2002, May 2002 in Prince George, British Columbia;

Selected Publications

Reports
- Craig Candier, Rachel Olson, Steven DeRoy and the Firelight Group Research Cooperative, with the Athabasca Chipewyan First Nation (ACFN) and the Mikisew Cree First Nation (MCFN). As Long as the River's Flow, Athabasca River Knowledge, Use and Change. Parkland Institute, University of Alberta, (2010).

Journal Articles
- Craig Candier, Rachel Olson, Steven DeRoy and Kieran Bredenick Participatory GIS as a Sustained (and Sustainable?) Practice: The Case of Treaty 8 BC. Participatory Learning and Action, 54 (2008), 325-336.

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Other publications


- "Good Practices Guide: Setting up and keeping an Aboriginal Mapping Program" guidebook produced by CIER for GeoConnections and Natural Resources Canada (2010).

- Rachel Eni, Gladys Rowe, and Steven DeRoy, Assessing the Social, Cultural, Health Impacts of Hydro-electric Construction in Fox Lake: Poster presentation at the 10th annual Health Impact Assessment Conference in Rotterdam, Netherlands.

Employment Equity

- Registered with Indian Status through the Ebb & Flow First Nation (Manitoba), Registry Number: 230 00396 01
Appendix 9: Time Sequence Analysis: MCFN Data by Decade of Last Reported Use, 1970-2010

This series of five maps show both the continuity of MCFN use since 1970, and changes related to development of access and road networks through the 1980’s, and loss of use due to industrial development in the 1990’s and 2000’s. Data is marked based on date of last reported use:

- Use values with a last reported use in the noted decade are shown in red.
- Use values in grey indicate values with last reported use in previous decades.
- Use values in black indicate values with last reported use in a future decade.
- Use values in a clear (unfilled circle) indicate values with no associate time data.

Only data from Tobias 2010 and the Shell specific studies (including data updated and verified from Tobias and previous MCFN traditional use studies) is shown.