Muskwa-Kechika Wildlife Management Plan

Part A: Strategic Document

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Ministry of Environment

Muskwa-Kechika Wildlife Management Plan

Part A: M-KWMP Strategic Document

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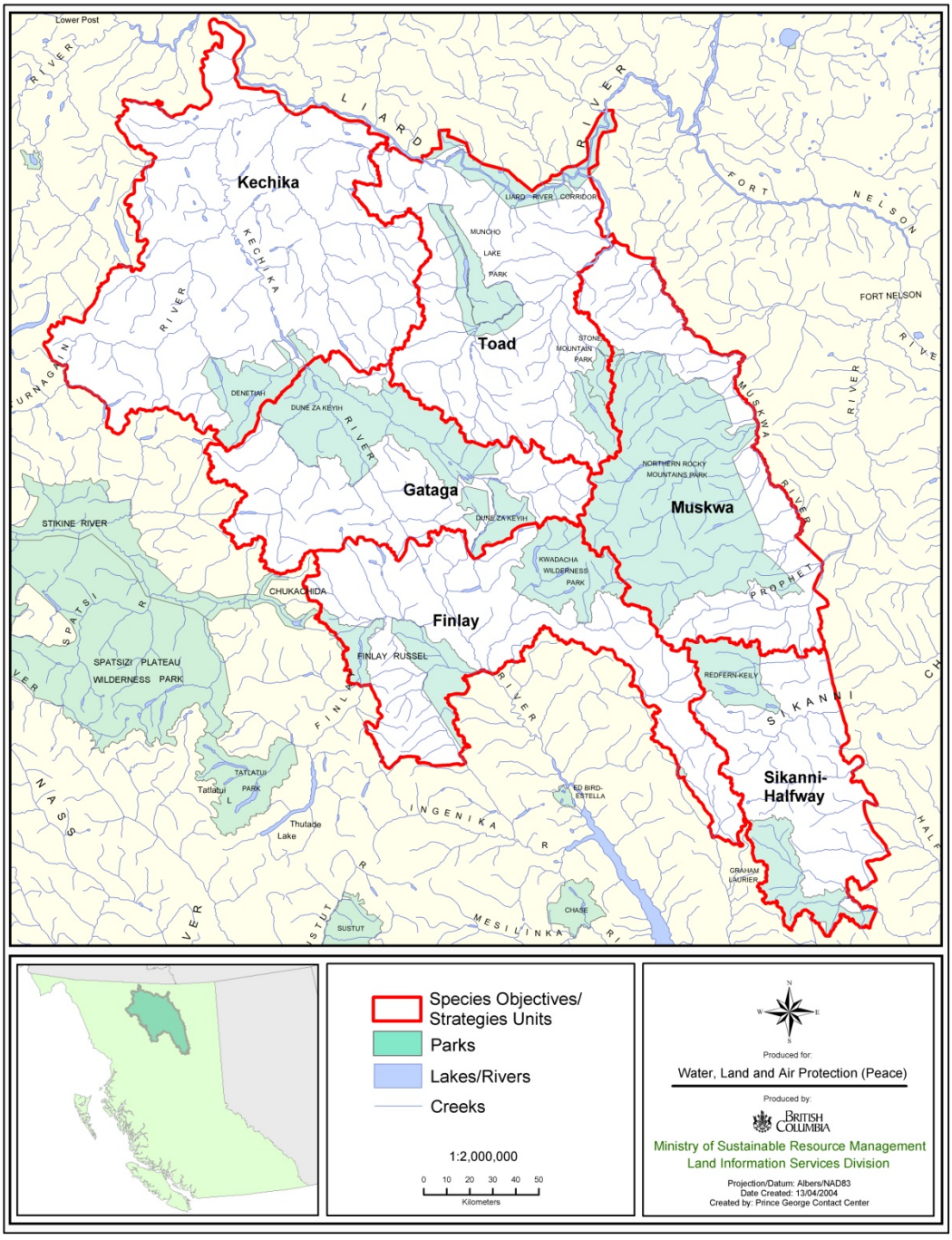
Organization of the Muskwa-Kechika Wildlife Management Plan

The Muskwa-Kechika Management Area is a vast territory with many important wildlife species and habitats throughout. However, scientific knowledge of the specific geographic occurrences of populations and habitats is presently quite limited, and a key part of the plan is to expand this information base over time. To provide an effective, usable plan for such an area requires that it be outcome-focused, supported by comprehensive technical information consistent with present knowledge.

The Muskwa-Kechika Wildlife Management Plan (M-KWMP) is comprised of two documents, which serve two important, related functions: (1) clear and concise strategic direction, and (2) comprehensive technical guidance.

Strategic Document	This contains the essence of the Wildlife Management Plan designed to stand as an approved local strategic plan as defined by the *Muskwa-Kechika Management Area Act.* As such, Part A can be referred to as "the Plan", while recognizing that an important aspect of the Plan is the support of a comprehensive Technical Manual, which is Part B.
Technical Manual	The Technical Manual, Part B in the full package of the M-KWMP contains explicit technical direction and advice with respect to implementation of the Plan, including extensive appendices. Part B is designed to serve as a comprehensive reference to assist in implementing the approved Plan. Part B can also be referred to as "the Plan Manual."

Figure 1. The Muskwa-Kechika Management Area and Species Objectives/Strategy Units.



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1.0 Context

1.1 Purpose

The Strategic Document of the Muskwa-Kechika Wildlife Management Plan (M-KWMP) is a local strategic plan for all activities in the Muskwa-Kechika Management Area (M-KMA) that affect or respect wildlife and/or wildlife management.

The broad purpose of the M-KWMP is:

> **to provide a management framework for maintaining the abundance and diversity of indigenous wildlife and their habitat in the context of human activities and uses.**

Over time, the range of other local strategic plans of the M-KMA and the various specific operational instruments that sanction specific uses affecting or respecting wildlife will be guided by this local strategic plan for maintaining wildlife.

The M-KWMP has two major components: (1) the Strategic Document, which is designed for Ministerial approval and is focussed on presenting wildlife outcomes for which the Province has responsibility, and (2) the Technical Manual, which supports the Strategic Document by providing comprehensive management directions for technical personnel responsible for implementation. To provide strategic direction, a clear and concise document is required that is appropriate for Ministerial approval as a local strategic plan. To support this first document, a detailed Technical Manual is needed as a reference to guide implementation of the local strategic plan. Together, these documents form the whole wildlife management plan for the M-KMA.

1.2 Planning Area

The Muskwa-Kechika Management Area is an extensive region located in northeastern British Columbia. It is comprised of over 6.4 million hectares of land and water widely recognized for its special wilderness and wildlife values. Established in 1998, the M-KMA is managed under the *Muskwa-Kechika Management Area Act*,[1] and includes parks and protected areas, ecological reserves, and special management zones (Figure 1, page v).

The Muskwa-Kechika Wildlife Management Plan applies to the entire M-KMA while recognizing the specific legal and regulatory frameworks of the various land administration areas within the planning area. The M-KWMP has been developed to meet an overall vision for wildlife because wildlife populations and habitat requirements are not limited to administrative boundaries. Management depends on co-operation among adjacent jurisdictions, various regional, provincial, and federal departments, and other land use planning initiatives.

1.3 Legislative Foundation

1.3.1 Muskwa-Kechika Management Area Act

The Muskwa-Kechika Wildlife Management Plan arises from the *Muskwa-Kechika Management Area Act*, which is the special legislation established as a framework for maintaining the wilderness and wildlife characteristics of the Muskwa-Kechika Management Area while allowing resource use and development activities. Once approved by the Minister of Environment, the Strategic Document component of the Wildlife Management Plan is a legal instrument.

The Preamble to the Act provides important context for the Wildlife Management Plan:

> *"… the Muskwa-Kechika Management Area is an area of unique wilderness in northeastern British Columbia that is endowed with a globally significant abundance and diversity of wildlife;*
>
> *… and … the management intent for the Muskwa-Kechika Management Area is to maintain in perpetuity the wilderness quality, and the diversity and abundance of wildlife and the ecosystems on which it depends while allowing resource development and use in parts of the Muskwa-Kechika Management Area designated for those purposes including recreation, hunting, trapping, timber harvesting, mineral exploration and mining, oil and gas exploration and development;*
>
> *… and … the long-term maintenance of wilderness characteristics, wildlife and its habitat is critical to the social and cultural well-being of first nations and other people in the area;*
>
> *… and … the integration of management activities especially related to the planning, development and management of road accesses within the Muskwa-Kechika Management Area is central to achieving this intent and the long-term objective is to return lands to their natural state as development activities are completed."*

Subsection 7(2)(e) of the *Muskwa-Kechika Management Area Act*, for activities within the Muskwa-Kechika Management Area, states that

> *"an operational instrument affecting or respecting wildlife management must be consistent with any local strategic plan that is a wildlife management plan*."

Subsection 7(4) states that

"an operational instrument referred to in subsection 7(2) must incorporate any conditions necessary to make its operation consistent with the local strategic plan...."

The Act defines an "operational instrument" to be

> *"…any instrument or document affecting or respecting Crown land or a natural resource that is enacted under an Act other than the M-KMA Act and regulations."*

"Operational instruments" includes all permissions given in the exercise of administrative or judicial discretion, rather than permissions given on a legislative basis. Examples of operational instruments that might affect or respect wildlife management include (but are not limited to) instruments or documents issued with respect to mining and exploring for minerals, oil, and gas, cutting and planting trees and setting fires, grazing animals on Crown land, occupying Crown land on a temporary or long-term basis, transferring of Crown land, building and using roads, activities authorized under the *Wildlife Act,*[2] using Crown land for recreational purposes, fishing and hunting, the use of water and the alteration of water bodies, releasing waste into the environment, and the use of pesticides.

1.3.2 Muskwa-Kechika Management Plan

Under the Act, the Muskwa-Kechika Management Plan[3] provides the overarching management framework. This plan results from Land and Resource Management Plans (LRMPs) for the Fort Nelson and Fort St. John Forest Planning Areas. The Mackenzie LRMP has been developed subsequently to the current Muskwa-Kechika Management Plan. The Muskwa-Kechika Management Plan now under review and revision.

The General Management Direction for the Muskwa-Kechika Management Area, as it first appeared in the Muskwa-Kechika Management Plan, is the following:

> *The management intent for the Muskwa-Kechika Management Area is to ensure wilderness characteristics, wildlife and its habitat are maintained over time while allowing resource development and use, including recreation, hunting, timber harvesting, mineral exploration and mining, oil and gas exploration and development. The integration of management activities especially related to the planning, development and management of road access within the Muskwa-Kechika Management Area is central to achieving this intent. The long-term objective is to return lands to their natural state, as much as possible, as development activities are completed.*

It is noted that, while maintaining wildlife and their habitats is a specific objective, this plan recognizes that economic and other human activities are permissible.

> *Local strategic plans must be consistent with the objectives and strategies of the Management Plan… Approvals, permits and plans which are subsequent to and take direction from approved local strategic plans must be consistent with the local strategic plan but need not demonstrate consistency with the objectives of the Management Plan.(3.5, p. 10)*

Success is dependent on the continued efforts at integration of management directions across the variety of local strategic plans, such as the Wildlife Management Plan, with the issuance and updating of the variety of operational instruments. Regarding operational activity in the context of wildlife management, the Muskwa-Kechika Management Plan further specifies:

> *Any issuance, approval, permit or authorization, by a minister, ministry or agent of the Crown, of an allocation, tenure, disposition, licence or any other instrument or document affecting wildlife management allocation or management, must be consistent with any wildlife management plan which includes the subject area of the instrument or document of allocation or management. (4.1.5, p. 11)*

The Muskwa-Kechika Management Plan, section 6.0, includes transition provisions, including a provision for "grandparenting" of existing plans and permits that pre-date the plan, while requiring that such plans or permits when renewed or replaced must be consistent with the Management Plan.

1.4 Relationships with First Nations

The M-KMA lies within the asserted traditional territories of the Treaty 8 and the Kaska Dena First Nations. The Muskwa-Kechika Management Area (M-KMA) has provided shelter, food, clothing, and ultimately a way of life for First Nations for hundreds of years. First Nations were actively involved in the sustainable management of their territories for hunting, trapping, fishing and harvesting of plants and berries in harmony with the land. The Province of British Columbia is committed to meaningful consultation with First Nations on a government-to-government basis; new approaches to consultation and accommodation are currently being developed in recognition of this duty.[4] This wildlife management plan is consistent with Sec.35 (1) of the *Constitution Act,*[5] which recognizes and affirms aboriginal treaty rights. The M-KWMP recognizes the traditional food, social, and ceremonial uses of wildlife in the M-KMA. Although some First Nations (i.e., Treaty 8 members) did not participate in the Land and Resource Management Planning that led to the M-KMA, all future processes will engage First Nations as another level of government and will continue to do so in future wildlife management actions. Negotiated collaborative agreements with First Nations are an example of such processes. The Muskwa-Kechika Wildlife Management Plan and subsequent management actions within the plan area will respect First Nations traditional harvesting, cultural activities, and other aboriginal or treaty rights and interests, and approval of the M-KWMP is without prejudice to any future treaty agreements.

1.5 Relationships to Other Local Strategic Plans

1.5.1 General

The M-KWMP–both the Strategic Document (as a local strategic plan) and Technical Manual portions–has been developed in consideration of a variety of key documents. Fundamentally, the M-KWMP draws authority from the *Muskwa-Kechika Management Area Act (M-KMA Act)* and the Muskwa-Kechika Management Plan (M-KMP). All other local strategic plans, including pre-tenure plans and the Muskwa-Kechika Management Area Recreation Management Plan have been considered and have influenced the development of the M-KWMP. Much of the technical information supporting the plan, as provided in the accompanying Technical Manual, is based on multi-stakeholder land use planning and direction from Land and Resource Management Plans (LRMPs) for the Fort Nelson, Fort St. John, and Mackenzie Planning Areas.

In addition to the M-KWMP, other approved local strategic plans, as required by the *Muskwa-Kechika Management Area Act,* address wildlife or wildlife management with regard to specific activities and/or specified geographic areas within the larger Muskwa-Kechika Management Area. These other local strategic plans, as defined in the Muskwa-Kechika Management Plan, include: Landscape Unit Objectives, Oil and Gas Pre-Tenure Plans, Recreation Management Plans and Park Management Plans.

Whereas the M-KWMP provides broad direction for wildlife management throughout the whole of the Muskwa-Kechika Management Area, these other local strategic plans provide sector-specific and/or geographic area-specific management direction. The Province is responsible to ensure that there is consistency, over time, among these plans, as specified in the Muskwa-Kechika Management Plan. Sectors and specific tenure holders take direction from their pertinent sector-specific or area-specific plans, as per standard practice. Decision-makers for the Province's authorities and agencies, when updating existing plans or in the absence of approved plans, look to the M-KWMP to achieve or assure consistency.

1.5.2 Operational planning under the Forest and Range Practices Act.

The preparation and adjudication of operational plans required under the *Forest and Range Practices Act* (FRPA),[6] such as forest stewardship plans, are informed by the provisions of the *Muskwa-Kechika Management Area Act,* and related strategic documents such as the M-KWMP. Operational plans under FRPA may be considered to be local planning initiatives that set out specific results or strategies that are consistent with government's land use intent. In this respect, it is sufficient-for the purposes of preparing and adjudicating an operational plan-that required operational plan content address the objectives established by government for the purposes of FRPA.

Where elements of the M-KWMP are to have legal meaning for the purposes of FRPA operational plans, government will employ the authorities granted under the *Land Use Objectives Regulation*[7] or the *Government Actions Regulation*[8] to legally enact critical land designations and objectives or measures for the values that are to be managed consistent with the provisions of the *Muskwa-Kechika Management Area Act*.

Compliance with the statutory and regulatory requirements set out under FRPA will be deemed sufficient in achieving consistency of forest and range practices with management intentions for the Muskwa-Kechika Management Area.

1.5.3 Oil and gas pre-tenure plans

Oil and gas pre-tenure plans, also referred to as pre-tenure plans (PTPs), provide area-specific direction to the oil and gas sector with respect to exploration, development, and production activities. The Muskwa-Kechika Management Plan defines local strategic plans as including oil and gas pre-tenure plans. The *Memorandum of Understanding Respecting Operational Land Use Planning for Oil and Gas Activity in the Northeast of British Columbia, July 31, 1996* provided the initial definition of pre-tenure plans.

As stated on page 1-1 in the May 2004 document Pre-Tenure Plans for Oil and Gas Development in the Muskwa-Kechika Management Area,[9] pre-tenure plans are intended to:

> *Encourage and guide environmentally responsible development of oil and gas resources by providing results-oriented management direction that ensures oil and gas activities are consistent with the M-KMA Act;*
>
> *Provide a sustainable resource management framework to address social well-being, environmental conservation and economic prosperity, and*
>
> *Identify roles and responsibilities for ongoing monitoring of progress in achieving the results anticipated by the Pre-Tenure Plan.*

Several approved pre-tenure plans occur within the M-KMA that pre-date the M-KWMP, including the Halfway-Graham PTP, Besa-Prophet PTP, Muskwa-West PTP, and Sulphur/8 Mile (Eastern Half) PTP. The management direction provided in pre-tenure plans applies to all oil and gas activities within the specified geographic areas. These plans are the responsibility of the Integrated Land Management Bureau, and have been developed with multi-stakeholder advisory groups.

Each pre-tenure plan is a specific legal instrument for the oil and gas sector in the specified area. Pre-tenure plans include some wildlife management direction, including preliminary targets, objectives, and indicators for six focal wildlife species (as indicators of habitat conservation): Mountain Goat, Elk, Moose, Stone's Sheep, Caribou and Bison, for conservation of ecosystem diversity, conservation of species diversity (including red- or blue-listed species), areas of special biological significance, and restoration of ecosystems. As these pre-tenure plans are developed or renewed in future years, the Province is responsible to ensure appropriate consistency between the pre-tenure plans and the M-KWMP. This consistency will be achieved through inter-agency dialogue, directed to ensuring that the respective local strategic plans are compatible, and through the adaptive management component of these plans.

1.5.4 Recreation Management Plan

The Muskwa-Kechika Management Plan defines a recreation management plan as a local strategic plan for the purpose of recreation management. The *Memorandum of Understanding Respecting Recreation Planning in the Muskwa-Kechika Management Area, December 1997* defines a recreation management plan. A recreation management plan is a pre-condition for the issuance, approval, permitting, or authorization of a commercial backcountry recreation allocation, tenure, disposition, licence, or any other instrument or document relating to commercial backcountry recreation.

The Muskwa-Kechika Management Area Recreation Plan[10] establishes 12 "planning and management principles" to guide decision-making, co-ordination of management, and implementation of plans in the M-KMA. Principles with explicit relevance to management of wildlife and wildlife habitat in the M-KMA include environmental stewardship, the non-

degradation concept, management of human influence, and determination of the limits of acceptable change.

The planning and management principles for the Muskwa-Kechika Management Area Recreation Plan are provided in the M-KWMP Technical Manual, Technical Appendix 1.

1.5.5 Park management plans

Protected areas are a key component of the M-KMA. Over 1.6 million hectares of land are contained within 16 protected areas, such as Northern Rocky Mountains, Redfern-Keily, Dune Za Keyih, Graham-Laurier, Muncho Lake, and Liard River Corridor. These protected areas, while subject to the *Muskwa-Kechika Management Area Act,* are managed under their respective legislation including the *Park Act,* the *Ecological Reserves Act,* and the *Environment and Land Use Act*.

Planning in the M-KMA considers the management and policy direction for protected areas in general, and for specific protected area management plans as they are developed. Protected areas are managed in accordance with approved policies for the conservation and public enjoyment of natural, cultural, and recreational values. Management actions in each specific protected area in British Columbia, including those in the M-KMA, are guided by documents referred to as Management Plans, Management Direction Statements or Purpose Statements. These area-specific documents, where they exist, prescribe management direction appropriate to the given protected area within the context of the governing legislation, regulations, and subsequent policies.

Within protected areas the goals and objectives of the M-KWMP will be achieved in a manner that is consistent with plans and policies for those areas designated as protected areas. Where inconsistencies arise, appropriate efforts will be made to implement strategies aimed at achieving consistency.

2.0 Plan Foundations

2.1 Vision

The Muskwa-Kechika Wildlife Management Plan has been developed under the umbrella of the *Muskwa-Kechika Management Area Act*, the Muskwa-Kechika Management Plan,[11] and the Fort Nelson, Fort St. John, and Mackenzie Land and Resource Management Plans.[12,13,14] It is through this Act and these plans that the Muskwa-Kechika Management Area is to be established as a model of land and resource management integration in which wilderness quality and the diversity and abundance of wildlife and ecosystems on which it depends is maintained in perpetuity while allowing sustainable resource development and use.

The Muskwa-Kechika Wildlife Management Plan, in the context of maintaining "the diversity and abundance of wildlife and ecosystems" (as per the preamble to the Act) provides wildlife

management outcomes that have been designed to facilitate compatible management and use of the Muskwa-Kechika Management Area to achieve the wildlife conservation intent of the Act.

The vision underlying the Muskwa-Kechika Wildlife Management Plan is the Muskwa-Kechika Management Area with its diversity and abundance of indigenous wildlife and their habitat maintained over time, and passed on in undiminished splendour and value to future generations.

2.2 Goals of the Wildlife Management Plan

The following plan goals are based on those provided in the *Planning Guide to Wildlife Management Areas,*[15] as referenced in the Muskwa-Kechika Management Plan, and also based on input from the Advisory Group to the M-KWMP (refer to Acknowledgements, M-KWMP Technical Manual).

The Muskwa-Kechika Wildlife Management Plan is designed to:

1. Maintain, increase, or restore the populations and habitats of wildlife species that occur within the Muskwa-Kechika Management Area;

2. Ensure that no indigenous wildlife species is extirpated from the Muskwa-Kechika Management Area;

3. Identify wildlife management activities that are consistent with provincial policy, Land and Resource Management Plans, and the *Muskwa-Kechika Management Area Act,* and that are aimed at maintaining ecological integrity and viable populations of wildlife while allowing resource development and use in parts of the Muskwa-Kechika Management Area designated for those purposes;

4. Provide a strategic framework, and a comprehensive technical reference, to guide preparation and adjudication of operational instruments in the Muskwa-Kechika Management Area that affect or respect wildlife management;

5. Recognize the rights and interests of First Nations and develop collaborative management of wildlife with First Nations;

6. Encourage and support scientific study of ecological systems within the Muskwa-Kechika Management Area;

7. Seek the co-operation and involvement of all levels of government, affected stakeholders, and the general public in order to address impacts that their activities may have on wildlife and their habitat;

8. Provide suitable opportunities for appropriate and sustainable public appreciation and use of wildlife resources in the Muskwa-Kechika Management Area without compromising the maintenance of wildlife and wildlife habitats; and

9. Effect monitoring for the purposes of determining whether natural resource use practices adopted for implementation of the Muskwa-Kechika Wildlife Management Plan are delivering the intended wildlife management outcomes stated in the plan.

2.3 Guiding Principles for the Wildlife Management Plan

Principles comprise the underlying philosophy of a plan. The principles for the M-KWMP are:

1. Ecological approach to wildlife management
2. Respect for First Nations
3. Manage for long-term sustainability
4. Habitat disturbance focus
5. Mitigate and adapt to the effects of climate change
6. Multiple information sources
7. Priority species focus
8. Hierarchy of impact management strategies
9. Integrated resource management approach
10. Results-based approach
11. Adaptive management approach
12. Variable management effort

The guiding principles are linked to each other, and the application of any management action will likely achieve outcomes under several principles. For example, cumulative effects assessment and management actions follow from principles 1, 3, 4, 8, 9, 10, and 11.

1. Ecological approach to wildlife management

Within the opportunities and constraints provided by jurisdiction, mandate, and responsibility, the Muskwa-Kechika Wildlife Management Plan will follow an ecological approach to guide management of wildlife and wildlife habitat in the Muskwa-Kechika Management Area. Management of wildlife in the M-KMA will be accomplished in large part by allowing ecological functions and processes to continue to operate that benefit community abundance and diversity, rather than a particular species; such functions include, but are not limited to, habitat variegation, connectivity, predator prey dynamics, and natural disturbance. Where there is a threat of significant reduction or loss of biological diversity, ecosystem function, or habitat suitability, appropriate measures will be taken to avoid or minimize that threat. An ecological approach to wildlife management includes several key elements (refer to Appendix A-2), including a hierarchical context, adaptive management, ecological boundaries, ecological integrity, co-ordinated management, human impacts and influences, and human values. Describing thresholds of ecological impact beyond which the viability of ecosystem processes or components is uncertain or vulnerable will be an important application of an ecological approach to wildlife management.

2. Respect for First Nations
The Province of British Columbia is committed to meaningful consultation with First Nations on a government-to-government basis, based on mutual respect, recognition, and reconciliation.[16] First Nations and resource managers will collaborate to manage wildlife in an open and transparent manner.[17] Project proponents and resource users should respect any cultural resources (archaeological sites) that are found and report these to the proper authorities.

3. Manage for long-term sustainability
In an area available for human use and resource development, it is not possible to completely avoid impacts to all wildlife species and habitats; disturbance will occur on a site-specific basis. By avoiding or mitigating impacts and restoring habitats, and by seeking to minimize cumulative effects, the M-KWMP will provide for long-term sustainability of the endemic wildlife of the Muskwa-Kechika Management Area. To achieve this, management will consider the implications and impacts of use and development in four timescales: the short term (1–4 years), the near term (5–20 years), the medium term (20–100 years), and the long term (> 100 years).

4. Habitat disturbance focus
Maintaining the wildlife that characterizes the Muskwa-Kechika Management Area is best achieved by focussing management efforts on identifying important habitats, then avoiding or minimizing, monitoring, and mitigating disturbance to important habitats. For this principle to be applied, it is necessary to provide development processes with the best available information with respect to the natural environment before decision-making occurs.

5. Mitigate and Adapt to the detrimental effects of climate change
The M-KWMP recognizes that climate change may affect physical processes, which can in turn affect biological systems in the M-KMA. To be able to determine or predict the future effects of climate change requires a multi-level approach that considers ecosystems as a whole. The effects of climate change on these biological systems should be tracked, evaluated, and reported as part of the implementation of the M-KWMP.[18, 19] Management direction and statutory decision-makers should consider the potential impacts of climate change on wildlife.

6. Multiple information sources
Decisions with respect to wildlife management will be based on the best available science and information. Over time, implementation of the M-KWMP will incorporate various information sources, including First Nations Traditional Ecological Knowledge (TEK) and other local knowledge, the best available scientific information, as well as innovative tools and techniques as available.

7. Priority species focus
The M-KWMP will focus management effort on a limited number of priority species. Wildlife species considered for active management have been selected based on the mandate and legal responsibilities of the Ministry of Environment, ecosystem management principles, M-KWMP Advisory Group discussion (Technical Manual, Acknowledgements), and peer review. The general intent is to manage to improve the status of priority wildlife within a sustainable, natural range of variability. Improved status means a higher probability that a population will exist at or above a threshold number (or density) over the near (5-20 years) to medium (20-100 years) term

as a result of management. Where possible, desired conditions will be defined for each wildlife species and will include:

a. Ensuring that populations of sufficient size can continue to fluctuate, without risk of extirpation during periods of low abundance;
b. Managing the risk from human use (e.g., hunting, industrial, and recreational activities) to ensure that low population thresholds are not reached; and
c. Working within the bounds and range of natural processes.

The priority species do not occur uniformly in the planning area, and therefore management efforts will vary according to pre-development inventory information. Appendix A-3 in this document lists the priority species. Several other species are referred to as non-priority species: while these do not require special management under the wildlife management plan, they are actively used (i.e., hunting and trapping) and this use is managed. These non-priority species are listed in Table 8 in the M-KWMP Technical Manual.

8. Hierarchy of impact management strategies

All projects approved must be consistent with the *M-KMA Act* and *Regulation*. All regulatory agencies are required to ensure that any approved projects meet all regulatory requirements including the *Muskwa-Kechika Management Area Act*[20] and associated regulations. Impacts to wildlife and wildlife habitat in the Muskwa-Kechika Management Area should be managed according to a hierarchy of avoidance, mitigation, and restoration strategies. This is a stepwise progression, where one moves to the next step only when all options in the current step have been exhausted.

Step 1: Impact avoidance strategies, such as avoiding sensitive locations or time periods.

Step 2: Impact mitigation strategies, such as applying techniques to reduce, overcome, or compensate for impacts that cannot be avoided.

Step 3: Restoration strategies, such as applying techniques to restore affected habitats or populations once a development or development phase has been completed.

Step 4: Compensation strategies, such as restoring or reclaiming habitat suitability at some other location.

9. Integrated resource management approach

All agencies and resource managers with land use, tenure, and resource management responsibilities in the Muskwa-Kechika Management Area will be responsible for integrating and co-ordinating planning, management, and development activities to enable sustainable environmental, economic, and social values consistent with zoning and other direction provided by LRMPs, the *Muskwa-Kechika Management Area Act,* and the Muskwa-Kechika Management Plan. An integrated resource management approach is based on communication, co-ordination, and involvement of those affected before actions are taken. From a wildlife management perspective, integration of agency efforts is intended to reduce cumulative impacts to wildlife and wildlife habitats and, consequently, to assist in sustaining wildlife resources as a priority of the *M-KMA Act.* For the maximum effect of integration to be achieved, agency efforts should be transparent and co-operative in both research and management.

10. Results-based approach

Rather than prescribing conservation, mitigation, and restoration measures, the focus will be on providing clear and measurable outcomes for resource use plans, operational instruments, and activities. These outcomes will be based on an appropriate range of natural variability, and will describe desired results for wildlife and wildlife habitat. Resource managers and users will be responsible to design their most effective strategies to achieve the results, such as through avoidance, mitigation, restoration, or compensatory initiatives. This approach reduces dependence on rigid regulation and enables innovative solutions that vary with specific situations.

11. Adaptive management approach

An adaptive management approach will be employed to improve policies and practices over time, based on learning from results. Adaptive management is defined here as:

> *a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. Its most effective form – "active" adaptive management – employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed.*[21]

In the adaptive management approach, three general time scales will be recognized for implementation of the M-KWMP, including the short term (1–4 years), the near term (5–20 years), and the medium term (20–100 years). Management actions should be tracked, evaluated, and reported. Surveying, monitoring, and reporting activities in the short term should be included in periodic work plans over the medium and long term. As more information (e.g., scientific and/or traditional knowledge) becomes available, activities should be changed to reflect that knowledge. An adaptive management approach not only includes the implementation of operational programs, but must also include well-designed monitoring and analysis of these programs so that defensible inferences can be made. Appendix 2 in the M-KWMP Technical Manual provides a more detailed explanation of adaptive management.

12. Variable management effort

With wildlife conservation as the priority of the Muskwa-Kechika Wildlife Management Plan, management effort to this end should be strategically applied. If the population of an endemic wildlife species is at a functionally significant level or greater, then little or no management effort should be applied to the population. If conditions change so that the population begins to decline, or is stable somewhat below a functionally significant level, management effort should be proportionally increased. If current knowledge indicates that the wildlife is below an estimated minimum viable population level, maximum management effort should be applied to increase the population towards minimum viable and functionally significant levels. Appendix A-4 in the Strategic Document provides more information regarding management effort.

3.0 Strategic Directions

3.1 General Strategic Directions

3.1.1 A Provincial Government Plan for Wildlife Management

The Strategic Document of the Muskwa-Kechika Wildlife Management Plan (M-KWMP) is a local strategic plan of the British Columbia government. The goals and principles expressed in Section 2 of this document are goals and principles of the Province with respect to wildlife management in general in the Muskwa-Kechika Management Area, while recognizing that some local strategic plans pre-date this plan and that these remain as the legal instruments directing the applicable sectors.

3.1.2 A "Results-based" Local Strategic Plan

The Strategic Document of the Muskwa-Kechika Wildlife Management Plan identifies outcomes as parameters of success in maintaining wildlife and wildlife habitat across the entire M-KMA. These outcomes will be pursued and achieved responsibly through the various operational instruments that authorize and direct resource development and other land use activities, and by way of government actions undertaken to directly inform legal obligations under different statutes, such as the *Forest and Range Practices Act.*

Area-specific planning and management direction is expected to occur in conjunction with the authorization of those activities, in accordance with their scale and potential for wildlife impacts. The M-KWMP includes appropriate wildlife management outcomes for all priority wildlife and habitats in order that it can serve as a comprehensive plan for the entire area. Resource and land use activities with potential impacts on wildlife habitat need to include appropriate planning and management practices to achieve the wildlife management outcomes of this plan. To ensure that the desired outcomes are achieved, monitoring the results of applied actions is a necessary element of successful results-based management.

3.1.3 Supporting Technical Manual

A comprehensive Technical Manual accompanies the Strategic Document to provide reference information to assist resource managers, proponents, and tenure-holders in meeting the outcomes specified by the plan. The Muskwa-Kechika Wildlife Management Plan Technical Manual is broad in geographic scope and subject matter. It is expected that, in the reality of variable distribution of wildlife and habitat resources, all management prescriptions in this technical manual are unlikely to have universal applicability. The recommended prescriptions of the Technical Manual are relevant where the corresponding wildlife and habitat values exist.

3.1.4 Consistency

Sector-specific plans, either at the strategic level or operational level, should provide appropriate direction to operational instruments for avoiding and mitigating impacts to wildlife and wildlife habitat. In the results-based approach, this is achieved by describing the wildlife management

outcomes that signal success. Agencies with responsibilities for issuance of resource or land use tenures, except where sector-specific local strategic plans pre-date this wildlife management plan, have the responsibility to ensure that the plans and activities of development proponents and tenure-holders are consistent with achieving the outcomes of the Muskwa-Kechika Wildlife Management Plan. Each operational instrument in its development and implementation will apply to specific geographic areas or locations. Therefore, the matter of consistency with the Muskwa-Kechika Wildlife Management Plan is best resolved between the responsible agencies at the time of development or review/renewal of operational instruments or local strategic plans. Some operational instruments and local strategic plans pre-date this plan and consistency will be resolved when these are reviewed or renewed.

Consistency will be achieved through discussion between the agency responsible for issuing an operational instrument or developing a local strategic plan and the Ministry of Environment. Discussion will be focussed on ensuring that the objectives of the Muskwa-Kechika Wildlife Management Plan are achieved, while not unduly compromising the objectives of the sector-specific plan. Sufficient time and resources must be allocated from each responsible agency to ensure consistency is achieved.

For the purposes of preparation and adjudication of operational plans under the *Forest and Range Practices Act,* it will be sufficient that the content of such plans be consistent with the objectives that have been established by government for the purposes of that statute. Government may need to undertake actions to establish land designations and either objectives or general wildlife measures, consistent with the M-KWMP intent, in order to provide operationally specific direction to forest and range planning and practice initiatives.

3.1.5 Co-operative Implementation

Responsibility for implementation of the M-KWMP, through sector-specific local strategic plans and operational instruments, as applicable, is shared among provincial agencies with land use, resource management, and tenure responsibilities in the Muskwa-Kechika Management Area. The Ministry of Environment has responsibility for monitoring overall implementation of the Muskwa-Kechika Wildlife Management Plan. Resource management agencies of the provincial government will seek the co-operation and involvement of governments, including First Nations governments, as well as affected stakeholders and the general public in addressing wildlife management issues and concerns of importance. Organizational structures in place with the capability to facilitate the integrated management approach include the Muskwa-Kechika Advisory Board, the Northeast Managers' Committee and the Inter-Agency Directors' Committee. These existing mechanisms do not preclude the development of further integrative mechanisms.

3.2 Wildlife Management Outcomes

Outcomes are the desired results of applying selected actions in order to achieve the goals of the plan. Table 1 presents the range of wildlife management subjects and outcomes for the Muskwa-Kechika Management Area.

The Muskwa-Kechika Wildlife Management Plan, as a local strategic plan, requires that operational instruments affecting or respecting wildlife management be consistent with these outcomes as determined by the appropriate resource managers. Agencies issuing or monitoring operational instruments are assigned the responsibility for ensuring that operational instruments are consistent with the outcomes. Other local strategic plans that pre-date the M-KWMP remain as the legal direction for associated operational instruments. In these cases, consistency with the M-KWMP will be achieved through inter-agency collaboration, and over time through processes for renewal of these older plans.

As previously noted, a comprehensive Technical Manual supports the Strategic Document of the Muskwa-Kechika Wildlife Management Plan to provide technical information and guidance to assist professional resource managers, proponents, and tenure-holders in meeting the outcomes specified. The Technical Manual is separate from the approved Strategic Document.

In the following table of outcomes, the subjects are referenced to section numbers in the accompanying M-KWMP Technical Manual. Table 1 also includes samples of important management actions recommended by the Technical Manual that is a companion to this plan. Certain of these actions are provided to inform considerations pertinent to the *Forest and Range Practices Act.* It is emphasized that these are **only examples** of recommended actions. A more complete listing of recommended actions is provided in the Technical Manual. The "Responsibility" column refers to the government ministry or ministries with primary responsibility. In this column, "t.a." is an abbreviation for "tenure-authorizing agency," and means that an agency authorizing a tenure has a primary responsibility for the outcome indicated.

Table 1: Wildlife Management Outcomes

Subjects	Outcomes	Respon-sibility	Important Actions -samples (refer to Technical Manual for more details)
General Habitat: refer to Technical Manual section 1.1			
Ecological approach to management	The diversity, distribution, and abundance of endemic ecosystems are maintained over the long term in each Species Objective/Strategy Unit (SO/SU)(Figure 1). Ecosystems are maintained within their natural range of variability. Important wildlife habitat is maintained, and continues to function. Scarce, representative, fragile, rare, endangered, and threatened species and ecosystems are identified and maintained in each Landscape Unit.	MoE[a] MoAL[b] t.a.	Important wildlife habitat is incorporated into vegetation, habitat, and agency maps and databases. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Best management practices	Best management practices are available and used.	MoE t.a.	Complete and apply appropriate guidelines and best management practices for all resource uses/sectors. Monitor the effectiveness of best management practices.
Cumulative effects management	Cumulative effects indicators are measured against thresholds and used in planning.	MoE t.a.	Monitor for cumulative effects. Determine and implement thresholds and related practices.
Landscape-level Habitat (Technical Manual section 1.2)			
Seral stage and ecosystem distributions	Proportional occurrence of seral stages and ecosystems are maintained within their natural range of variability for all biogeoclimatic zones on a landscape-unit basis.	MoE t.a.	Prepare and maintain up-to-date land cover information. Consider disturbance patterns in planning. Track range conditions. Document seral/ecosystem distribution. Monitor effects of large mammal management. For the purposes of FRPA, current objectives established for Old Growth seral representation will be applicable for the purposes of this outcome.
Habitat connectivity	Connectivity of habitats is maintained for priority large mammal species on a landscape-unit basis. Natural fragmentation levels are maintained for priority large mammal species on a landcape-unit basis. Important wildlife corridors in each landscape unit continue to be well used by wildlife.	MoE t.a.	Identify and map links, corridors, routes, trails, and landscape-level important wildlife habitat. Minimize development of new links and corridors. Include OGMAs, wetlands, WTPs, and important wildlife habitat.

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Functional riparian areas	Riparian zones have appropriate buffers. Hydrologic characteristics remain within the natural range of variability.	MoE t.a.	Obtain habitat inventory prior to development. Provide inventory, assess impacts, and monitor use of riparian areas. Chemical use, erosion, and sediment are controlled in riparian areas. Apply available guidelines and best management practices. Maintain relatively large, undisturbed vegetative buffers in riparian areas. For the purposes of FRPA, the planning and practice requirements set out in statute and regulation will apply for the purposes of this outcome.
Stand-level Habitat (Technical Manual section 1.3)			
Fragile, scarce, and representative ecosystems	Fragile, scarce, and representative ecosystems are maintained within their natural range of occurrence on a landscape-unit basis.	MoE t.a.	Define, identify, describe, track, and manage for fragile, scarce and representative ecosystems within a natural range. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.
Species-specific Habitat (Technical Manual section 1.4)			
Important habitats for priority species	Important habitats (Appendix A-5) of priority species are identified and, over time, maintained in proportion to their natural occurrence on a landscape-unit basis.	MoE t.a.	MoE: ensure consistency with national and provincial strategies. Identify, track, and maintain occurrence and use of important wildlife habitat. Important habitat features are incorporated into databases, and mapping and databases are kept current. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.
Red/Blue-listed Plant Species and Communities (Technical Manual section 1.5)			

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Red and blue-listed plants and plant communities	Listed plants and plant communities are identified and maintained in development areas.	t.a.	Determine distribution of listed plants and plant communities. Identify, track, and maintain occurrences of listed plants and communities; apply IWMS procedures and standards. Apply existing or surrogate best management practices. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.
Fire Management (Technical Manual section 1.6)			
Fire as habitat management tool	Habitat objectives (seral stage distributions within natural range of variability) for priority species are achieved on a landscape-unit basis.	MoF MoE	Identify historic and current fire regime Consolidate existing Fire Management Plans (FMPs). Implement prescribed burning recommendations; avoid overuse on specific sites.
Migration Habitat (Technical Manual section 1.7)			
Important migration habitat	Important migration habitats for priority species are identified and maintained in relation to development activities.	MoE t.a	Identify and track important migration habitat. Include migration habitat when managing habitat connectivity.
Results-based Habitat Management (Technical Manual section 1.8)			

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Habitat suitability	Habitat suitability is maintained (outcomes are achieved) within the natural range of variability for priority species in relation to development activities within each landscape unit using avoidance, mitigation, and restoration techniques.	t.a.	Monitor development to document continued use of important habitat features. Maintain database and map status, and provide information. Identify current wildlife habitat values and use, and desired habitat results. Apply in order of preference: relocation, redesign, compensatory mitigation, and/or enhanced restoration. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.
Wildlife Species Management (Technical Manual section 2.0)			
General Direction (Technical Manual section 2.1; for species-specifics, Technical Manual sections 2.2 to 2.8)			
Populations of priority wildlife species (Appendix A-3 lists priority species)	The population status of priority wildlife is sustained or improved with respect to the natural range of variability on the basis of known natural occurrence per landscape unit.	MoE t.a.	Set population targets at the medium level. Obtain periodic wildlife population assessments.
Health of priority species	Populations of priority species are unaffected by diseases introduced through increased access or development. Game-farmed animals and banned exotic animals are not present.	MoE MoAL t.a.	Enforce existing environmental regulations. Manage potential disease vectors. Develop a response plan. Collect samples in a registry.

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Habitat suitability impacts	Important habitats of priority species (Appendix A-5) are maintained in proportion to natural occurrences on a landscape-unit basis. Priority species persist in using important habitats in each landscape unit.	MoE t.a.	Identify and monitor important habitats in relation to development plans. Apply existing or appropriate guidelines, guidebooks, and best management practices. Implement results-based habitat management Develop and apply precautionary best management practices. Maintain habitat suitability. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.
Disturbance from access	Access development is planned and co-ordinated to minimize cumulative and long-term effects on important habitats of priority species. Vehicle wildlife collisions are minimized and not significant to the populations. Air access is managed in consideration of seasonal habitat issues/sensitivities for priority species. Upon cessation of activities, access routes are restored to a vegetated state using reclamation, rehabilitation, re-contouring, and other techniques that, over time, will approximate the desired conditions.	MoE MoT[c] t.a.	Co-ordinate access among users. MoE: develop and provide access thresholds. MoE, MoT: track vehicle wildlife collisions and implement traffic restrictions. Provide and apply least-risk windows and flight guidelines/buffer zones for identified species, particularly re natality and winter range. For the purposes of FRPA, access management initiatives affecting sensitive ecosystems or wildlife habitat will be reflected in general wildlife measures for specific land designations.

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Wildlife harvest	Harvest levels are maintained at levels that can be sustained for the long term. Harvested species' populations remain stable or improve to functional/sustainable levels on a landscape or wildlife management unit basis.	MoE	Monitor harvest levels, and direct population inventory and research. Manage to reflect conservation and biodiversity goals first, then First Nations priorities and opportunities for hunting and trapping. Maintain liaison with First Nations. Co-ordinate compulsory inspections for identified species.
Red- and Blue-listed species	A comprehensive database for listed species habitat and distribution at different scales is developed and populated. Important habitats for red- and blue-listed species are identified and maintained at different scales. Recovery and management plans for listed species are supported and implemented.	MoE t.a.	Conduct baseline inventory as needed. Provide guidelines; encourage public reporting. Include listed species in land use planning. Provide known habitat and distribution information to proponents. Apply appropriate guidelines, including to high potential habitat. Assess impacts for proposals and deliver listed species information. Adaptive management must consider the effects on listed species. Develop and implement recovery planning and monitoring. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.
Fish – general (Technical Manual section 2.6)			

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Fish species	Suitability of fish habitat is maintained, including water quality and hydrological conditions. Distributions of endemic fish species are maintained as per natural occurrence in each SO/SU. The genetic diversity and abundance of wild stocks are maintained per each SO/SU.	MoE DFO[d] t.a.	Identify and map fish distributions and important habitat. Collect baseline information. Minimize habitat fragmentation and eliminate obstructions. Under FRPA, riparian management provisions and regulatory requirements for protection of fish and fish habitat, and for safe fish passage, will be applicable to this outcome. Study and characterize priority species (distributions, populations), monitor trends, develop and implement inventory and monitoring strategies. Apply guidelines and habitat information. Follow established policies for fish transfers, manage unstudied fish populations conservatively, monitor use.
Reptiles/amphibians (refer to 2.7 in Technical Manual)			
Invertebrates (refer to 2.8 in Technical Manual)			
Non-indigenous Species Management (Technical Manual section 3.0)			
Domestic Animals			
Preventing the introduction of disease	Diseases are not introduced to wild populations/species by domestic animals.	MoE MoAL MFR[e]	Remove feral horses. Keep pets and other domestics under control. Separate domestic from wild stocks of related species.
Preventing harassment or displacement of wild species	Priority wildlife species are not disturbed in or displaced from important habitats by uncontrolled domestic animals.		Avoid domestic grazing competition with wild herds; conservatively manage domestic grazing. Use local, weed-free feed. MoE will assess exotic species before allowing.

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Invasive Species Preventing and controlling invasive plants and fish	Invasive plants are not introduced, or, if introduced accidentally, are removed. Indigenous species are protected from fish introductions.	MoE DFO t.a.	Control designated plants. Treat and re-seed disturbed sites. Should use local, invasive-free feed. Ensure that there are no species of concern prior to introductions. Avoid fish introductions where there is no natural occurrence. Determine potential impacts before introductions. For the purposes of FRPA, operational plan content requirements for invasive plants will be applicable for this outcome.
Wildlife Human Conflict (Technical Manual section 4.0)			
Bear human conflict	Fewer negative bear human interactions.	t.a.	Prefer non-lethal responses to conflicts. Avoid developments in bear habitat. Secure storage of food and proper management of food wastes.
Wildlife impact on property	Wildlife impact on private property is reduced, while minimizing risk to non-target species.	MoE	Prefer non-lethal responses for control. Follow provincial regulations and policy. Discourage control measures with risks to non-target species.
Domestic livestock control.	Livestock do not compete for habitats required by wildlife.	MoE AgL MoF	Apply conservative stocking rates. Control timing and distribution of access.
Industrial and Commercial Access and Development: Mitigation of Impacts (Technical Manual, section 5.0)			
Important habitat for priority species	Important habitats at different scales are undisturbed, or, if disturbed, disturbance is minimized and restoration is effective and timely.	t.a.	Identify and avoid disturbing important habitat. Limit, restrict, or prohibit access to protect important habitat. Minimize access-related disturbance to wildlife and habitat. Where required to inform legal obligations and administrative processes (e.g., under FRPA), MoE will undertake actions to establish land designations and general wildlife measures pertinent to delivery of these outcomes.

Table 1: Wildlife Management Outcomes			
Subjects	**Outcomes**	**Respon-sibility**	**Important Actions -samples (refer to Technical Manual for more details)**
Water quality and quantity	Quality and quantity of freshwater is maintained on a landscape-unit basis.	t.a.	Manage access within sensitive areas.
Vehicle wildlife collisions	Vehicle collisions with wildlife are minimized, reported, and tracked.	t.a.	Plan access and implement restrictions. Develop a tracking system for vehicle wildlife incidents.
Access management	Access is minimized in time and space through co-ordinated planning.	t.a.	Co-ordinate access management and planning. De-activate and re-vegetate roads no longer needed.
Management of Recreation Impacts on Wildlife (Technical Manual section 6.0)			
Effects of recreation on wildlife	Wildlife populations in recreation areas and other areas follow similar trends. Recreation does not effect wildlife populations and behavior.	MoE	Provide and apply appropriate guidelines. Include user groups in planning and assessment. Identify and encourage minimum-impact behaviours.
Historical Vocations and Activities (Technical Manual section 7.0)			
Opportunities for historical vocations and activities	Historical vocations and activities continue to be practiced and are considered in planning and management.	t.a.	Consider suitable practices in planning. Identify and monitor uses and areas.

[a] MoE = Ministry of Environment
[b] MoAL = Ministry of Agriculture and Lands
[c] MoT = Ministry of Transportation
[d] DFO = Department of Fisheries and Oceans (Federal)
[e] MFR = Ministry of Forests and Range

Appendix A-1: Roles and Responsibilities

Interagency and Stakeholder Co-operation

Resource management in the M-KMA necessitates the co-operation of provincial agencies, organizations, and stakeholders. Resource agencies are responsible for integrating and co-ordinating their respective mandates and goals, and co-ordinating management between neighbouring and overlapping jurisdictions. Organizational structures already in place include the Muskwa-Kechika Advisory Board, the Northeast Managers' Committee, and the Inter-Agency Directors' Committee. Significant knowledge can be gained from increased communications and partnership with other agencies and jurisdictions (including, but not limited to, the Canadian Wildlife Service and Yukon Environment). Resource management agencies of the provincial government will seek the co-operation and involvement of relevant governments as well as affected stakeholders and the general public in addressing wildlife management issues and concerns of importance.

Provincial Government

(The text of each subsection below was prepared and submitted by representatives of the respective provincial agencies. From time to time, government re-organization may render portions of these sections obsolete until this document is updated.)

B.C. Ministry of Environment

In general, the B.C. Ministry of Environment is responsible for:

- Overseeing implementation of the M-KWMP, and
- Providing expertise, guidance, and direction for all activities in the M-KMA that potentially affect wildlife.

Primary responsibilities include those that are legally mandated, such as (but not limited to):

- The issuance of angling, hunting, guiding, and trapping licences;
- The determination of sustainable harvests of wildlife;
- The provincial environmental assessment process;
- The application and enforcement of relevant legislation; and
- Involvement in management of species at risk.

The B.C. Ministry of Environment is the lead agency for species inventory and monitoring. To this end, the Ministry is responsible for:

- Establishing priorities for inventory and research;
- Working with other resource ministries to define and provide cumulative effects thresholds, best management practices, desired future conditions, and other wildlife management guidelines (e.g., the Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia [22] and the Guidelines for Evaluating, Avoiding and Mitigating Impacts of Major Development Projects on Wildlife in British Columbia[23)];
- Continuing to provide descriptions of important wildlife habitat including, but not limited to, vegetation communities, habitat classifications by species (as available), and suitability; and

- Continuing to participate in the development of other local strategic plans to ensure consistency with the M-KWMP.

The B.C. Ministry of Environment is responsible for establishing baseline information with respect to wildlife health. The Ministry also enforces existing environmental regulations to ensure that animal health is not compromised.

B.C. Integrated Land Management Bureau

The Integrated Land Management Bureau provides an array of services to the public and to other government agencies involved in using and managing Crown land and natural resources. The Bureau assists clients in many ways, including: co-ordinating access to tenures, permits, licences, Crown land sales and grants; co-ordinating multi-agency consultation engagement agreements with First Nations on land and resource issues including implementation of land use planning agreements; managing and providing land and resource information.

Strategic Context

- Balancing the Competing Demands for Land Use: The Bureau is tasked with finding a balance in managing the economic, social, and environmental activities undertaken on Crown land in a way that is beneficial to the province.
- Continued Market Demand for Natural Resources: High North American and international market demand for natural resources continues to result in ongoing requests for the Bureau to facilitate access, planning, and allocation of Crown land to meet the needs of communities, First Nations, and economic development.
- Economic Development Opportunities on Crown Land: Despite the current uncertainty of the U.S. housing market, demand for housing in British Columbia remains strong. This demand, plus low interest rates, low vacancy rates, and a growing population, has placed further pressure on making Crown land available.
- Engagement of First Nations: The Province continues to engage, consult, and accommodate First Nations interests and values while providing responsible access to land and resources. Advancing First Nations interests and values is part of the Province's commitment to the New Relationship with Aboriginal people.
- Climate Change: The challenge of climate change has led to significant growth in the interest and business of alternative forms of energy. The Province is currently managing an increased number of independent power project applications on Crown land. This demand is expected to continue for the next 10 - 15 years.
- Meeting Demands for Ongoing Technological Changes and the Increasingly Sophisticated Needs of Clients: The Bureau maintains a wealth of resource information through a number of systems and services available to industry, business, individuals, and various levels of government. Managing client expectations, setting priorities, and co-ordinating information sources across government is an ongoing Bureau priority.

The Integrated Land Management Bureau is the co-ordinating service agency and in regards to the Muskwa-Kechika Management Area will, if requested by other ministries, undertake planning such as pre-tenure plan development, recreation management plans, and the

establishment of landscape unit objectives in the M-KMA. The ILMB is also responsible for receiving, processing, and adjudicating tenures inside and outside of the M-KMA.

B.C. Ministry of Agriculture and Lands

The mandate of the Ministry of Agriculture and Lands is to promote economic development and environmental sustainability for the agriculture, aquaculture, and food sectors, supporting them in delivering safe, healthy, and high-quality food, and to manage Crown land in a manner that contributes to the economic, societal, and environmental government. Crown land policy and agriculture, aquaculture, and food policies, programs, and services of the Ministry have shifted from primarily a revenue and economic outlook to one that incorporates environmental and social objectives. The Ministry provides guidance for Crown land management by maintaining a land-use and allocation policy framework for the Province.

Strategic Context

- Agriculture and Lands
- Crown Lands

MAL is responsible for the Muskwa-Kechika Advisory Board, as well as maintaining the Muskwa-Kechika Management Area Act and Regulation.

B.C. Ministry of Forests and Range

The general responsibilities of the Ministry of Forests and Range are to:

- Protect, manage, and improve the province's forest and range resources.
- Establish performance standards ensuring long-term resource sustainability and health.
- Enforce compliance with the regulations of the *Forest and Range Practices Act.*
- Monitor pricing and revenue requirements for a more competitive forest sector.
- Enhance opportunities to generate wealth from forest and range resources.
- Maintain and expand international markets for British Columbia's forest products.
- Ensuring the public receives fair value for the use of its forest and range resources.

Within the M-KMA, the Ministry of Forests and Range is guided by a number of legal requirements and legislation for the management of wildlife and habitat values.

- Under the *Forest Practices Code of British Columbia Act*, the M-KMA was legally designated as a Higher Level Plan. Within this area, objectives and strategies were developed for riparian management zones.
- The Ministry is further guided by the *Ministry of Forests Act* where it states that the Ministry will *"plan the use of forest and range resources of the government, so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated, in consultation and cooperation with other ministries and agencies of the government and with the private sector."*
- The *Forest Planning and Practices Regulation* of the *Forest and Range Practices Act* provides requirements for licensees to develop results and strategies within their Forest Stewardship Plans to be consistent with objectives affecting wildlife and habitat values; for specified wildlife; for water, fish, wildlife, and biodiversity within riparian areas; for fish

habitat in fisheries-sensitive watersheds; and for wildlife and biodiversity – at the landscape and stand level.
- The *Range Planning and Practices Regulation* also requires the range agreement holder, when developing a Range Use Plan or a Range Stewardship Plan, to be consistent with the objectives for fish, wildlife, and biodiversity.

Tenures, licences, and activities currently administered by the Ministry of Forests and Range within the M-KMA include:
- Forestry licence to cut, occupant licence to cut, forest licences, non-replaceable forest licences,
- Pulpwood agreements,
- Range tenures, and
- Recreational uses on Crown land.

B.C. Ministry of Energy, Mines and Petroleum Resources

The Ministry of Energy, Mines and Petroleum Resources (MEMPR) envisions thriving, safe, environmentally responsible and competitive energy, mining, and petroleum resource sectors, which contribute to the economic growth and development of communities throughout British Columbia.

The Ministry manages the rights to Crown subsurface resources (tenures) for oil, natural gas, coal, and other minerals. Within the Muskwa-Kechika Management Area (M-KMA), resource development can proceed while minimizing impact to other resource values. The Ministry has developed strategic (pre-tenure) plans to support Fort Nelson Land and Resource Management Plan direction to protect other resource values within the M-KMA.

In addition, the Ministry is responsible for providing policy direction to the Oil and Gas Commission (OGC), which regulates the oil and gas industry in British Columbia. The OGC is a single-window regulatory agency that oversees oil and gas operations, including exploration, development, pipeline transportation, and reclamation.

In general, MEMPR, in co-operation with the OGC, is responsible for:
- Encouraging and guiding environmentally responsible development of oil and gas resources by providing results-oriented management direction that ensures that these activities are consistent with the *M-KMA Act*;
- Providing a sustainable resource management framework to address social well-being, environmental conservation, and economic prosperity;
- Ensuring that First Nations rights and values are respected;
- Ensuring that wilderness characteristics, wildlife, and its habitat are maintained over time, while allowing resource development and use;
- Integrating management activities especially related to the planning, development, and management of road access;
- Issuing petroleum, natural gas, and mineral tenures;
- Ensuring that tenures include caveats that provide direction that pre-tenure plans are in place and must be complied with;
- Ensuring that pre-tenure plans are practical and cost-effective;

- Developing legislation, regulations, and policy that will direct the alternative energy, electricity, oil, gas, and mining industries;
- Developing Best Management Practices and guidelines for the oil, gas, and mining industries;
- Remaining an active member on all land use plans;
- Engaging with First Nations and stakeholders;
- Working with other ministries and stakeholders to address species-at-risk related issues;
- Creating results-based legislation for the oil and gas industry; and
- Participating in access management planning.

With respect to the mining, oil, and gas industries in the Muskwa-Kechika Management Area, specific MEMPR objectives are:

- Creation of best management practices;
- Involvement in the creation of any documents, policies, and legislation that guides or attempts to direct oil, gas, and mining industry activities;
- Ensuring that industrial operations are not unduly compromised due to excessive cost;
- Minimizing access impacts through planning and co-ordination with other users;
- Involvement in any discussions pertaining to connectivity and habitat fragmentation; and
- Minimizing constraints to exploration and development outside of parks and protected areas.

B.C. Oil and Gas Commission

The Oil and Gas Commission (OGC) is an independent public agency and was established under the *Oil and Gas Commission Act* in July of 1998 as part of the provincial government's Oil and Gas Initiative.

The OGC is responsible for regulating British Columbia's oil and gas sector. The OGC has a legislative mandate to make decisions on oil and gas applications, considering broad environmental, economic, and social effects. This includes specific approvals and permits for exploration, development, and production phases of oil and gas development. Examples of specific activities include geophysical programs, well sites, drilling, access, camps, gravel pits, ancillary production facilities, pipelines, etc.

Except for geophysical activities, the only local strategic plan that the oil and gas sector must comply with to meet the requirements of the *M-KMA Act* is a pre-tenure plan. Geophysical activities receive guidance from OGC's geophysical guidelines for the M-KMA to be environmentally sensitive to the M-KMA's significant wildlife and habit values, and for consistency with the *M-KMA Act* and Management Plan. The oil and gas sector professionals may use the M-KWMP as technical background in project planning and monitoring.

The Oil and Gas Commission takes direction and ensures that decisions are consistent with the pre-tenure plans and the geophysical guidelines.

The Oil and Gas Commission is expected to be aware of all local strategic plans (including the M-KWMP) in the M-KMA and the resource values and uses they address.

First Nations

The Province of British Columbia is committed to meaningful consultation with First Nations on a government-to-government basis, based on mutual respect, recognition, and reconciliation.[24] First Nations and resource managers will collaborate to manage wildlife in an open and transparent manner.[25] Project proponents and resource users should respect any cultural resources (archaeological sites) that are found, and report these to the proper authorities.

Project Proponents and Resource Users

All project proponents and resource users in the M-KMA are encouraged to familiarize themselves with the M-KWMP so that they understand the general direction it provides. Efforts should be made to co-operate with ongoing programs that are in place to monitor and manage wildlife.

Commercial and/or industrial projects or activities in the M-KMA require provincial permits or licences issued by the appropriate authority. Those permits or licences may require proponents or resource users to conduct such activities as environmental impact assessments, inventories, and innovative practices that will meet the goals and objectives of the M-KWMP.

Various other agencies, organizations, and public and private sources should contribute to both inventory and monitoring. Project proponents and resource users doing inventory and monitoring in the M-KMA should be required, as a permit/funding/contract condition, to deliver specified data to the appropriate agencies.

Muskwa-Kechika Advisory Board

The Muskwa-Kechika Advisory Board (the Board) is appointed under Section 9 of the *Muskwa-Kechika Management Area Act.* The Board's function includes advising on "natural resource management in the management area."[26]

The M-KWMP is to be the Board's plan for the future management of wildlife. As such, the Board is responsible for:

- recommending the Minister's approval of the M-KWMP;
- working in partnership with the B.C. Ministry of Environment and other agencies with implementation responsibilities for the M-KWMP;
- using the M-KWMP to assist in identifying priorities for the Trust Fund; and
- proposing to the Trustee what projects should be funded under the M-KMA Trust Fund.

The Board may also provide advice on the implementation and monitoring of the M-KWMP and may recommend changes to the plan.

Implementation and Monitoring Leadership

Leadership for implementing and monitoring the Muskwa-Kechika Wildlife Management Plan is the responsibility of the B.C. Ministry of Environment. The principles of adaptive management outlined in Appendix 2 of the Technical Manual emphasize the need for implementation and monitoring phases in the full circle of planning. The B.C. Ministry of Environment will periodically lead a review of the implementation of the M-KWMP. Objectives for this review should include:

- To evaluate implementation and success of the management strategies in achieving the desired wildlife goals and objectives;
- To review the development and application of inventory, monitoring, and research;
- To define and/or provide cumulative effects thresholds, best management practices, desired future conditions, and other wildlife management guidelines;
- To evaluate the methods and effects of achieving wildlife plan goals and objectives, with respect to the effects on other species, or other ecosystem components (e.g., monitor non-target species in areas of large-mammal population increases);
- To integrate new information and scientific findings into the plan;
- To review the wildlife goals and objectives when stakeholder goals, societal goals, and other factors affecting desired results are identified;
- To elaborate and suggest solutions to problems and issues arising from the review;
- To publicly report the results of the periodic review; and
- To assess the impact of management actions on the habitat composition and complexity of the Muskwa-Kechika Management Area (e.g., monitor habitat in areas of large-mammal population increases and compare with controls).

Appendix A-2: Ecological Approach to Wildlife Management

An ecological approach to management of wildlife and wildlife habitat in the M-KMA will be accomplished in large part by allowing ecological functions and processes (such as, but not limited to, habitat variegation, connectivity, predator prey dynamics, fire, and succession) that benefit community abundance and diversity, rather than a particular species, to continue to operate (see M-KWMP Technical Manual, section 1.0 Habitat Management).

An ecological approach to the management of wildlife and wildlife habitat in the M-KMA should be based on the following seven "themes" reflecting established and emerging ecosystem management practice:[27]

1. **Hierarchical Context**. Resource managers should take a "systems perspective," by looking for and addressing connections between all possible levels in the "biodiversity hierarchy (genes, species, populations, ecosystems, landscapes)."[28, 29] The M-KWMP provides direction for management at several scales. Landscape-level habitat objectives, broadly applied objectives for important habitat features, and results-based habitat objectives are examples of larger-scale (or "coarse filter") approaches to wildlife management; stand-level objectives and species-specific objectives are examples of the finer scale of management proposed in the plan ("fine filter").

2. **Ecological Boundaries**. Management must recognize and work across jurisdictional boundaries and must define ecological boundaries at appropriate scales. The spatial scale of the area to manage should be large enough to provide the necessary habitat to support viable populations. Scale is pre-determined with the designation of the M-KMA, which is considered large enough to maintain several viable populations of Grizzly Bears.[30, 31, 32] For those management issues that extend beyond the M-KMA, managers should recognize the ecological boundary rather than jurisdictional lines. The timeframe to consider should be long enough to include long-term processes, such as a coniferous forest cycle from disturbance, through succession stages, to old growth.

3. **Ecological Integrity**. Managing for ecological integrity is to allow the structures and functions of an ecosystem to continue unimpaired by stresses induced by humans, and to ensure that these are likely to persist unimpaired by human-induced stresses over time. An important application of this theme is to protect native biodiversity, including "the diversity of plants, animals and other living organisms in all their forms and levels of organization, and includes the diversity of genes, species, and ecosystems, as well as the evolutionary and functional processes that link them."[33] This should include (but is not limited to) managing according to natural disturbance agents and within natural ranges of variation, conserving viable populations of all native species, seeking to prevent introductions of non-native species, re-introducing extirpated species, maintaining the presence of rare ecosystems, and monitoring human effects on ecological integrity.

4. **Adaptive Management**. Wildlife management is viewed as a continuous experiment where the results of previous actions are examined in order to learn and adapt to uncertainty. Adaptive management is defined here as: *a systematic process for continually improving*

management policies and practices by learning from the outcomes of operational programs. Its most effective form – "active" adaptive management – employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed.[34]

Three general time scales are recognized for implementation of the M-KWMP, including the short term (1 4 years), the near term (5 20 years), and the medium term (> 20 years). Management actions should be tracked, evaluated, and reported. Surveying, monitoring, and reporting activities in the short term should be included in periodic work plans over the medium and long term. Some species, systems, and areas are more sensitive than others: when assessed risks appear too great, adaptive management may not be sufficient to address the risks, and avoidance will be the more appropriate response. As more information (e.g., scientific and/or traditional knowledge) becomes available, activities should be changed to reflect that knowledge.

5. **Co-ordinated Management**. Managers from all sectors (including non-government) should make all attempts to integrate and co-ordinate management and development activities to reduce the footprint on the environment; an example of this is co-ordinated access. Organizational structures already in place that may meet the requirement of co-ordinated management include the Muskwa-Kechika Advisory Board, the Northeast Managers' Committee, the Inter-Agency Directors' Committee, and the B.C. Integrated Land Management Bureau.

6. **Human Impacts and Influences**. "Humans are fundamental influences on ecological patterns and processes and are in turn affected by them."[35] The M-KWMP recognizes this relationship by incorporating the results of broad agency, stakeholder, and public participation. Throughout the plan, the potential for human impacts and influences on ecosystems is addressed with objectives and management directions that avoid, mitigate, and minimize impacts on the environment. Future planning should continue to involve interested parties and the general public.

7. **Human Values**. Human values are an important component of ecosystem management, and can be independent of scientific knowledge. Research extension (i.e., communicating the results of scientific study) is integral to the ecological approach, so that public values can be informed with scientific knowledge. As public values change, so do ecosystem management objectives and the planning and management techniques used to achieve them.

In an ecological approach to wildlife management, the primary measures of success in achieving management goals should be:

- how well the results of the planning and management regime approach natural ecological conditions in both terrestrial and aquatic settings;
- how well the diversity of ecosystems and species is being maintained;
- how well federally listed and provincially Red- and Blue-listed wildlife (which are presently found or thought to occur in the M-KMA) are numerically responding; and
- how well selected fish, ungulates, large carnivores, and furbearing animals are numerically responding.

The B.C. Ministry of Environment will periodically lead a review of the implementation of the M-KWMP, which will be available to the public.

Appendix A-3: Priority Communities and Species

The following tables include species and species communities considered as priorities for active management that have been selected based on the mandate and legal responsibilities of the Ministry of Environment, ecosystem management principles, M-KWMP Advisory Group discussion (Technical Manual, Acknowledgements), and peer review. Future iterations of the plan will reflect any adjustment in priorities (e.g., results of the Conservation Framework).

Plant species and plant communities of concern known or suspected to occur in the M-KMA

Common Name	Scientific Name	Listing
Raup's Willow	*Salix raupii*	Red
Porsild's Whitlow-grass	*Draba porsildii*	Blue
Porsild's Bryum	*Mielichhoferia macrocarpa*	Special Concern
Arctic Rush – Nuttall's Alkaligrass – Seablite	*Juncus arcticus – Puccinellia nuttalliana – Suaeda calceoliformis*	Red
Mat Muhly – Arctic Rush – Nevada Bluegrass	*Muhlenbergia richardsonis – Juncus arcticus – Poa secunda* spp. *juncifolia*	Red
Black Spruce - Kinnikinnick – Reindeer Lichens	*Picea mariana – Arctostaphylos uva ursi – Cladina* spp.	Blue
Subalpine Fir - Lady Ferns – Horsetails	*Abies lasiocarpa – Alnus* spp. *– Equisetum* spp.	Blue
Slender Sedge – Drepanocladus Moss	*Carex lasiocarpa – Drepanocladus aduncus*	Blue
Glaucous Bluegrass	*Poa glauca* ssp. *rupicola*	Blue
Herbaceous vegetation		

Priority wildlife species for the Muskwa-Kechika Wildlife Management Plan

Common Name	Scientific Name	Listing
Stone's Sheep	*Ovis dalli stonei*	Yellow
Caribou, Woodland subspecies	*Rangifer tarandus caribou*	Red/Blue
Wood Bison	*Bison bison athabascae*	Red
Plains Bison	*Bison bison bison*	Red
Moose	*Alces alces*	Yellow
Mountain Goat	*Oreamnos americanus*	Yellow
Elk	*Cervus elaphus*	Yellow
Gray Wolf	*Canis lupus*	Yellow
Grizzly Bear	*Ursus arctos*	Blue

Wolverine	*Gulo gulo*	Blue
Fisher	*Martes pennanti*	Blue
Northern Myotis	*Myotis septentrionalis*	Blue
Peregrine Falcon, *anatum* subspecies	*Falco peregrinus anatum*	Red
Short-eared Owl	*Asio flammeus*	Blue
Bay-breasted Warbler	*Dendroica castanea*	Red
Cape May Warbler	*Dendroica tigrina*	Red
Black-throated Green Warbler	*Dendroica virens*	Blue
Connecticut Warbler	*Oporornis agilis*	Red
Bull Trout	*Salvelinus confluentus*	Blue
Lake Trout	*Salvelinus namaycush*	Yellow
Arctic Grayling	*Thymallus arcticus*	Yellow
Rainbow Trout	*Oncorhynchus mykiss*	Yellow
Northern Pike	*Esox lucius*	Yellow
Western Toad	*Bufo boreas*	Yellow
Selected Invertebrates		

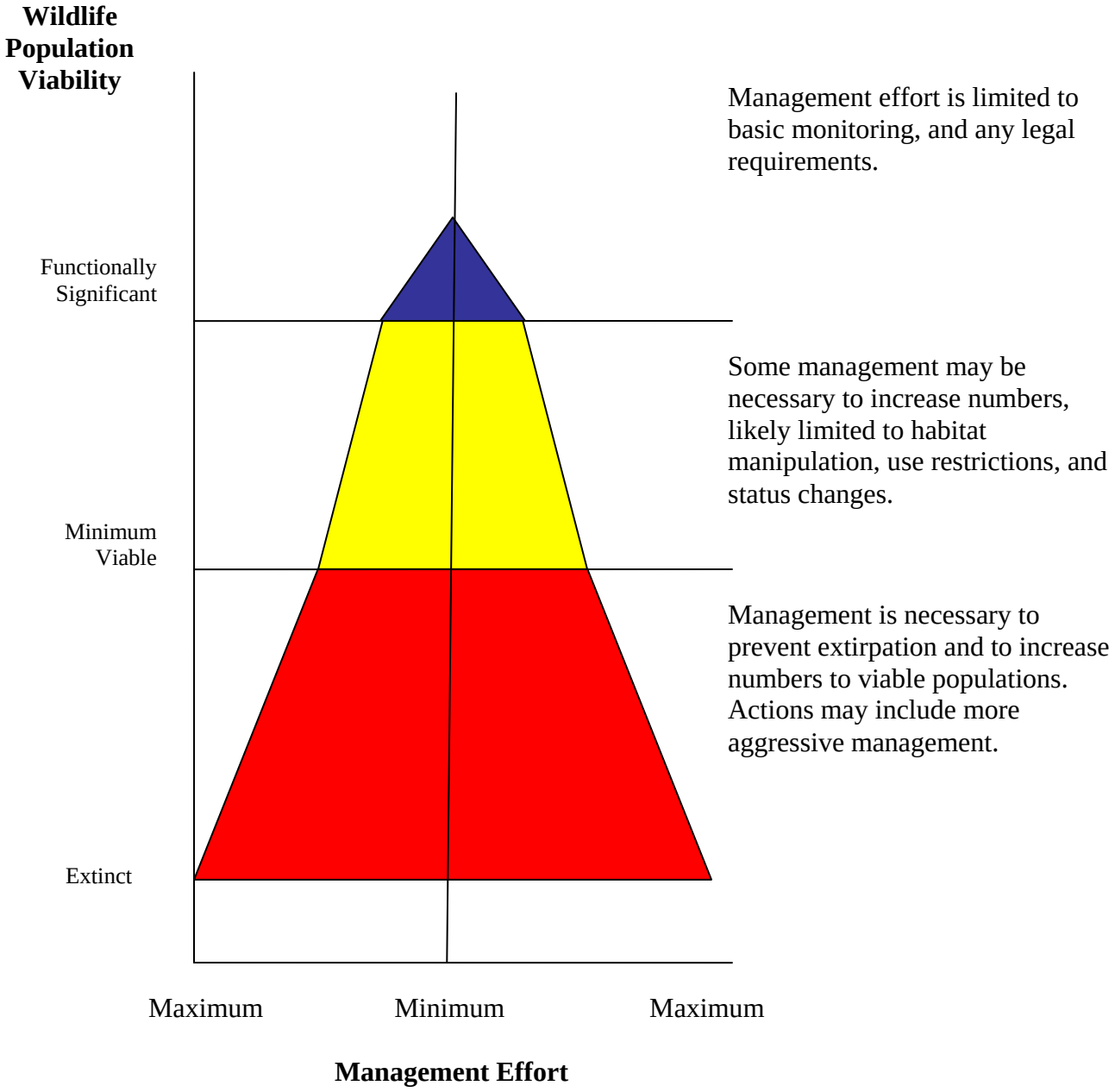
Appendix A-4: Management Effort

With wildlife conservation as the priority of the Muskwa-Kechika Wildlife Management Plan, management effort for wildlife conservation purposes should be strategically applied. Figure 2 illustrates this concept with respect to the management of a wildlife population. If the population of an endemic wildlife species is at a functionally significant level or greater, then little or no management effort should be applied to the population (green area in the diagram). If conditions change so that the population begins to decline **more rapidly than or beyond what would be expected of natural variability**, or is stable somewhat below a functionally significant level, management effort should steadily increase (yellow area). If current knowledge indicates that the wildlife is below an estimated minimum viable population level (red area), maximum management effort should be applied to increase the population towards minimum viable and functionally significant levels.

Different funding sources, lead agencies, and available expertise can all affect where and how limited management resources are expended. Certain mandated responsibilities and core activities require a substantial proportion of time and financial budgets. However, most resources (beyond those needed for mandated responsibilities) should be applied to those wildlife issues most in need of conservation effort.

Other factors will certainly influence management effort. The issues are complex and interconnected; several management actions are meant to be beneficial for many or all wildlife, particularly those objectives and management directions in section 5.1 Habitat Management. Actions that are general or have multiple benefits should be priority management directions, and require considerable management effort. Nevertheless, managers should not look at sections of the wildlife plan independently, but together, in combinations dictated by the circumstances.

Similarly, this management effort model can be applied to communities of species, wildlife habitats, or ecosystems. With conservation as a priority, the greatest management effort should be applied to those elements that are most at risk. All future resource management that respects or affects wildlife in the Muskwa-Kechika Management Area should be conducted with this model in mind. This approach can be extended to the allocation of resources (funds, personnel, time), and should be reflected in operational activities.



In this figure, volume represents management effort.

Figure 2: Strategic Application of Management Effort

Appendix A-5: Important Wildlife Habitat

Important wildlife habitat should be mapped and described in pre-development assessments, including:

Terrestrial

- ☐ winter range and over-wintering areas;
- ☐ denning sites for Bears, Cougar, Lynx, Wolves, and Wolverines;
- ☐ breeding sites (e.g., licks, leks, rutting arenas, wallows);
- ☐ birthing sites (e.g., calving);
- ☐ rearing sites;
- ☐ south- and/or west-facing slopes;
- ☐ colonies, rookeries;
- ☐ mineral licks;
- ☐ wildlife trails;
- ☐ rubbing and scent posts/points;
- ☐ travel and escape routes;
- ☐ seeps, springs;
- ☐ wetlands;
- ☐ riparian islands;
- ☐ avalanche chutes;
- ☐ snags and coarse woody debris;
- ☐ old growth, and Old Growth Management Areas;
- ☐ forests with interior conditions;
- ☐ wildlife tree patches;
- ☐ riparian zones;
- ☐ open meadows;
- ☐ nesting sites;
- ☐ hibernacula;
- ☐ talus slopes;
- ☐ caves;
- ☐ cover; and
- ☐ cliffs.

Aquatic

- ☐ main channel pools (including, but not limited to, depth, flow, and volume characteristics), especially those on the downstream edge of large boulders or those downstream of stable, large woody debris;
- ☐ riffle-pool junctions, especially under the cover of banks;
- ☐ water flow – volume, seasonal variation (especially along dammed rivers/streams);
- ☐ off-channel pools near woody debris or overhanging banks;
- ☐ channel structure;
- ☐ spawning habitat;
- ☐ rearing habitat;
- ☐ undercut banks;
- ☐ large woody debris;
- ☐ logjam pools;

- thermal pools;
- early (spring) open water;
- riparian islands;
- riparian zones;
- groundwater flow, seeps, springs;
- substrate;
- wetlands; and
- water temperature

Many of these features can be found on TRIM or forest cover maps, or through air photo interpretation. Others would require field assessments and local/anecdotal information. Site-specific prescriptions can be agreed to by parties involved during pre-development consultation and referral.

If a person carrying out development finds important wildlife habitat that was not identified on an approved development plan or permit, the person carrying out the practice must:

1. modify or stop any activity that is in the immediate vicinity of the previously unidentified habitat to the extent necessary to refrain from threatening it; and

2. promptly advise the appropriate managers and district environment official of the existence and location of the important wildlife habitat.

Appendix A-6: Glossary of Key Terms

Note: A more complete glossary is available in the Technical Manual.

Appropriate Resource Management Agencies: used to refer generally to agencies and ministries of the provincial government, each of which have specific resource management responsibilities, including issuance and monitoring of specific types of resource tenures. In any given situation, the "appropriate" agencies are those with prescribed tenure, management, and monitoring responsibilities (e.g., through issuance of various operational instruments).

Attempt to: to make a planned, directed effort to achieve the outcome specified; to try. Magnitude of effort will depend on available personnel and resources.

Best Management Practices: approaches based on known science that, if followed, should allow the client to meet the required standard(s) or achieve the desired objective(s).

Conservation: the act or result of maintaining, managing, preserving, or protecting something; especially planned management of a natural resource with the intention of sustaining that resource over the long term, usually through a combination of protecting and mitigating measures to respond to various human activities that have the potential to diminish that resource.

Consistent: compatible or in harmony with; follows set principles, intent, and specific direction; not contradictory. Actions, plans, or operational instruments that are consistent with the Muskwa-Kechika Wildlife Management Plan will lead to the mutual achievement of objectives.

Ecological Integrity: a condition where the structures and functions of an ecosystem are unimpaired by stresses induced by humans and are likely to remain so.

Functionally Significant (Population): a population that is not at risk (i.e., not considered to be vulnerable, threatened, or endangered) and is able to maintain its natural role in ecosystem function. Functionally significant populations can be achieved within a single population, or within a meta-population.

Guidelines: approaches based on known science that, if followed, should allow the client to meet the required standard(s) or achieve the desired objective(s).

Habitat: "habitat" or "wildlife habitat" means the air, soil, water, food, and cover components of the environment on which wildlife depend directly or indirectly in order to carry out their life processes.

Manage: to exercise executive, administrative, and supervisory direction of; to administer and regulate disposition of; to guide use and regulate availability.

Management Actions: includes strategies, initiatives, plans, and specific products (outputs) that are the responsibility of appropriate agencies of the British Columbia government to implement or to ensure are implemented by other parties.

May: an auxiliary to introduce examples that are viable, or likely, and that are possibly subject to unspecified conditions. Does not imply a requirement.

Minimize: to make a planned, stated, and directed effort to reduce to a reasonable minimum. For example, to minimize the impacts of road development to wildlife and wildlife habitat, the potential wildlife species and habitat values would be determined beforehand, alternative access methods would be developed, potential impacts (worst- and best-case scenarios) of each alternative would be identified, and the option with the likelihood for the least impact to wildlife and wildlife habitat would be selected.

Mitigate: to avoid, minimize, rectify, reduce, or compensate for the impact of one resource use on another.

Monitor: to evaluate progress toward stated objectives and guide the long-term revision, adjustment, and refinement of the plan; the systematic measuring, comparing, and evaluation of suitable indicators of change in conditions.

Must: an auxiliary that, when used in the Strategic Plan, expesses a mandatory requirement, obligation, or necessity for a decision-maker; can be used as a test for consistency with the plan.

Natural (Conditions): determined by nature; environmental conditions within the range of historic variability prior to European settlement. In most cases, “natural conditions” should be described in terms of a long - term average or norm, with accompanying ranges for specified conditions (e.g., mean seasonal stream flows with historic maximums and minimums; peak flows with mean return intervals).

Natural Range of Variability: the range of variability in ecological conditions that occurred before European settlement.

Operational Instrument: a plan, allocation, tenure, disposition, licence, or any other instrument or document affecting or respecting Crown land or a natural resource that is enacted or authorized under an enactment; a broad definition, meant to cover all forms of specific permission given by the Provincial Government.

Outcome: the predicted or desired end result of a program, plan, action, or series of actions.

Priority Wildlife Species: means species of special management interest in the Muskwa-Kechika Area because they are Red- or Blue-listed, or because their M-K populations are a substantial proportion of the total population, or because their populations or habitats are particularly sensitive to human activities. These species are also important for First Nations, guide outfitters, and the public.

Restore: to replace, replenish, or rehabilitate habitat disturbed by development actions or by forces of nature to suitability levels approximating pre-disturbance.

Results-based Habitat Management: management actions concurrent with natural resource development and use (including, but not limited to, recreation, timber harvesting, mineral

mechanical exploration and mining, and oil and gas mechanical exploration and development) with the objective of maintaining local habitat suitability.

Shared Stewardship: the notion that environmental sustainability depends on the collective knowledge, commitment, and actions of individuals, organizations, communities, industries, and all levels of government as a whole, and that caring for the environment is a responsibility shared among all sectors of society.

Should: an auxiliary used to express a recommendation to a decision-maker to consider the advice, guidance, or direction proposed, but that is not mandatory and cannot result in an inconsistency.

Stewardship: the ethic and practice of careful and responsible management of resources and amenities for the benefit of present and future generations.

Sustain: to support, maintain.

Sustainable (Development): The Bruntland Commission defined sustainable development as "the management of the human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining the potential to meet the needs and aspirations of future generations." For natural resources development to be sustainable it must take account of economic, social, and ecological factors of the living and non-living natural resource base, and of the long term (> 100 years) and short-term (1–4 years) advantages and disadvantages of alternative actions.

Unduly: to an excessive, improper, or unjustifiable degree.

Viable Population: a population in a state that maintains its vigour and its potential for evolutionary adaptation. This requires that the population be naturally regulated and subject to selective pressures. Over the medium (20–100 years) to long term (> 100 years) a viable population should exhibit a stable growth rate and a stable age distribution.

Wildlife: vertebrates (mammals, birds, reptiles, amphibians, and fish), invertebrates, and plants, and includes the eggs and juvenile stages of these vertebrates, invertebrates, and plants.

Wildlife Management: Wildlife management can be described as the application of scientific and technical principles to wildlife populations and habitats to produce a desired effect (direct or indirect) on the abundance, dynamics, distribution, diversity, and species composition of wildlife, including plants and invertebrates. Wildlife management can be applied through legislation, policies, or procedures.

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