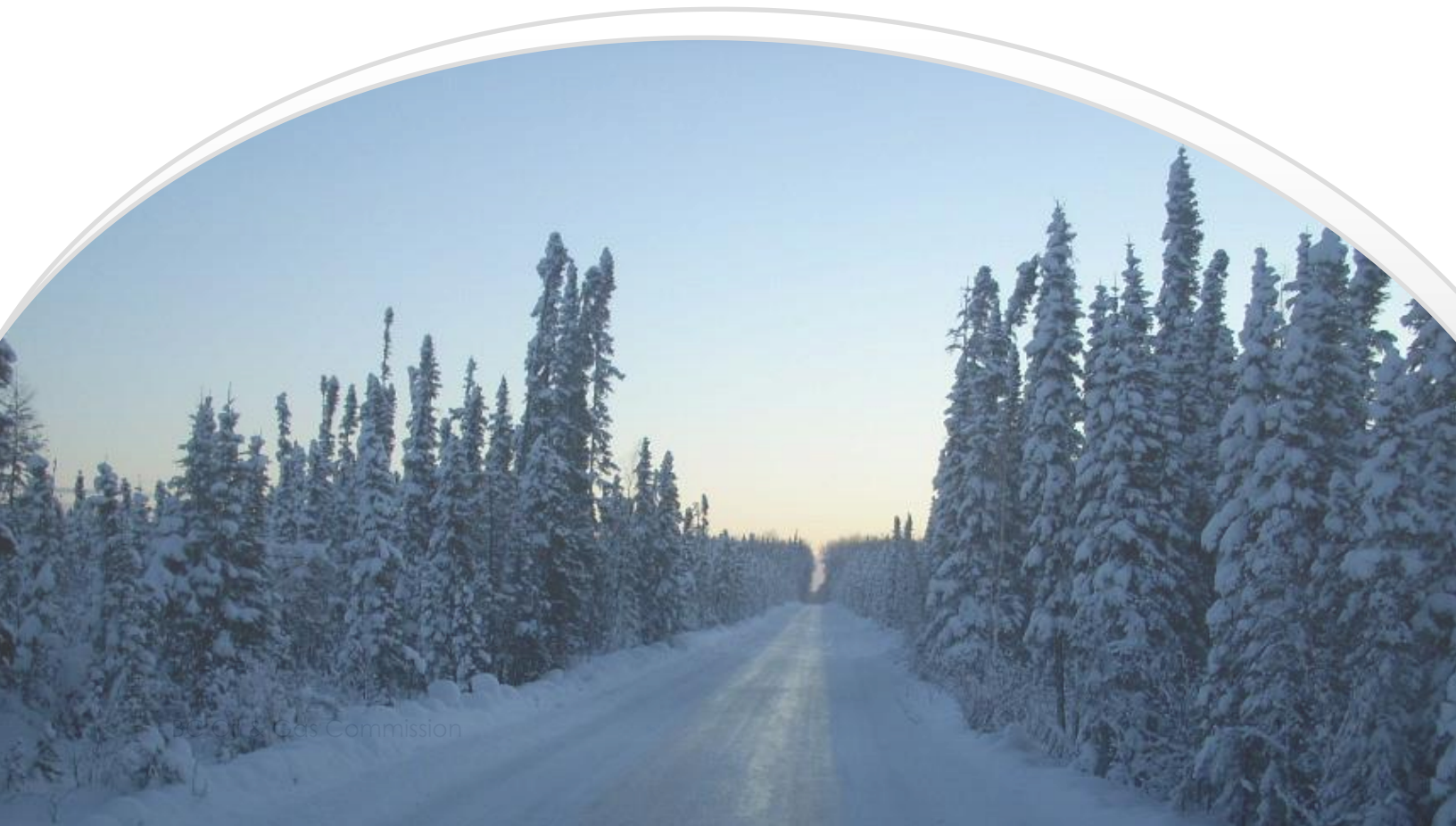




Horn River Basin and Muskwa– Kechika Management Area Guidance Document

June 2016
Version 1.0



About the Commission

The BC Oil and Gas Commission (Commission) is the single-window regulatory agency with responsibilities for regulating oil and gas activities in British Columbia, including exploration, development, pipeline transportation and reclamation.

The Commission's core roles include reviewing and assessing applications for industry activity, consulting with First Nations, ensuring industry complies with provincial legislation and cooperating with partner agencies. The public interest is protected by ensuring public safety, protecting the environment, conserving petroleum resources and ensuring equitable participation in production.

How to Use This Document

Written by the Commission, the Horn River Basin and Muskwa-Kechika Management Area Guidance Document outlines additional planning requirements to minimize the disturbance of the ecosystems within these areas.

The purpose of this guidance document is to identify if geophysical exploration in the Horn River Basin can be planned and implemented in a manner minimizing the disturbance of ecosystems within the basin. This guidance is in addition to that contained in the [Environmental Protection and Management Guideline](#).

All oil and gas activity applications regulated by the Commission are submitted through ePermitting. Some activities may require additional applications, approvals from other regulators or create obligations under other statutes. It is the applicant and permit holder's responsibility to know and uphold all legal obligations. Applicants should refer to the Commission's [Oil and Gas Activity Application Manual](#) for application requirements for oil and gas and associated permit applications.

Additional resources to assist applicants and permit holders include:

- [Glossary and acronym listing](#) on the Commission website.
- [Documentation and guidelines](#) on the Commission website.
- [Frequently asked questions](#) on the Commission website.
- [Advisories, bulletins, reports and directives](#) on the Commission website.
- [Regulations and Acts](#) listed on the Commission website.

Document Revisions

The Commission is committed to the continuous improvement of its documentation. Revisions to the documentation are highlighted in this section and are posted to the Documentation Section of the Commission's website. Stakeholders are invited to submit feedback using the Commission's documentation [feedback form](#).

Posted Date	Effective Date	Chapter	Summary of Revision(s)
June 23, 2016	June 23, 2016	All	This is a new document. Users are encouraged to review the document in full.

Horn River Basin and Muskwa-Kechika Management Area

The Commission has created additional planning and application requirements companies must comply with for geophysical exploration in certain areas of the province. All projects proposed for the Horn River Basin (HRB) and in the Muskwa-Kechika Management Area (M-KMA) must be planned and implemented to minimize the disturbance of ecosystems within these areas. In addition to the Oil and Gas Activity Application Manual, geophysical exploration activities should meet guidance recommendations outlined in this document.

1. Horn River Basin

All geophysical projects proposed in the Horn River Basin (HRB) will be evaluated for consistency with this geophysical project guidance. Proposed seismic projects in the Horn River Basin must meet the following criteria:

- 1) Projects will not overlap unless applicants commit to using common source and receiver lines in the area of overlap, with no new or additional clearing.
- 2) Source lines are a maximum of three metres in width with meandering avoidance techniques and sight line screens (“moose blinds”) at least every 200 metres.
- 3) Receiver lines are a maximum of two metres in width with meandering avoidance techniques and sight line screens (“moose blinds”) at least every 200 metres. If necessary, for access or safety reasons, every fourth receiver line may be widened to a maximum of three metres.
- 4) Lines must be hand-cut within areas identified by the Commission, unless otherwise indicated by safety requirements.
- 5) Orient source and receiver lines to follow existing or planned seismic survey lines to minimize the need for additional clearing for future seismic projects.
- 6) Distance between source lines must be greater than 200 metres.

Geophysical exploration permit applications covering an area larger than 35 square kilometres or entailing more than 200 hectares of new cut require enhanced consultation with First Nations. This enhanced consultation includes a 20 day review and response period as described in the First Nations Consultation Process Agreements.

If there are overlapping geophysical projects, the Commission connects with both applicants to share contact information to coordinate projects.

2. Muskwa-Kechika Management Area (M-KMA)

The purpose of this document is to provide guidance so that projects in the Muskwa-Kechika Management Area (M-KMA) are environmentally sensitive to the significant resource values and are consistent with the [Muskwa-Kechika Management Area Act](#).

This guidance document provides enhanced minimum standards for a range of geophysical activities; standards that generally exceed those required outside of the M-KMA. The document provides applicants, permit holders, government agencies and stakeholders a common understanding of the standards that apply to geophysical exploration in the M-KMA.

This document should not be viewed as prescriptive or limiting, such that an applicant is discouraged from seeking continuous improvement and efficiencies in the geophysical project. Consistent with the intent of the M-KMA Act, applicants and permit holders are expected to join in a process of adaptive management, including the development of innovative alternatives to standard approaches, monitoring, learning and cooperating in problem solving. The goal of adaptive management is to promote continuous improvement in geophysical activities and technologies. Design of an adaptive management approach will consider environmental, social and economic factors.

Applicants and permit holders are encouraged to engage in a) “proactive” adaptive management approaches - well planned activities based on thorough consultations, and b) “retroactive” approaches - learning from past actions.

Strategic Direction

All geophysical activities must be consistent with the Land and Resource Management (LRMP) objectives referenced in the [M-KMA Management Plan](#).

Pre-Tenure Plans (PTP) do not set management direction for geophysical activities but do provide information that is of value to a geophysical applicant in planning for their activities.

The Commission recommends applicants acquire these documents in order to become familiar with the overall management framework that applies to the M-KMA and, more specifically, to understand the objectives that apply to geophysical activities.

The preamble of the Muskwa-Kechika Management Area Act identifies the M-KMA as an area of unique wilderness of global significance and outlines the following management intent with respect to oil and gas activities:

“...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.....including.....oil and gas exploration and development.”

The general management direction in the management plan focuses on two main points:

- The management intent for the M-KMA is to ensure wilderness characteristics, wildlife and its habitat are maintained over time, while allowing resource development and use, including...oil and gas exploration and development.
- The integration of management activities especially related to the planning, development and management of road access within the M-KMA is central to achieving this intent.

The general management objectives referenced in the M-KMA Management Plan are reflected in the following summary of objectives (drawn from [M-KMA Pre-Tenure Plans](#)):

- The structure and function and distribution of ecosystems remain within a natural range.
- Soil resources are able to sustain productive ecosystems.
- Habitat elements for each focal species are sustained in winter habitat capability classes that range from 1-6 within each biophysical zone.
- Areas of special biological significance are conserved physically and functionally.
- Maintain wilderness quality over time.
- Maintain water quality and quantity within the natural range of variation.
- Ecosystems disturbed by development are restored to simulate natural pre-development conditions.
- Recognition of Treaty rights and consideration of First Nations' traditional knowledge.
- Opportunities for employment and other economic benefits are explored with First Nations.
- Effective extraction of provincial oil and gas resources
- Minimizing impacts of oil and gas activities on non-energy sectors with direct interests in the planning area through avoidance or mitigation measures.

The original [Land and Resource Management Plan](#) objectives that apply to specific drainages within the M-KMA, and would therefore apply to individual geophysical projects.

Biophysical resources and values information is available in the Pre-Tenure Plans (PTP) and on websites listed under information sources for each of the PTP areas. This information, together with information gathered during the consultation process, is used by operators to design a minimal impact geophysical project.

Applicants will forward a copy of their geophysical project to the Integrated Land Management Bureau (ILMB) in Fort St. John, for informational purposes. The application is not forwarded to seek comments on the application or to serve as a referral. It will be forwarded to ensure staff involved in the management of the M-KMA are aware of pending activities; and to ensure the Commission and geophysical applicants are made aware of other ongoing projects in the M-KMA that could be impacted by the proposed project (such as baseline wildlife research).

On submission of an application, the Commission may request that the applicant provide additional field information and/or modify their proposed geophysical project to avoid, mitigate and minimize impacts.

Pre-Tenure Planning Cumulative Impact Accounting System

New disturbances from geophysical activity in the M-KMA will be included in the monitoring of Pre-Tenure Plan targets for species conservation, conducted by ILMB. Pre-Tenure Plans have also established disturbance thresholds for specific focal species by pre-tenure planning unit.

Applicants will continue to report totals of areas disturbed by geophysical activities to the Commission as part of the existing reporting requirements. In addition, it is expected that applicants will use geographic information systems to calculate disturbance by habitat type in order to meet Pre-Tenure Plan reporting requirements. Contact the appropriate Commission Operations Manager for the region for additional information.

Some types of line clearing significantly reduce impacts on soils and vegetation cover and result in less reportable disturbance (Minimal Impact Line for example).

Other disturbances from geophysical activities may be time limited (that is, they only constitute a disturbance when they are in place; such as winter-only disturbances) and once reclamation occurs, they will not contribute to the threshold “account.”

Geophysical activities that disturb surface soil layers and remove vegetation will have similar reclamation requirements as specified in Pre-Tenure Plans.

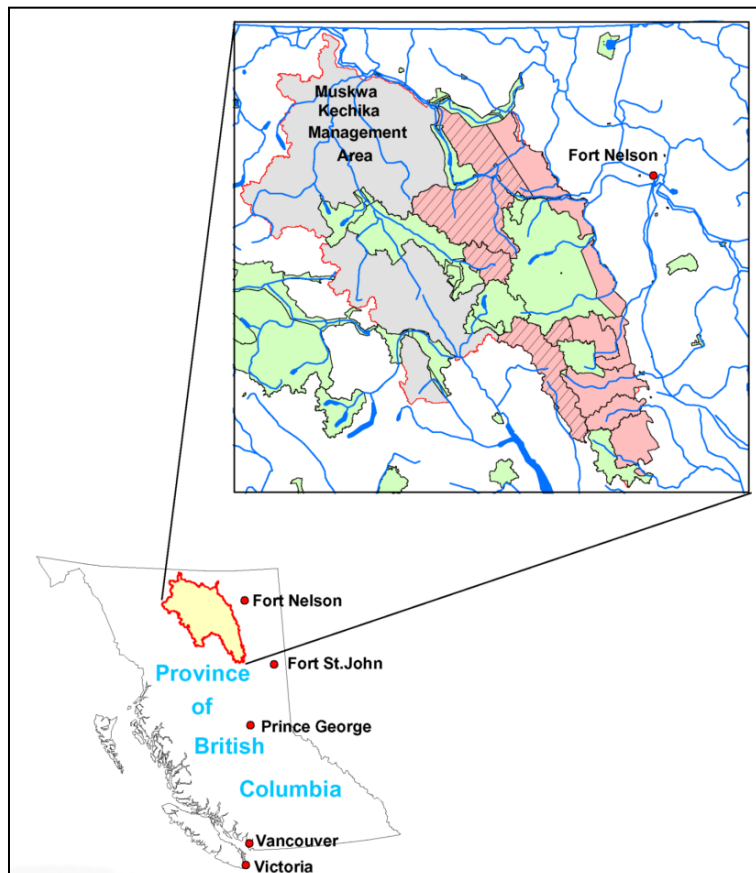
Specific Operational Direction

The Special Management Zones in the M-KMA require that special measures be used when working in this area, so that overall footprint is minimized.

The guidelines provided in the table below apply to geophysical activities within the M-KMA and are supplementary to all other existing operating standards and procedures. These guidelines must be referenced by the applicant in completing a geophysical exploration permit application.

The specific guidance provided in the table is directed at achieving operator compliance with the management objectives referenced in the M-KMA Management Plan, and contained in the Fort St. John, Mackenzie and Fort Nelson Land and LRMPs. The table describes specific operational measures and minimum standards consistent with meeting the objectives of these plans. If there is a discrepancy between these guidelines and the LRMP strategies, then the LRMP strategies shall prevail.

Map of the Muskwa-Kechika Management Area.



Geophysical Project Elements	Specific Guidance
1.0 Planning	<p>1.1. Planning for geophysical activities in the M-KMA require the advice of a qualified individual or organization with the capacity to:</p> <ul style="list-style-type: none"> • Access and evaluate existing and required biophysical information. • Interpret and apply guiding literature related to the interaction between geophysical activities and other resources values to design a least-impact program. • Monitor geophysical activities to prescribed standards. • Modify geophysical programs and develop strategies to avoid, minimize and mitigate the impacts of geophysical activities on other resources and values. <p>Often these skills will be applied within a best practices framework.</p> <p>1.2. Operational timelines to reduce impacts on specific fish and wildlife species is available in the Environmental Protection and Management Regulation Guidance Manual.</p> <p>1.3. Applicants will:</p> <ul style="list-style-type: none"> • Carry out a public consultation process as described in the Consultation and Notification Regulation. • Identify wildlife populations that may be impacted by the proposed geophysical program and other issues of concern based on: <ul style="list-style-type: none"> a) Local knowledge from consultations with First Nations, guide outfitters, trappers. b) Key and unique resource values and uses identified in each Pre-Tenure Plan area. c) Reconnaissance level field evaluation. • Use best practices to design an appropriate geophysical program, using the guidelines that follow in this table. • Use the information gathered in (a-c) above to complete the geophysical exploration application form <p>1.4. Drawing on the minimum standards provided in this table, applicants are required to achieve an overall program design, including line layout and line clearing, that avoids, minimizes and mitigates impacts on wilderness quality, wildlife and recreation and that avoids the creation of motorized and non-</p>

Geophysical Project Elements	Specific Guidance
	<p>motorized access.</p> <p>1.5. In general, applicants are required to reduce the cumulative impacts of geophysical disturbance in the M-KMA, by limiting the contribution of each geophysical project, by coordinating geophysical programs and through employing environmentally sensitive geophysical techniques.</p> <p>1.6. Workers who understand the reasons for the M-KMA and these guidelines are more likely to carry out the work in a manner that achieves the management intent for M-KMA. Applicants are to provide an orientation to all employees and contractors involved in planning activities or working in the project area. This will include notification to workers that recreational use of the area is prohibited while accessing the area for industrial purposes.</p>
2.0 Line Layout/ Line Density	<p>2.1. The number and width of lines will be minimized and monitored to ensure disturbance remains within prescribed PTP thresholds.</p> <p>2.2. Coordinate line clearing requirements with other operators and use existing lines wherever possible.</p> <p>2.3. Re-growth on existing lines must be indicated and pictures submitted at time of application.</p>
3.0 Line Clearing	<p>3.1. On steep, unstable, or erodible terrain, lines will be hand-cut.</p> <p>3.2. On more favorable terrain, lines may be cleared mechanically with mulchers.</p> <p>3.3. Cleared lines will be no more than 2.0 metres in width.</p> <p>3.4. Line clearing will use avoidance methods to minimize line-of-sight and cutting of merchantable timber.</p> <p>3.5. Timber removal techniques shall consist of minimal removal of vegetation, and conform to all legislation.</p> <p>3.6. Other mechanical methods will only be considered if it can be demonstrated that they will not result in significant environmental impacts (for example, use existing cat-cut lines).</p>
4.0 Vegetation	<p>4.1. Ground and duff disturbance must be minimized.</p> <p>4.2. Cutting of alpine and sub-alpine vegetation must be avoided.</p>

Geophysical Project Elements	Specific Guidance
5.0 Stream Crossings	<p>5.1. Operational timelines to reduce impacts on specific fish and wildlife species is available within the Commission's Environmental Protection and Management Guidebook.</p> <p>5.2. Stream crossing methods will all be categorized as non-routine and must be disclosed as part of the Geophysical Exploration Application. Contact a Commission Natural Resource Officer for more information.</p>
6.0 Lines of Sight	<p>6.1. Doglegs must be used where seismic lines intersect roads and trails.</p> <p>6.2. Where avoidance techniques cannot be used, or existing lines are not present, incorporate wildlife blinds every 200 meters.</p>
7.0 Campsites	<p>7.1. Campsites and staging areas are to be located outside of the M-KMA boundary.</p> <p>7.2. Campsites and staging areas must be indicated on preliminary application submission, including:</p> <p>7.3. Existing clearings and openings.</p> <p>7.4. Existing abandoned wellsites (with Certificate of Restoration).</p> <p>7.5. Camps that are to be used for less than 30 days.</p>

Geophysical Project Elements	Specific Guidance
8.0 Aerial Based Operations	<p>8.1. Aerial based operations include heliportable, heli-assist, gravity and aeromagnetic surveys.</p> <p>8.2. Heliportable lines are restricted to 1.5 metres in width and will occur in areas of unstable terrain and higher elevations, where season and timing dictates.</p> <p>8.3. The involvement of a qualified biologist or technician is critical in developing suitable mitigation strategies for fish and wildlife protection.</p> <p>8.4. Wildlife timing windows will be met, as described in the Environmental Protection and Management Regulation Guidance Manual.</p> <p>8.5. Demonstration that an identified timing window is unavoidable requires variance and mitigation plans to minimize potential wildlife impacts. Requirements for mitigation plans are outlined in Environmental Protection and Management Regulation Guidance Manual.</p> <p>8.6. The Ministry of Environment is currently developing a Best Practices guide which will assist industry in developing appropriate procedures for aircraft use. In the interim, applicants are required to develop a wildlife flight plan that includes the following elements:</p> <ul style="list-style-type: none"> • Identifies wildlife species of concern and seasonal (timing) windows. • Designates avoidance distances. • Predetermines suitable flight routes. • Specifies suitable landing sites. • Includes information on other activities in the area to assist in coordination with other programs to reduce cumulative impacts. • Communicates the wildlife flight plan to all pilots and field staff before operations begin. • Provides for monitoring of wildlife sightings. • Provides for regular written reports (weekly) to the Commission.

Geophysical Project Elements	Specific Guidance
9.0 Helipads	<p>9.1. The number of helipads will be kept to a minimum.</p> <p>9.2. There will be no more than 1 helipad per 1 kilometre. of proposed line, unless otherwise indicated by safety requirements.</p> <p>9.3. Wherever possible helipad placement will take advantage of natural openings and suitable sites that are immediately adjacent to cleared lines.</p> <p>9.4. Potential helipad locations(s) should be situated in areas of lower wildlife habitat capability and must avoid special biological features (such as licks or wallows).</p> <p>9.5. Helipads must be constructed with due regard to safety.</p> <p>9.6. The number and size of helipads must be identified in the Geophysical Exploration Permit Application.</p>
10.0 Clean-up of Operations	<p>10.1. Work site cleanup activities will occur on an ongoing basis, concurrent with the geophysical project's progress.</p> <p>10.2. No evidence of work, such as; flagging tape, lathe, signs, spray paint, and other debris shall be left behind. Use biodegradable products where possible.</p> <p>10.3. No fuel, oil, and/or chemical storage within alpine, sub-alpine or riparian areas is permitted.</p> <p>10.4. Fuel will be stored in a manner that provides for spill containment, such as double wall tanks or other suitable ground level containment.</p> <p>10.5. All fuel barrels must be removed from the M-KMA prior to the end of the program. Fuel audits must be submitted to the Commission and MOE Pollution Branch upon program completion. The fuel audit will include records of how much fuel was hauled into the program area (such as number of barrels or tanks) and what was hauled out upon completion. All barrels or tanks must be accounted for.</p> <p>10.6. All trash must be contained and removed to an approved land-fill outside of the M-KMA.</p>

Geophysical Project Elements	Specific Guidance
<p>11.0 Reclamation Planning and Activities</p>	<p>11.1. Erosion control measures must be specified within the application.</p> <p>11.2. Methods to repair blowouts within 24 hours must be specified.</p> <p>11.3. Methods to immediately plug any flowing holes encountered must be specified.</p> <p>11.4. To minimize risk of flowing holes, erosion, and hole settling, shot hole filling will include some bentonite (or other material with similar properties).</p> <p>11.5. A monitoring report will be required within one year of program completion. The report should include the results of:</p> <ul style="list-style-type: none"> • Reconnaissance level field checking to confirm level of vegetation re-growth, surface soil disturbance, erosion problems and any impacts at other environmentally sensitive sites (such as stream crossings). • Equivalent of a 1:20,000 scale photograph of the program area shall be taken from an aircraft as a measure of visual impact at the landscape-level. • Description of any unforeseen impacts and how they have been mitigated. • Any adaptive management approaches used and documentation of success or failures. <p>11.6. Seismic lines with evidence of ground disturbance (such as removal of vegetation and duff layers), must be re-vegetated with indigenous plant species only, under the revegetation guidelines detailed in the Environmental Protection and Management Regulation Guidance Manual. A weed-free, short-lived cover-crop can be used where necessary to stabilize soil and facilitate native species growth. Under the ecosystem restoration target in the PTPs, a more comprehensive reclamation plan will be required in these situations; the target being to return the ecosystem to its natural state as much as possible over time, consistent with the direction in the M-KMA Management Plan.</p>

Geophysical Project Elements	Specific Guidance
<p>12.0 Other Considerations</p>	<p>12.1. The operational standards in this guideline, while generally applicable in the M-KMA, may vary for some areas already covered by pre-existing plans (Upper Sikanni Management Plan for example). Applicants are to discuss the location of their proposed geophysical project with Commission staff, to determine if other operational standards apply.</p> <p>12.2. Other conditions may apply to address special management requirements, such as :</p> <ul style="list-style-type: none"> • Beetle infested trees • Spiritual or traditional use areas • Recreational sites • Culturally modified trees • Mineral licks, or • Raptor nesting sites <p>12.3. Vehicular access is only permitted along designated access routes in the M-KMA. For ground-based operations a permit is required for exemption from the vehicle access restrictions. Information on the M-KMA Access Management Area regulation is available on the Commission website.</p> <p>12.4. Access control such as signage, controlled access and deactivation upon completion of the program may be required.</p> <p>12.5. Signage:</p> <ul style="list-style-type: none"> • Must be located at the nearest point of access in relationship to the M-KMA boundary • Must indicate program name, program number, operator name and type of activity being carried out (for example, heliportable program in progress) • Must be removed upon completion of the program

Geophysical Project Elements	Specific Guidance
13.0 Archaeological Assessments	<p>13.1. Applicants may be required to conduct an Archaeological Overview Assessment and/or a Selective Post Archaeological Impact Assessment if circumstances warrant. Typically, a Selective Post Archaeological Impact Assessment is required in areas of high archaeological potential and where mechanical line cutting methods are employed.</p> <p>13.2. More specific guidance on procedures for conducting archaeological assessments is available on the Commission website.</p> <p>13.3. If there are known (recorded) archaeological sites, then avoidance techniques are required.</p> <p>13.4. Use techniques that minimize disturbance of duff layer (such as hand-cut and mulchers, as noted earlier), reducing the likelihood that Selective Post Arch. Impact Assessments will be required.</p>

Geophysical Project Elements	Specific Guidance
<p>14.0 Area-specific and Species-specific Guidance</p>	<p>14.1. Operational timelines to reduce impacts on specific fish and wildlife species is available online (see Table 1.0 Planning).</p> <p>14.2. Strategy for geophysical operations from Fort St. John LRMP: “All new-cut seismic exploration in areas with potentially unstable slopes and/or high environmental values shall be heli-portable unless it can be conclusively demonstrated that conventional seismic exploration will not cause significant environmental impacts.”</p> <p>14.3. Within the High Elevation Zone of Sulpher/8 Mile there is a lack of information about Stone’s Sheep, a species of particular importance in this area. The PTP Public Advisory Group (PAG) have a) recommended initiating research on Stone’s Sheep populations and habitat immediately, while b) delaying the development of management direction and the issuing of tenures for five years (by Dec. of 2009), until research findings are available. More information on this management approach can be found in Sections 7.11 and 9.1.1 of the Pre-Tenure Plans for Oil and Gas Development in the M-KMA. The PAG developed recommendations regarding geophysical operations because it was felt that geophysical activities are an important contributor to potential Stone's Sheep impacts.</p> <p>14.4. The Commission will implement the PAG agreement by reviewing all geophysical proposals to ensure they:</p> <ul style="list-style-type: none"> • Recognize the special circumstances and interests of the Higher Elevation Zone. • Recognize the Stone's Sheep research program and mitigate potential effects. • Incorporate new information and research from the Stone's Sheep studies as it becomes available. <p>Applicants will use qualified personnel to plan and implement appropriate strategies to mitigate potential impacts on Stone's Sheep and will consult and share information with researchers to avoid and/or mitigate impacts on the research program. This general approach will be followed for other natural resource research being undertaken throughout the M-KMA.</p> <p>14.5. Applicants will provide all crews with wildlife awareness information, and bear avoidance information, in particular. The Commission may request that applicants develop hazard reduction plans for bears in some areas.</p>