DRAFT MANAGEMENT PLAN

July, 2008

Proposed Gilpin-Morrissey Wildlife Management Area
Disclaimer: This draft management plan contains preliminary proposals that are subject to change and therefore may not necessarily reflect the position of the Ministry of Environment. At the conclusion of the planning process a revised management plan will be approved by the Ministry.
Proposed Gilpin-Morrissey
Wildlife Management Area

DRAFT

MANAGEMENT PLAN

Prepared by the
Okanagan Region
Environmental Stewardship Division
Gilpin-Morrissey
Wildlife Management Area

Management Plan

Approved by:

______________________________ Date:_________________

Regional Manager
Environmental Stewardship Division
Okanagan Region
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Executive Summary

This section will be completed after further review and consultation of the draft plan.
Introduction

British Columbia is the most biologically diverse province in Canada. An array of ecosystems in the province support approximately 142 mammals, 488 birds, 22 amphibians, 18 reptiles and 468 fish, along with an estimated 2,790 native vascular plant species (BC Conservation Data Centre, 2007). The British Columbia Ministry of Environment mission is to maintain and restore the natural diversity of provincial ecosystems and fish and wildlife species and their habitat; and to provide park, fish and wildlife recreation services and opportunities to British Columbians and visitors. One activity the Ministry, specifically the Environmental Stewardship Division, engages in to meet these goals is the management of the province’s parks and protected areas system, which includes lands set aside specifically for the conservation of wildlife habitat.

Conservation lands for fish and wildlife may be acquired by the ministry in several ways (e.g., acquisition, Crown land transfer, long-term lease). However, each site gives priority to the conservation of wildlife, fish and their habitats, while often providing for other resource use and activities. These sites are established where the wildlife, fish and related habitat values are, or have the potential, to be of regional, provincial, or national significance. They may be used for a variety of purposes including conserving or managing:

- habitat for endangered, threatened, sensitive, or vulnerable species;
- habitat required for a critical life-cycle phase of a species such as spawning, rearing, nesting, or winter feeding;
- migration routes or other movement corridors; and,
- areas of very high productivity or species richness.

To date, 23 sites in the province have been designated as Wildlife Management Areas (WMAs) under the *Wildlife Act*. The WMA designation provides the Ministry with tools to assist in managing important fish and wildlife habitats.

The Ministry of Environment is assessing the feasibility of establishing a WMA (encompassing approximately 3,890 hectares) on portions of Crown and leased land (i.e., the Nature Trust property) referred to in this draft plan as the Gilpin-Morrissey. The creation of a plan that outlines how management would be carried out on the site is a prior requirement for considering the establishment of the WMA.

The primary rationale for considering this WMA is the presence of: year-round wild sheep habitat, essential winter mule deer habitat, and species and ecological communities at risk. This plan will set appropriate management objectives and strategies for the protection of conservation, recreation and cultural heritage values and provide guidance for restoration efforts aimed at maintaining wildlife and their supporting habitats in the proposed WMA. Because the proposed WMA boundary encompasses foreshore areas of
the Kettle and Granby rivers, fish and aquatic species and their habitats will also be addressed in the draft plan.

**WMA Planning Process**

The Ministry of Environment (Environmental Stewardship Division) prepares management plans to guide the management of WMA’s over the next 15 to 20 years. These plans set forth objectives and strategies to manage fish and wildlife species and their habitats, along with various human uses. A management plan relies on current information relating to such subjects as natural and cultural attributes and human activities within the proposed WMA, together with land management initiatives occurring on surrounding lands. It is recommended that a plan be reviewed every five to ten years as environmental, social, and economic conditions change.

The process for preparing a management plan involves analysis of the overall goals of the WMA. The primary intent is to ensure management decisions maintain fish and wildlife habitats and that human use does not have an overall negative impact on WMA values.

A management plan not only establishes long-term management direction for a WMA, it also identifies immediate issues. Because the Ministry is unable to address all issues simultaneously, the management plan prioritizes the numerous management strategies it identifies.

A plan is prepared after thorough stakeholder input into the identification of major issues and potential strategies to resolve them. A public process is then undertaken to provide comments on a draft plan. Once all comments have been assessed, the Regional Manager of the Ministry of Environment can approve the final document.

A WMA designation does not affect any rights granted before the designation, but any new activities or tenure renewals that involve use of land or resources in the WMA will generally require written permission from the Regional Manager of the Environmental Stewardship Division of the Ministry of Environment (MoE). MoE is also responsible for tenuring those specific uses or activities that pertain to the ministry’s mandate. For each WMA, allowable activities depend primarily on the management plan developed in consultation with conservation partners, stakeholders, the public, and First Nations. Compatible activities are generally permitted, whereas certain activities that may negatively impact wildlife or habitat may be restricted.

The WMA planning process for the Gilpin-Morrissey is being carried as follows:

1. Development of an outline of the WMA proposal, which conforms to any management strategies in existing land use plans.
2. Identify key stakeholders, local, regional and First Nations government, and other agencies that would be affected by a WMA designation and meet to present the draft WMA proposal and discuss their concerns.

3. Prepare a Management Plan for the area based on responses and consultation results.

4. Revise the Management Plan based on comments from referral process.

5. Hold an open house session and provide easy access to the draft plan (e.g., web-based version) for review. If necessary, amend the plan to incorporate public concerns.

6. Ensure broad endorsement of the Management Plan. Outstanding issues which cannot be resolved at the regional level may require a dispute resolution process.

7. Submit the Management Plan to the Interagency Management Committee (IAMC) for review and recommendation of a Land Act section 106 transfer of administration and subsequent WMA designation under the Wildlife Act.

8. Forward proposal to Cabinet via an OIC package that is routed through the appropriate Ministry and Cabinet Committee channels.

**Legislation and Establishment**

Under the British Columbia *Wildlife Act* (Section 4.2), the Minister may designate a Wildlife Management Area (WMA). The *Wildlife Act* outlines the ability of the Minister to designate, with Cabinet approval, land under his/her administration as a WMA; and states that WMA’s are subject to prior rights granted.

Once an area has been identified in a government approved land use plan for proposed designation as a WMA, the Ministry must ensure that it has administration of the land in question. In some instances, a request for a Land Act, section 106 Crown land transfer of administration from the Ministry of Agriculture and Lands (MAL) to MoE may be required. If so, the appropriate application is submitted by MoE to the Integrated Land Management Bureau of MAL. A key component of the application is a set of clear management objectives or a draft management plan which outlines the purpose and long term management objectives for the area. With respect to the Gilpin-Morrissey, the management plan is being drafted prior to the any Land Act application in an effort to clearly define management direction for the site.

The last stage involves submission of the WMA proposal package to Cabinet for approval. An Order-in-Council (OIC) under the *Wildlife Act* is required to give the Minister of Environment consent from cabinet to establish the WMA. Once the OIC is approved, the Wildlife Management Area is designated by a regulation of the minister under the *Wildlife Act*. 
Background Summary

The grassland, forest landscapes, and riparian assemblages of the Gilpin-Morrissey area have a long history focused on conservation and management of wildlife and habitat. In the early 1970’s, provincial government staff, on the urging of members of the Grand Forks Fish and Game Association, the Trail Wildlife Association and the West Kootenay Outdoorsman, and other public groups, purchased key parcels of ranch property that contained essential habitat for mule deer and other game species.

The first of these parcels was purchased in 1973 using provincial Greenbelt\(^1\) funds. This was the former Boothman Ranch site which encompassed approximately 600 hectares. In 1974, the former Esouloff and Tallarico properties, totalling approximately 192 hectares, were acquired by The Nature Trust of BC (formerly the Second Century Fund). Other Crown land areas located upslope of these purchased properties were viewed as important complementary sites and there was a growing desire to manage the entire area under some form of coordinated management.

The proposed Gilpin-Morrissey WMA represents a culmination of several decades of effort to manage the land area and resource activities within this area. Coordinated Resource Management Planning (CRMP) in the late 1970’s and 80’s built upon management initiatives (i.e., the Grand Forks Management Area) established in the early 1970’s. Following the re-introduction of California bighorn sheep to the area in 1986, an Order in Council (OIC) was established in 1988 over those sections of property purchased using Greenbelt funds and other select Crown land parcels (see Figure 1). The purpose of the OIC was to provide boundaries for coordinated management of wildlife and domestic livestock grazing. Currently, MoE has administration over much of the acquisition area (via a Ministerial Order M 241 signed in 2006) and the lands acquired by The Nature Trust of BC (through a 99 year lease agreement), both of which are illustrated in Figure 1.

In the fall of 2004, after significant lobbying from some residents of Grand Forks, the Environmental Stewardship Division (ESD) of the Ministry of Environment proposed initiating an assessment and draft management planning process for a Wildlife Management Area located immediately east of the municipal boundaries.

In 2007, two new provincial parks (originally identified as Goal 2 sites following the WKBLUP) were established as Gilpin Grasslands Park and Boothman’s Oxbow Park. These areas incorporated approximately 500 hectares of the original 1973 Greenbelt acquisition. These parks are located adjacent to the proposed WMA and assist in maintaining the ecological integrity of the area.

\(^1\) *Green Belt Protection Fund Act* was enacted in 1972. The purpose of the Act was to encourage the establishment and preservation of land (beyond those protected in parks) in the public interest. The *Greenbelt Protection Fund Act* was later replaced by the *Greenbelt Act (RSBC 1996)*.
The area identified for the proposed WMA contains significant grassland values and provides essential habitat for species at risk, such as the California bighorn sheep, western rattlesnake, gopher snake, American badger, and Lewis’s woodpecker. Recreational uses, including recreational hunting and game/guide outfitting, off road vehicle use, mountain biking and wildlife viewing occur within the area identified for the WMA.

The proposed WMA is located in the Overton-Moody Range Unit and has had continual range tenure in place since the late 1970’s. A debate has been ongoing for several decades over the use of the area by cattle and the potential negative impact it may have on wildlife populations and grassland values. An updated Range Use Plan (which covers the proposed WMA) is currently being drafted in coordination with the Ministry of Forests and Range and the range tenure holder, with input from the Environmental Stewardship Division of the Ministry of Environment.

A background report was created for the proposed WMA in 2005 and updated in 2007.

Figure 1: Context of administrative boundaries
Relationship to Other Planning Processes

Coordinated Planning in the 1970’s and 80’s

Grand Forks Environmental Management Area

In 1973, the Grand Forks Environmental Management Area (GFEMA) was created to address “requirements for mule deer winter and spring range [and] integrated development of further objectives projected [for] upland game bird management, waterfowl management, logging, livestock grazing and less intrusive public recreation and public education” (Bone, 1974, p. 3). A regional committee (under the auspices of the GFEMA) was also created with the primary purpose to “increase and maintain the productivity of this area for the benefit of wildlife, domestic stock and people” (p. 4).

Coordinated Resource Management Plans

Developed in British Columbia from the mid 1970’s to 1980’s the Coordinated Resource Management Plan strategy aimed to address conflicts and provide certainty between a mosaic of land uses (i.e., forestry, livestock grazing and range use, hunting and outdoor recreation). There were 87 CRMP’s completed in the province, primarily in the Kootenays and Okanagan. The CRMP’s were supported and developed by the various participating agencies, landowners, licencees, and public users of the planning areas. An inter-agency task group assumed joint responsibility for implementation of CRMP’s.

In 1976, a Coordinated Resource Management Group for the Overton-Moody Range Unit (encompassing all of the now proposed Gilpin-Morrissey WMA) was initiated to assist in developing a more formal land use planning process. The group built on the earlier efforts of the GFEMA regional committee. The Coordinated Resource Management Plan (CRMP) was an effective means to address livestock grazing, forest management, watershed integrity, recreation, wildlife management, as well as being a guide to overall development, rehabilitation and management to the plan area. Momentum in the CRMP began to decline in the early 1980’s most likely due to capacity (i.e., funding and time) for members to participate fully.

Kootenay-Boundary Land-Use Plan and Implementation Strategy

Following recommendations from the Commission on Resources and the Environment (CORE) in the early 1990’s, land use planning for resources and conservation was initiated in many areas of the province. The Gilpin-Morrissey area was encapsulated
within the West Kootenay-Boundary Land Use Plan (WKBLUP) approved in 1995. This plan was completed at the same time as the East Kootenay Land Use Plan (EKLUP). In 1997, a consolidated plan (the Kootenay-Boundary Land-Use Plan - KBLUP) synthesized the results of the EKLUP and the WKBLUP. The new plan designated various land uses, including protected areas, over the entire region.

In addition to detailing specific land uses, the KBLUP also established land use management guidelines through the Kootenay-Boundary Land Use Plan Implementation Strategy (KBLUP-IS). These guidelines helped to integrate land use management with a variety of government strategic policies and were intended to provide broad, corporate guidance to managing agencies.

Through the KBLUP-IS, specific management direction for locations outside of protected areas (i.e., provincial parks) was identified through wildlife connectivity corridors, Priority Grizzly Bear Management Areas and by delineating Special Resource Management Zones (RMZ), Integrated Management Zones (IRMZ) and Enhanced Resource Development Zones (ERMZ).

Several resource management objectives and strategies were developed for the Gilpin Grasslands which are outlined in Table 1. Moreover, the zoning strategy discussed in this draft management plan utilizes ungulate winter range (i.e., for bighorn sheep and mule deer) that is approved under the Forest and Range Practices Act as a basis for Priority Conservation zoning.

The Gilpin landscape unit was also assigned an intermediate Biodiversity Emphasis Option citing the important ungulate winter range, red and blue-listed species, high ecosystem representation (specifically grassland interface areas), sensitive soils, biogeoclimatic subzone and variants at risk (i.e., IDFdm1, IDFxh4, PPdh1 and ICHmk1) and connectivity to the Okanagan Region.

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2 The land areas included in the East Kootenay and West Kootenay land use planning process was 4,067,326 hectares and 4,167,583 hectares respectively.

3 A complete description of objectives and strategies for all landscape units can be found on the Integrated Land Management Bureau site: http://ilmbwww.gov.bc.ca/lup/lrmp/southern/kootenay/implementation_strat/app2.htm.

4 The intermediate biodiversity emphasis option is a trade-off between biodiversity conservation and timber production. Compared to the lower biodiversity emphasis option, it provides more natural levels of biodiversity and a reduced risk of eliminating native species from the area.

5 IDF (Interior Douglas-fir), dm1 (Kettle Dry Mild), xh4 (Boundary Very Dry Hot), PP (Ponderosa Pine), dh1 (Kettle Dry Hot), ICH (Interior Cedar Hemlock), mk1 (Kootenay Moist Cool).

6 The Gilpin-Morrissey was not cited in the KBLUP as a potential Wildlife Management Area although the plan did refer to the creation of Midge Creek, Hamling Lakes and East Side Columbia Lake WMA’s.
Table 1: Land Use Planning Resource Management Zone-Objectives and Strategies relevant to the Gilpin area from the KBLUP

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| Ensure the range of objectives and strategies are integrated in the grassland area, particularly as they relate to access for proposed development. | All proposals for new road development or expansions will be evaluated through either:  
- an enhanced referral process  
- special measures which, because of imminent development, require immediate attention. |

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<td>Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a moderate risk to basic stewardship level.</td>
<td>Implement a program of road and trail deactivation and rehabilitation, in accordance with the access management guidelines. In establishing priorities for access management, consideration should be given to the Overton-Moody Range Unit.</td>
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<td>Maintain the regional connectivity corridor between Gladstone Park and the United States, to contribute to ecosystem representation (PP, ICH, IDF subzones), to serve as habitat linkage for the seasonal migration of ungulates, and to support Gladstone Park</td>
<td>Apply the connectivity guidelines within the regional connectivity corridor.</td>
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<td>Retain attributes for old growth dependent species and fur bearers.</td>
<td>In establishing priorities for Old Growth Management Areas, consideration should be given to the Interior Cedar-Hemlock zone in the northern part of the unit and to Interior Douglas Fir at the forest/grassland interface.</td>
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<td>Ensure habitat requirements for red and blue listed and regionally significant species are achieved.</td>
<td>Maintain mature grasslands near hibernacula for Western Rattlesnake through application of the appropriate components of the Forest Practices Code.</td>
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<td><strong>Objective</strong></td>
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<td>Maintain the abundance of mule and white-tailed deer, elk and California Big Horn Sheep within the sustainable carrying capacity of their habitat.</td>
<td>Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the Forest Practices Code.</td>
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Relationship with First Nations

The Okanagan Nation Alliance has identified the Gilpin-Morrissey WMA as being within their asserted traditional territory. The management plan proposes to develop working relationships between the Ministry of Environment and the Okanagan Nation Alliance in a number of areas to ensure that management of the proposed WMA accommodates traditional uses and activities. The management plan will not limit subsequent treaty negotiations or land claim settlements.

Role of the Wildlife Management Area

Setting and Context

The proposed Gilpin-Morrissey WMA is located between the community of Grand Forks (population 4,100) and Christina Lake (population 1,460) and is situated in the Monashee Range of the Boundary region of southern British Columbia. A small portion of the proposed WMA lies along the Kettle River at approximately 500 metres (ASL) elevation. Above that is a broad, southwest-facing band of grassland and shrubland that extends up to roughly 900 metres elevation, at which point the vegetation blends into open forest, with closed forest on level slopes and north aspects. A large capacity electrical transmission line running east-west, forms the northern boundary, which varies between 1,200 to 1,400 metres in elevation.

Regionally, the proposed WMA complements a system of protected areas and conservation lands in the West Kootenay-Boundary area. Within a 60 kilometre radius are large wilderness provincial parks such as Granby and Gladstone and smaller parks such as Gilpin Grasslands, Boothman’s Oxbow, Christina Lake, Boundary Creek, Jewel Lake, Johnstone Creek and the Kettle River Recreation Area, all of which contain regionally important recreational, cultural heritage and natural features.

Site Attributes

The proposed WMA encompasses four distinct biogeoclimatic subzones, the PPdh1, IDFdm1, IDFxhr4, and ICHmk1 and is found within the Southern Okanagan Highlands ecoregion. The following small creek drainages are included within the proposed WMA boundaries: Sand, Morrissey, Dan O’Rea, Gilpin, Hurly and Ben Stubbs. A portion of the WMA extends below Highway 3 to the Kettle River and is comprised primarily of cultivated pasture and cottonwood stands along the river. Another small section of the proposed WMA extends to the west, along the foreshore area of the Granby River and contains an intact riparian area of high ecological value.

Less than one percent of the province is grasslands. Of this, only about two-thirds are Crown land with the remainder in private ownership. The Gilpin-Morrissey area retains portions of this endangered ecosystem, adding to the proposed WMA’s provincial
significance. The 638 hectares of the PPdh1 biogeoclimatic subzone within the proposed WMA accounts for approximately 3.8% of the total area of that subzone that is protected provincially and 4.7% of the PP dh1 subzone representation in protected areas within the South Okanagan Highlands ecossection. In addition, the IDF dm1 subzone within the plan area accounts for approximately 11% of the South Okanagan Highlands Ecosystem in protected areas. A variety of faunal species (e.g., California bighorn sheep, badgers, rattlesnakes, and gopher snakes) that are reliant on intact grasslands, and ‘provincially’ at risk (i.e., either red or blue-listed) can be found within the plan area. A host of flora species and plant communities that are red and blue-listed\(^7\) in the province are also located within the plan area.

Internationally, the proposed WMA’s proximity to the Colville and Okanagan national forests in the United States highlight the area’s wildlife connectivity and watershed scale importance.

The proposed Gilpin-Morrissey WMA also plays an important role in several recovery initiatives that involve a variety of agencies and government jurisdictions, specifically:

- American Badger Recovery Team- Ministry of Environment;
- Okanagan Badger Recovery Implementation Group- Ministry of Environment;
- Lewis’s Woodpecker Working Group- Canadian Wildlife Service;
- Southern Interior Reptile-Amphibian Recovery Team- Ministry of Environment and the Canadian Wildlife Service; and
- Western Screech Owl Recovery Team- Ministry of Environment

**The Nature Trust Properties**

The proposed Wildlife Management Area would include property owned by The Nature Trust (TNT) of British Columbia. Originally purchased in 1974, the 193 hectares are comprised of Lot 1 DL 493 Plan 24897 and part of DL 494 Plan B 107 (referred to in this management plan as the western TNT properties) and Sub Lot 14 of DL 2700 Plan 1183, and DL 2736 (referred to as the eastern TNT properties in this plan). The Ministry of Environment currently holds a 99 year lease on the property. Relevant sections of the lease agreement as they relate to management include;

> That the lessee, at all times during the terms of the lease, maintain and preserve in good order and condition the grounds of the said premises, and carefully protect and preserve the trees, bushes, shrubs, plants and flowers, now growing and which may at any time during the said term grow therein, from waste, injury or destruction.

\(^7\) See Appendix 1, the Species at Risk section and the Background Report for more information.
-That the said premises shall be preserved and/or developed by the lessee as a site of ecological interest for the use, enjoyment and benefit of the people of British Columbia.

Specific management direction for The Nature Trust properties is covered in the Range Use section, Motorized and Mechanized Use section, Access and Zoning section, and the Management Services section of this draft plan.

**WMA Goals**

These goals are intended to be the guiding principles for the Ministry of Environment in its management of the proposed WMA:

1. **Restore**\(^8\) and maintain wildlife populations and their habitats (specifically bighorn sheep, Western rattlesnake and mule deer).

2. Utilize an ecosystem-based management approach in managing activities and uses compatible with WMA objectives.

3. Improve the understanding of the grassland, forest and riparian values of the WMA by encouraging low-impact inventory, monitoring and research activities.

4. Raise public awareness of the conservation, ecological and cultural heritage values contained within and adjacent to the proposed WMA.

5. Continue to encourage and foster a strong stewardship ethic within the community for the proposed WMA.

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\(^8\) The term restore has multiple definitions; however, in the context of this management plan restoration is focused on increasing and maintaining wildlife populations by improving habitat suitability and reducing mortality. This can be achieved by a variety of means, but commonly prescribed fire, selective logging, tree slashing, tree spacing, forage plant seeding, alien invasive plant control, and access control are measures undertaken.
Map 1: Proposed Gilpin-Morrissey WMA Regional Context

Copies of maps are located at http://www.env.gov.bc.ca/bcparks/planning/mgmtplns/gilpin_grass/gilpin_mp.html.
Map 2: Proposed WMA Overview

Copies of maps are located at [http://www.env.gov.bc.ca/bcparks/planning/mgmtplns/gilpin_grass/gilpin_mp.html](http://www.env.gov.bc.ca/bcparks/planning/mgmtplns/gilpin_grass/gilpin_mp.html).
Management Zones of the Proposed WMA

Zoning is a process of dividing an area into management units based on consistent management objectives. Unlike provincial parks, WMA’s do not have a standardized zoning system. However, management zones can be established to identify areas with similar objectives. Three management zones (see Map 3) have been devised for the proposed Gilpin-Morrissey WMA: one large Priority Conservation Zone, a smaller General Conservation Zone and a Special Habitat Feature Zone.

The **Priority Conservation Zone** (PCZ) encompasses 2,638 hectares (approximately 68% of the proposed WMA) and contains essential habitat for California bighorn sheep (a provincially blue-listed species) along with areas that retain significant grassland values (i.e., bluebunch wheatgrass plant communities). Also included within this zone is open and closed forest which contains habitat for mule deer (a mammal identified in this plan as a species of management concern). The PCZ reflects a merged mapped polygon of winter range for both California bighorn sheep and mule deer approved under the *Forest and Range Practices Act* (Government Action Regulation). More specific direction for the PCZ is provided in the management strategies sections that follow and allowable uses are contained within the acceptable activities matrix (Table 2). General direction for the zone includes:

- Focussed effort on grassland restoration (i.e., use of prescribed fire, innovative range management).
- Establishment of research plots (i.e., a minimum of four new exclosure sites)
- Forest harvesting (except for the purposes of maintaining grassland/open forest values) and new road development for industrial activity would be kept to a minimum in the PCZ.
- All non-status roads would remain open to motor vehicles (environmental assessments may be required to ensure recreational use does not negatively impact wildlife and wildlife habitat).
- Existing mountain bike trails (as identified) would be considered for formal designation (contingent upon environmental assessment).
- New trail development (for non-motorized uses- e.g., mountain biking) would not be permitted within this zone.
- Focussed effort on reducing the number of redundant roads.\(^9\)
- The eastern Nature Trust properties (i.e., DL 2736 and SL 14) of the PCZ would be restricted to non-motorized use only.
- No development proposals (e.g., forestry, mining, recreation trails/facilities) would be considered on Nature Trust properties.
- The Nature Trust properties would not be available for domestic cattle grazing (fencing may be required to impede cattle foraging).

\(^9\) The boundaries of the PCZ reflect merged ungulate winter ranges for bighorn sheep and mule deer (approved under the *Forest and Range Practices Act*).

\(^10\) Redundant roads are defined in Appendix 4.
The **General Conservation Zone** (GCZ) is approximately 912 hectares (approximately 23% of the proposed WMA). There are two distinct areas of GCZ, one in the upper (northern) portion of the proposed WMA boundary and a smaller section situated south of Highway #3 and includes portions of the Boothman pasture (see Range Use section for more information on this pasture). The GCZ contains habitat features that assist in buffering the Priority Conservation Zone, and although the General Conservation Zone does not contain known or identified features/values of priority or are of special habitat concern, sustainable management practices within this zone are imperative to realize the overall goals of the proposed WMA. More specific direction for the GCZ is provided in the management strategies sections that follow and within acceptable activities matrix (Table 2). General direction for the zone includes:

- New trail development (for non-motorized use) would be considered in this zone (subject to environmental assessment).
- If proposals come forward, industrial activity (e.g., forestry and mining) would be directed to this zone.

The **Special Habitat Feature Zone** (SHFZ) is 343 hectares (approximately 9% of the plan area) and includes those areas within the proposed WMA that are legislated as Wildlife Habitat Areas under the *Forest and Range Practices Act*. The SHFZ contains essential habitat for reptile species (i.e., Western rattlesnake, gopher snake and tiger salamanders) and vegetation features that are highly sensitive to disturbance. The WHA designation would remain in place if the Wildlife Management Area was designated. However, because WHA’s apply specifically to forestry and grazing tenure, the SHFZ provides additional conservation measures for these areas. General direction for the zone includes:

- Focussed effort on grassland/riparian restoration, provided the implementation of these restorative activities do not negatively affect sensitive species within this zone.
- Limit use in Granby river riverfront area of the SHFZ to low impact (non-motorized) activities.
- Ensure livestock grazing is not conducted on the Granby riverfront portion of the SHFZ. Grazing within the SHFZ along the Kettle River and above Highway #3 must comply with the existing Range Use Plan.
- Discourage industrial activity (i.e., forestry and mining).
- Existing non-status roads in the SHFZ would remain open to motorized and non-motorized uses, contingent upon environmental assessments.
- New recreation trail development would not be considered.
- Heavy emphasis on reducing the frequency of redundant roads within this zone.

There may be circumstances where specific zones change over time (e.g., creation of additional special habitat feature zones) should new data/inventory reflect the need to protect additional WMA values. Any substantial changes in zoning would require amendment of this plan and public/stakeholder/government review.
## Compatible Activities

A list indicating the extent to which activities are considered compatible within the proposed Gilpin-Morrissey WMA objectives is in Table 2 (on page 16).

**Table 2: Compatible Uses and Activities**

<table>
<thead>
<tr>
<th>Gilpin-Morrissey WMA Activity/Uses</th>
<th>Compatible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal traditional uses and activities</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Camping – backcountry/no trace</td>
<td>Y1</td>
<td>Focus use in the upper GCZ</td>
</tr>
<tr>
<td>Campfires</td>
<td>Y1</td>
<td>GCZ only</td>
</tr>
<tr>
<td>Commercial guided ATV tours</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Commercial guided tours (non-motorized)</td>
<td>Y1</td>
<td>With Regional Manager consent</td>
</tr>
<tr>
<td>Hiking and Walking</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Fishing, Hunting and Trapping</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Natural and cultural values appreciation (guided interpretation, photography,</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>wildlife viewing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mineral tenure exploration/development</td>
<td>M</td>
<td>Not within SHFZ other zones with Regional Manager consent</td>
</tr>
<tr>
<td>Forest development activities (logging, road Usage/construction)</td>
<td>Y1</td>
<td>Not within SHFZ other zones with Regional Manager consent</td>
</tr>
<tr>
<td>Scientific research (manipulative activities and/or specimen collection)</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Backcountry Skiing/Snowshoeing</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Aircraft (helicopter) access</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Exotic insect/disease control (all species)</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Filming (commercial)</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Fire management (prescribed fire management)</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Fire management (prevention and suppression)</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Fish/riparian area enhancement</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Forest insect/disease control</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Grazing (domestic livestock)</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Guide outfitting (hunting)</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Guide outfitting (nature tours-non motorized)</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Horse use/pack animals (not exotic)</td>
<td>Y1</td>
<td>No off-trail use in SHFZ</td>
</tr>
<tr>
<td>Invasive weed control</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Motorized Access (Use of Non-Status Roads)</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Mountain Biking</td>
<td>Y1</td>
<td>Designated single-track trails and non-status roads</td>
</tr>
<tr>
<td>Off-Road Access (snowmobiles)</td>
<td>M</td>
<td>Users must stay on designated roads (non-status/road use permits) and trails (specific to mountain bikes)</td>
</tr>
<tr>
<td>Off-Road Access (motor vehicles and mountain bikes)</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

Y = Compatible activity or use.  
M = May be compatible under certain conditions.  
Y1 = Compatible with restrictions.  
N = Not compatible.
Map 3: Zoning Map

Copies of maps are located at http://www.env.gov.bc.ca/bcparks/planning/mgmtplns/gilpin_grass/gilpin_mp.html.
Vision Statement

The development of a vision statement is an important tool in the overall management of a Wildlife Management Area. A shared vision helps to focus and guide the planning, management, operation and development of a conservation land while facilitating closer cooperation between land managers, the community, and visitors. A clear vision provides the context to guide the short-term and long-term management of a WMA. Furthermore, it can assist in providing direction to WMA managers in regard to evolving demands in recreation and adjacent land use and incorporating new approaches to conservation management.

This vision statement is not meant to describe the current condition of the WMA; rather it portrays the condition of the WMA twenty years from now if the objectives and strategies contained within this management plan are implemented.

The Vision for the Gilpin-Morrissey Wildlife Management Area

The Gilpin-Morrissey Wildlife Management Area, forming the picturesque backdrop to the City of Grand Forks and majestic setting along portions of the Kettle and Granby rivers has remained a biologically diverse and culturally significant feature of the Boundary country.

A careful and coordinated management approach, along with the proactive measures aimed at addressing public access, range use, and ecosystem restoration have played a significant role in maintaining the rare ecological values of the WMA. Stewardship and compliance initiatives, facilitated by the Ministry of Environment, have focussed on uniting First Nations and other British Columbia citizens towards a common goal; fostering the responsible use of the land and the wildlife resources contained within, and adjacent to, the WMA.

First Nations continue to utilize the landscape of the Gilpin-Morrissey for food, social and ceremonial purposes. Collaborative management opportunities have expanded the understanding, knowledge, respect, and information sharing between First Nations government and the BC provincial government. With strong local engagement in management of the WMA, a holistic approach to the protection and conservation of wildlife and wildlife habitat within the WMA will continue for generations to come.
An Ecosystem Based Management Approach

The Environmental Stewardship Division is moving toward a more comprehensive approach to the management of protected areas and conservation lands in order to enhance ecosystem values and processes and protect ecological integrity. The concept of Ecosystem Based Management (EBM) has many definitions and has been used in a variety of contexts. Primarily though, EBM places emphasis on understanding and learning about the ecology of a given landscape. It then uses this knowledge and defines what level of human use and development is sustainable and works within ecological limits imposed upon the landscape. This requires:

- incorporation and integration of the best of existing knowledge (e.g. traditional, local and western science) into planning and decision-making;
- understanding of the interrelationships of the ecosystem’s biological and non-biological components;
- that decision makers accept that the knowledge of natural processes and human interactions is incomplete and inherently limited, and decisions made in the present can pose unacceptable risks for the future;
- that emphasis be placed on the precautionary principle and the practice of adaptive management;
- a focus on long-term/or large-scale issues;
- a holistic view of the environmental system and environmental problems;
- interagency co-operation, given ecosystems extend beyond jurisdictional boundaries; and
- that consideration be given to the guidelines of Best Management Practices.

Indeed, much of the understanding, knowledge and practices needed to implement an EBM approach for protected areas and conservation lands are still in the formative stages and will be developed over time. Although EBM within conservation lands is largely an

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11 Ecological integrity is the ability of the ecosystem to respond to changes through natural cycles and processes that evolved through the ages in that ecosystem. In order to maintain ecological integrity, managers avoid activities that might lead to changes that the ecosystem is not able to adapt to through its own natural cycles.

12 The National Framework for the Conservation of Species at Risk defines the principle as “where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize a threat”. In reality, some level of uncertainty is associated with almost all conservation-based decisions.

13 Adaptive management is a systematic approach for continually improving management policies and practices by learning from the outcomes of operational programs.

14 In 2004, the Ministry of Environment released Best Management Practices (BMP’s) for Activities Adjacent to Parks and Protected Areas. Although applicable to parks and protected areas, the relevance of this document to conservation lands is significant. BMP’s are non-legal guidelines recommended to attain desired environmental results for those carrying out activities adjacent to protected areas which could be potentially harmful (either directly or indirectly) to protected area natural values and ecosystem function.
Environmental Stewardship Division initiative, the KBLUP-IS also emphasized the importance of an ecosystem-based approach to land and resource planning.

Since the home range of various wildlife species is much larger than the WMA, effective management of the various ecosystems (i.e., grasslands, riparian, forest) that provide habitat for that wildlife is a challenge. The efforts to preserve and maintain species diversity within the WMA could be negatively influenced by land management practices outside its boundaries. Indeed, the concepts of island biogeography\textsuperscript{15} are becoming more apparent in many conservation lands and protected areas in the province.

In addition to mitigating concerns over adjacent land use, maintaining ecosystem function within the Gilpin-Morrissey WMA is imperative. While some natural processes like climate are distal, very complex and unmanageable at the WMA level, other processes such as wildfire, disease, and insect infestation must be accounted for and proper management scenarios devised to lessen their negative impacts on ecological integrity. Incorporating resiliency into the WMA is a pivotal step in ensuring natural and human caused disturbance does not adversely impact the proposed Gilpin-Morrissey WMA’s ecosystems.

**Climate Change**

Most scientists are now in agreement that most of the warming in the past 50 years is directly related to human activities that release greenhouse gases into the atmosphere. For over one hundred years British Columbia has experienced warming and changes in precipitation consistent with trends seen around the globe.

Within the provincial protected area and conservation lands system, the ecological impacts resulting from climate change are becoming more obvious every year. Increased drought like conditions, erratic and expansive natural disturbance events (i.e., insect infestations, wildfire) and enhanced glacial melting and runoff are some of the pressures being placed on protected areas and conservation lands within the province. To date, the Environment Stewardship Division lacks a definitive policy on how to address climate change within provincial protected areas. Historically the management of these areas tends to follow a ‘hands-off approach’. Studies conclude that the values and attributes that the protected area or conservation land was originally designed to protect and conserve may no longer exist under a climate change scenario.

The Gilpin-Morrissey WMA’s fragile grassland ecosystem and forested environments will undoubtedly be affected by climate change. It is prudent to establish monitoring programs within the conservation land to 1) track the responses of species to climate changes, 2) observe ecosystem shifts, 3) and measure important functional relationships. Knowledge of how these changes are occurring will help to direct management actions to

\textsuperscript{15} The concept of ‘Island Biogeography’ proposed by MacArthur and Wilson (1962) states that big reserves are better than small reserves and that connected (or close) reserves are better than unconnected reserves.
build resiliency. Climate change strategies have been incorporated into the key management issues that are covered in the remainder of this plan.

Species at Risk

British Columbia has pledged to conserve the province’s species at risk under the National Accord for the Protection of Species at Risk (1996). The BC Conservation Data Centre tracks the province’s species at risk and assesses the conservation risk for each species. In an effort to simplify interpretation of species’ ranks, lists are created.

Relevant to the proposed WMA are two lists. The red-list includes species that have been legally designated as endangered, threatened or extirpated, or are considered candidates for such designation. The blue-list includes species not immediately threatened or endangered, but of special concern due to characteristics that make them particularly sensitive to human activities or natural events. Some red and blue listed species are also listed by the Species at Risk Act (SARA) as at risk nationally in Canada. There are 152 plant and animal species that are either red or blue-listed within the Arrow Boundary Forest District. Many of these species are known to occur in the proposed WMA, but additional inventory is required to develop a more complete understanding of species at risk needs in this area.

Natural Values Management

Vegetation

General Context

The proposed Gilpin-Morrissey WMA includes four distinct biogeoclimatic (BEC) variants; PPdh1 (Ponderosa Pine dry hot – kettle variant- 638 ha., IDFdm1 (Interior Douglas-fir dry mild – Kettle variant- 1125 ha.), IDFxh4 (Interior Douglas-Fir very dry hot – Boundary variant- 815 ha.) and ICHmk1 (Interior Cedar Hemlock moist cool – Kootenay variant- 1312 ha.), and spans a diverse natural range that includes vegetation associated with riparian areas, grassland, and forest. Studies and inventories suggest that over 350 floral species exist within the plan area with a large percent of those species consisting of broadleaved plants and approximately 30 grass species.

South aspect forest cover is primarily Douglas-fir and ponderosa pine, whereas forested north facing areas consist primarily of western red cedar and hemlock trees. Western larch is scattered throughout the plan area. Shrub cover consists primarily of red osier dogwood, rose, snowberry, hawthorn, mock orange, saskatoon, ninebark and chokecherry. In spring and early summer, the south facing slopes of the proposed WMA are adorned with the bright yellow flowers of arrow-leafed balsam root.

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16 See Appendix 1 for more information on the red and blue lists.
17 Please refer to the Background Report for specific species at risk.
spring and summer various wildflowers such as larkspur, shooting star, brown-eyed Susan, and lupine, among others are located across the landscape.

Riparian vegetation is concentrated along creeks and it is not uncommon to discern year-round and ephemeral stream areas by a lining on both sides of willow, trembling aspen and small cottonwoods. The proposed WMA touches the shores of both the Kettle and Granby rivers in small portions of the plan area. Large, old growth black cottonwood, ponderosa pine and Douglas-fir are a significant vegetation feature of these riverbank areas. There is a remnant higher elevation wetland (commonly referred to as Lost Lake) located in the western section of the plan area, but the site has been severely degraded by off-road vehicles and human use.

The grassland ecosystem of the proposed WMA is unique to British Columbia and is an extension of the ‘Pacific Northwest Bunchgrass’ type. Much of the grasslands in the area are in early to mid seral stage owing partly to historic human disturbance on the landscape. These early seral species include needle and thread grass, Sandberg’s bluegrass, junegrass, and red three-awn. Some areas of the proposed WMA retain remnant late seral grasslands where bluebunch wheatgrass and fescue are common. There are also several introduced non-native grassland species (specifically Kentucky bluegrass and crested wheatgrass).

Highly competitive invasive weed species (e.g., knapweed and toadflax) are prevalent on portions of the plan area. An aggressive biological control program by the Ministry of Forests and Range has significantly reduced weedy species in some sections of the proposed WMA; conversely, the emergence of other weed species for which there is no current biological control (e.g., sulphur cinquefoil and hoary alyssum) are becoming more visible on the landscape.

Mosses grow in a variety of locations within the plan area, particularly rock outcroppings. An inventory in the late 1990’s which analyzed grassland portions of the proposed WMA revealed 13 moss species. Although the area is thought to have once supported a number of lichen species, their abundance has been reduced (possibly because of trampling by livestock and wildlife, along with human encroachment during periods of vulnerability in dry summer months).

**Floral Species and Plant Communities at Risk**

Four floral species at risk (cup clover, northern linanthus, false-mermaid, and obscure cryptantha) are known to occur within the plan area along with three red-listed plant communities (black cottonwood-snowberrry, bluebunch wheatgrass-arrow leafed balsam

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18 Listed and described in ‘Grassland Ranges in the southern interior of British Columbia’, Canadian Department of Agriculture, 1968.
19 Seral stages are an effective method to categorize grassland types. Typically, early seral stages are characterized by grass species that tend to increase in abundance and vigor following disturbance. Over time they are replaced by late seral stage, or “climax” grasses. Native grasslands at or near potential natural condition are characterized by an abundance of mid to late seral grasses.
root, and Douglas-fir- western larch- pine grass). However, the most recent comprehensive plant survey is from 1974. The Conservation Data Centre lists all of the plant species that are red and blue-listed in the Arrow Boundary Forest District. The list contains 94 species (43 red-listed and 51 blue-listed).

Nine ecological communities at risk have the potential to occur within Biogeoclimatic Subzone variants IDFxh4 and PPdh1 (relevant to the Arrow Boundary Forest District) that are found within the proposed WMA boundary (seven are red-listed, two are blue-listed). A Wildlife Habitat Area for the ponderosa pine – black cottonwood – snowberry ecological community has been established within the plan area.

There is one introduced species located in the plan area that has become naturalized yet is considered unique in the province. The shrub buffaloberry (*Sheperdia argentea*) occurs near the eastern portion of the proposed WMA and is most likely a result of a transplant carried out in the 1980’s as part of habitat enhancements.

**Natural Disturbance Regimes**

Natural disturbances such as fire, forest disease and insect infestations are fundamental in maintaining ecosystem complexity. While allowing natural processes to occur without interference is consistent with wildlife and habitat management, this strategy contains an element of risk to WMA values. Human manipulation of the landscape since European contact has significantly disrupted natural cycles of disturbance. Successful fire suppression (in an effort to protect property and valued timber resources) has created conditions for unnatural fuel build up (dead limbs, leaf litter, and juvenile trees) and increased canopy closure - the building blocks of greater fire severity.

Today, land managers use a variety of tools to assist to restore habitat and landscapes to former natural cycles. The natural disturbance regimes described by the Ministry of Forests and Range cover a diversity of habitat types, from NDT (Natural Disturbance Type) 1 which is characterized by rare stand initiating events to NDT 4 which is defined as an area that undergoes frequent, low intensity, stand maintaining fires. Approximately 65% of the proposed Gilpin-Morrissey WMA is NDT 4 and the remainder is NDT 3. Recent logging within the plan area has focussed on maintaining both NDT 3 and 4 characteristics. This has been accomplished primarily by selectively removing trees (specifically in NDT 4 areas) and creating larger openings (but not clearcuts). This

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20 See the Background Report Appendix D.
21 WHA’s are mapped areas that have been approved by the Environment Minister as requiring special management. The purpose of a WHA is to conserve those habitats considered most limiting to a given species.
22 As an example, it has been suggested that wildfire occurred on the Gilpin-Morrissey landscape every 5 to 15 years prior to European settlement (Gayton, 2004).
24 NDT 4 includes grasslands, shrublands, and forested communities that normally experience frequent low-intensity fires. NDT 3 forest ecosystems experienced frequent wildfires that ranged in size from small spot fires to massive wildfires covering tens of thousands of hectares.
process encourages grassland health and rejuvenation and reduces the incidence of future forest in-growth (one of the significant threats to grasslands).

Prescribed fire is also another useful and potentially effective method to restore grassland values and minimize un-natural forest fuel build up (which can add to catastrophic wildfire events). Several areas within the proposed WMA and adjacent Gilpin Grasslands Provincial Park (prior to park establishment) have undergone prescribed burning at least four times over the past thirty years. The majority of these took place on grassland portions of the landscape. There are plans for future prescribed fires in the proposed WMA and adjacent Gilpin Grasslands Provincial Park.  

**Mountain Pine Beetle**

The proliferation of insect feeding (particularly of mountain pine beetle and to a lesser degree the Western pine beetle) on tree species is resulting in high tree mortality in certain areas of the Arrow Boundary Forest District. In turn, this is creating added ecological pressures on forested landscapes, particularly those set aside for conservation purposes.

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25 An Ecosystem Management and Restoration Plan is currently being drafted for the plan area and Gilpin Grasslands Provincial Park that will identify areas that may require vegetation management including prescribed fire.
In 2004, approximately 7,021,886 hectares of the province were affected in varying degrees by the mountain pine beetle. A provincial government study predicts that at the current rate of spread, 50 per cent of the mature pine will be dead [in the province] by 2008 and 80 percent by 2013.

Upper elevations of the proposed WMA are most at risk from mountain pine beetle and to date, approximately 26 hectares of the proposed WMA has been affected by mountain pine beetle (isolated to a north-eastern portion of plan area). However, old growth ponderosa pine from mid elevation to valley floor could be impacted by the spread of the beetle.

Vegetation Management Issues

Prescribed Fire

With the reduced frequency of natural wildfires occurring over most of the plan area, it is suggested that prescribed fire be used as a management tool. The objectives of prescribed fire are to restore grassland values, reduce undesirable plant species and remove excess forest litter (particularly along the forest fringe of the upper grasslands). Nonetheless, it is important to acknowledge that such management actions may actually increase some weed species (especially if fire is used on early seral stage and overgrazed sites), damage fragile lichen and moss covered terrain, and have detrimental effect of those species of grasses that are not well adapted to fire. The negative effects on ground dwelling animal species (particularly reptiles that are ‘at risk’) must also be considered.

In the ecosystems present in the proposed WMA area, prescribed fire is generally appropriate for spring (March to May) or late summer/fall (August – October) application, depending on the desired effect on vegetation and fuels and the potential for negative impact on sensitive species. Planning and implementation of prescribed fire must account for potential negative impacts and balance these against the potential benefits. In the ecosystems in the proposed WMA area, prescribed fire is an appropriate management tool only under a specific set of weather and fuel conditions, and at specific times of species’ life history stages. For example, prescribed fire is not appropriate in or near sheep lambing grounds during the lambing season, near snake hibernacula during spring dispersal and fall prior to hibernation, or after bunchgrasses have reached a certain growth stage. In some cases where there are sensitive species and ecosystems, prescribed fire will not be an appropriate management tool at any time.

An Ecosystem Management and Restoration Plan is under development that includes the plan area. The restoration plan will provide specific direction for meeting long term objectives of maintaining historic natural disturbance cycles within the proposed WMA and adjacent Gilpin Grasslands Provincial Park and Boothman’s Oxbow Provincial Park.

26 Analysis indicates these are ‘red-attack’ (forming characteristic red-tops one year after attack).
Alien Invasive Plants

Currently, the Ministry of Forests and Range, in coordination with the Boundary Weed Committee, is responsible for monitoring and treating invasive species within the plan area. Weed spread within the proposed WMA may result from unsuspecting visitors who carry seeds on clothing or vehicles, and from domestic feed for horses. Other vectors of weed spread are grazing livestock, wildlife and the wind. Parking areas, former road surfaces, utility rights of way, and other disturbed areas all have the potential to be opportunistic sites for weed establishment.

Continual monitoring and cultural/mechanical/biological treatment of weed sites in the proposed WMA (and surrounding area) may reduce the risk to native vegetation. Chemical control methods (i.e., herbicides) are another valuable control method, particularly in reducing the spread of highly competitive weed species such as knapweed. Herbicide applications within the proposed WMA should only be utilized when other means are ineffective and follow regulations outlined in the Province’s Integrated Pest Management Act.

Pine Beetle and Forest Health Management

Coordination with the Ministry of Forests and Range is essential in managing the spread of mountain pine beetle and other forest health issues that could be detrimental to ecosystem health in the plan area. As part of this coordinated effort, incorporating existing provincial and provincial/federal plans into WMA management is crucial (i.e., 2006-2011 Mountain Pine Beetle Action Plan and Mountain Pine Beetle Emergency Response Canada-B.C. Implementation Strategy). Monitoring sites that currently have infected stands and considering the variables associated with climate change are also imperative in any long term management within the plan area.

Range Management

Livestock grazing has affected the vegetative characteristics of the proposed WMA to varying degrees. In some grassland areas, the activity of cattle foraging has not had a detrimental effect, and in some cases enhanced plant vigour. Conversely, in some other portions of the plan area, degradation and loss of native flora species has resulted from a variety of factors associated directly and indirectly with the introduction of livestock.

Range management within the proposed WMA is covered in the Land Use and Tenure Management Section. Accompanying the background on range management are specific objectives and strategies to address this issue.

27 Cultural treatment is the modification or elimination of land use practices by humans which may indirectly cause or aid in the spread of invasive weeds (e.g., controlling access, manipulation of wildlife or livestock, and increased public awareness). Mechanical (physical) treatment often involves using tools that cut back plant parts (normally flower producing shoots) or use of prescribed fire, whereas biological control utilizes specialized insects (at various life stages) that consume flowering heads of seeds or foliage of weed species.
Inventory and Research

Recent baseline studies of flora within the proposed WMA are lacking, particularly of species at risk that could potentially occur within the plan area. Moreover, monitoring sites that can be used to more accurately record, measure, and identify impacts (i.e., from grazing, off road vehicle use, weed infestation) to sensitive areas need to be established within the proposed WMA if land managers are to make informed (science based) decisions/recommendations on land use activities. Exclosures (more fully explained on page 45) and monitoring plots are just two tools that could be more readily utilized. In addition, encouraging academic institutions, naturalists groups, local flora experts, and First Nations to assist in building the database and knowledge of the variety of vegetation values within the proposed WMA would be an essential component of management.

Climate Change

The effects of climate change in British Columbia are becoming more prevalent every year. A transformation in seasonal weather patterns exacerbated by the burning of fossil fuels is leading to warmer, drier summers, with drought-like conditions in many parts of the province. Similarly, more intense wildfires, forest disease and insect infestations are on the rise. It is hypothesized that shifts in the entire current biogeoclimatic zone structure will occur in future years as climate change becomes more pronounced.

Climate change effects on grasslands could be viewed as a positive aspect, for it is speculated that grassland coverage in the province will increase. Nevertheless, these ‘new’ grasslands will be predominantly early seral stage, prone to weed infestations, and lack the characteristics of healthy grass communities that retain ecological integrity and biodiversity. A ‘likely’ case scenario in the southern half of British Columbia is illustrated in Figure 3 (grasslands are indicated by yellow and transition areas are light green).
Forested ecosystems will also undergo dramatic changes in a world dominated by global warming. Currently, forests have evolved and adapted to varying climatic regimes over geologic time intervals. However, when those changes occur over decades rather than millennia, the impacts can be severe. Many tree species may not have time to adapt effectively. Drought, changes in nutrient cycling, and deficiencies in building resilience to disease and insect outbreaks will undoubtedly decrease forest health and vitality. Warmer and drier summers on average will produce more numerous and extensive fires in forest ecosystems, likely reducing both the extent and connectivity of forests.

Considering these aforementioned impacts of climate change, it is essential that land managers use ‘adaptive’ management approaches to build resiliency into the vegetation characteristics of the proposed WMA. One such initiative is the “Preparing for Climate Change” report that was prepared by the Ministry of Forests and Range in May, 2006. Under the auspices of the Climate Change Task Team (established in June 2005) the report explores opportunities to adjust approaches to forest and range management in response to rapidly changing climate conditions. The report also focuses on identifying potential risks and opportunities, knowledge and research gaps, and some short- and long-term adaptive responses to climate change that the MoFR and others (i.e. the Ministry of Environment) could undertake. The forest and range values within the proposed WMA would benefit greatly if key aspects of the “Preparing for Climate Change” report are incorporated into the management of vegetation resources within the plan area.

28 As an example, the pine beetle outbreak in the province has been attributed to climate change (i.e., the absence of cold winters in recent decades has made it easier for beetle larva to survive). It is also been suggested that climate change will allow the tree insects to further expand their range northward, eastward and toward higher elevations.

29 Resiliency is defined as the capacity of a system to absorb disturbance and reorganize while undergoing change so as to retain essentially the same function, structure, identity, and feedbacks (Folke 2004).

30 The report is available at http://www.for.gov.bc.ca/mof/Climate_Change/Preparing_for_Climate_Change.pdf.
Restoring Impacted Sites

Specific areas within the proposed WMA have been ecologically degraded because of human related activities over the last several decades. Increased motorized vehicle traffic (particularly of off-road vehicles), and indiscriminate trail/route development have had both an aesthetic and functional impact on ecological values in some portions of the plan area.

The Lost Lake area (northwest corner of the proposed WMA) has been subjected to high use from motorized vehicles (e.g., mud bogging). In the same location, numerous off-road activities have compressed and destroyed native vegetation via new vehicle tracks on steep terrain (many in excess of 30% grades). Motor vehicle use (particularly of off-road motorcycles) adjacent to Highway #3 has increased grassland scarring, whereas unauthorized mountain bike trail development and enhancement has created routes where potential conflict with wildlife and range values may occur.

For most of these impacted sites, restoration can be achieved through particular management strategies discussed throughout this plan (i.e., motorized access management, range management, tenure management) and implementation of follow-up monitoring. Effective restoration will require an integrated approach amongst land managers, tenure holders, recreational uses and stewardship groups.

For the purposes of this plan, emphasis of restoration efforts will be focussed in the Priority Conservation Zone and the Special Habitat Feature zones (see Zoning and Access map).

<table>
<thead>
<tr>
<th>Objective for Vegetation Management</th>
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<tbody>
<tr>
<td>Protect the ecological integrity of native vegetation within the proposed Gilpin-Morrissey WMA.</td>
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<table>
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<tr>
<th>Strategies for Vegetation Management</th>
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<tbody>
<tr>
<td>Undertake management activities (i.e., selective forest harvesting, prescribed fire, fuel management) that maintain historic natural disturbance cycles (i.e., which existed in pre-colonial periods) across the landscape.</td>
</tr>
<tr>
<td>Ensure integration with the Ecosystem Management and Restoration Plan (once fully developed and implemented).</td>
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</tbody>
</table>

31 Although with a primary focus on the use of prescribed fire, the Ecosystem Restoration Plan that is currently being developed for the greater plan area will undoubtedly complement efforts to restore degraded sites and highlight areas of significant vegetation value.
Focus restoration efforts in the Special Habitat Feature Zones and the Priority Conservation Zone.

Ensure restoration activities such as prescribed burning have adequate monitoring and address potential impacts on species at risk and issues such as invasive weed establishment in the post-treatment stage.

Undertake weed management initiatives that utilize a wide spectrum of control methods, with particular emphasis on non-chemical (herbicide) related measures.

Utilize native plant species as a first choice for restoration projects.

Encourage range management practices that do not degrade vegetation values.

Encourage further research, inventory and monitoring of vegetation, with particular emphasis on floral species at risk.

Ensure responses to climate change are integrated into all facets of vegetation management and make efforts to build resiliency to climate change effects on vegetation communities in the proposed WMA.

Reduce impacts from recreational activities such as off road vehicle damage (see Recreation Values Management section for more detail).

Wildlife

General Context

Owing to the elevation gradient of the proposed WMA (beginning from river valley and ascending to grasslands to upland forests) the area possesses a mixture of species with specialized ecological niches. Small and large mammals, birds, amphibians, reptiles and a host of invertebrates are known to exist within the plan area and are described below (a more detailed inventory is available in the Background Report).

Ungulates

California bighorn sheep (Ovis canadensis californian), were transplanted from Vaseux Lake to the plan area in 1986. The re-introduction has been very successful and the ‘Gilpin’ herd is currently estimated at two-hundred animals. The bighorns make extensive use of the steep, south-facing grassland terrain in lower elevations of the Priority Conservation Zone and are occasionally seen grazing near the highway. Provincially, California bighorn sheep (along with Rocky Mountain Bighorn Sheep) are blue-listed by the Conservation Data Centre.
Mule deer (*Odocoileus hemionus*) are found in the larger Gilpin-Morrissey area, particularly during the winter and upper half of the Priority Conservation Zone (see zoning section) reflects their range in the plan area. The population rebound of mule deer from a sharp decline in 1996 has been slower in the Grand Forks area than elsewhere in the Okanagan Region and this is a management concern. Tracking (telemetry) of 8 radio collared mule deer as well as observations from United States indicate local mule deer movement both southward and northward across the international boundary.

A herd of approximately fifty Rocky Mountain elk (*Cervus elaphus*) use the proposed WMA area occasionally during the winter. This population is most likely descended from elk transplanted near Christina Lake from Alberta in the early 1970’s.

White-tailed deer (*Odocoileus virginianus*) are common in the Grand Forks area. These animals typically do not migrate as far as the mule deer and may reside in the plan area year round. Populations of these animals appear stable.

Moose are occasionally observed in riparian areas within the upland forest portions of the proposed WMA.

**Non-Hoofed Mammals**

American black bear, cougar, bobcat, lynx, coyote and badger (a species at risk) have the potential to occur within the proposed WMA. Rodentia (e.g., beaver, long-tailed vole, bushy-tailed woodrat, yellow-bellied marmot, chipmunks, squirrels, and northern pocket gopher) and mustelids (ermine and skunk) do frequent various locations within the plan area.

**Herptiles**

The ecosystems of the Gilpin-Morrissey provide an important opportunity to conserve habitat for a host of amphibians and reptiles (commonly grouped as *herptiles*), many of which are becoming increasingly rare. The Western rattlesnake, gopher snake, racer, rubber boa (all considered species’ at risk), western terrestrial and common garter snake have been recorded within the plan area. Owing to the dry, grassland dominated ecosystem with wetlands, the Great Basin spadefoot (blue-listed in the province) and tiger salamander (a red-listed species) also occur within the proposed WMA.

Two Wildlife Habitat Areas (WHA’s) for the purpose of conserving habitat for gopher snakes and rattlesnakes have been designated within the proposed WMA. The Special Habitat Feature Zone reflects the WHA designation for these species and their habitat.

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32 Species of management concern (relevant to this plan only) is not the equivalent of a species of ‘special concern’ (blue-listed species).
Avian Species

A list of known and potential bird species occurring in the plan area can be located in the Background Report; however, notable species that deserve a high level of management attention are the Lewis’s woodpecker and the western screech-owl (*macfarlanei* subspecies). Both of these birds are red-listed in the province and recovery initiatives are in place in an effort to secure and protect habitat. The proposed WMA contains suitable habitat for both species (i.e., intact riparian with large cottonwoods or older aged, large diameter ponderosa pine and Douglas-fir stands). A WHA is proposed for Lewis’s Woodpecker and under consideration for screech-owl foraging habitat.

Several game bird species occur within the proposed WMA, these species, such as ring necked pheasants, partridges and quails were introduced into the area in the early 1900’s. They appear not to displace native species and add to the diversity of bird life in the area.

Invertebrates

Very little is known about the invertebrates (e.g., spiders, insects, snails, and earthworms) that exist in the proposed WMA. Nonetheless, this group of animals (which make up over 55% of all animals) is highly important in ensuring ecosystems function properly.

Wildlife Issues

Wildlife Fencing

The Crowsnest Highway #3 is a trans-provincial highway which bisects portions of the proposed WMA. Originally designed and constructed in the 1940’s, and upgraded in recent decades, Highway #3 has witnessed growing traffic volumes. Vehicle collisions with wildlife have also been steadily increasing. The area of Highway #3 between Grand Forks and Christina Lake has had one of the highest recorded incidents in BC of motor vehicles colliding with deer.\(^{33}\)

A wildlife fence (2.4 metres in height and located on the north side of highway for approximately 10 kilometres) was constructed in stages beginning in 1985, with most recent portions completed in 2005. The fence project was initiated by local individuals that were concerned about the mortality along the highway of transplanted bighorn sheep. To date, the fence has been effective at containing bighorn sheep to the north side of the highway and reducing mortality of deer crossing within the section of fencing.\(^{34}\)

\(^{33}\) Between 1993 and 2003, approximately 232 vehicle collisions were recorded on this segment of highway and of that amount 88% were associated with wildlife as the contributing factor.  
\(^{34}\) Gyug (2000) indicates that there is a reduction of wildlife numbers killed along the highway for portions of this fenced area. Conversely, the Ministry of Transportation indicates that the fence may be shifting deer movement to the end of fenced areas.
‘one-way’ gates constructed at strategic locations along the fence facilitate movement of deer from north to south. However, despite the installation of ‘one-way’ gates, the fence may be disrupting migratory patterns of deer (especially mule deer).  

In 2005, the Ministry of Transportation studied the cost/benefit of fencing both sides of Highway 3 between Grand Forks and Christina Lake to address vehicle/wildlife accidents. Private property, access, rugged terrain, and the potential of concentrating wildlife crossing at certain locations are challenges to options for new fencing. Wildlife highway underpasses were not discussed in the study. Such underpasses have been shown to be very effective in reducing wildlife mortality, but construction costs and maintenance can be high.

Encroachment of Wildlife on Adjacent Lands

Before colonial settlement of the Kettle and Granby River valleys, wildlife had a vast landscape in which to seek available forage throughout the seasons. However, as the human population grew, valley bottoms were quickly utilized for agricultural and residential purposes. Natural areas were replaced by cultivated fields and housing. To survive, wildlife have had to adapt or totally avoid human settlement.

Agricultural areas close to the proposed WMA are used for a variety of purposes such as tree nurseries, alfalfa (hay production), vineyards, and orchards. Deer (particularly white-tail deer) are a common site in many of these cultivated fields and their impacts can be dramatic on agricultural businesses. Moreover, smaller residential gardens and orchards are often impacted by selective browsing by deer. In some cases, wildlife fences have been constructed by land owners to exclude marauding deer.

There is a perception that the designation of protected areas and conservation lands creates an environment that can create higher wildlife populations and may increase grazing pressure on adjacent land (particularly agriculture areas). Alternatively, it is possible that conservation lands provide an attractive alternative and lure wildlife away from agriculture land. Research in this area is lacking.

The Ministry of Environment recognizes that farmers can be impacted by wildlife depredating agricultural lands. The Provincial Agriculture Zone Wildlife Program (PAZWP) is exploring hunting as a tool in agricultural areas to manage wildlife populations and to manage costs to producers. Although outside the purview of WMA management (PAZWP applies specifically to private lands), this initiative has signalled

35 The population of mule deer was reduced by half in the winter of 1996. Within the Gilpin-Morrissey area, the population is still 30% to 40% below its former population.
37 For more information view http://www.wildlifeandroads.org/.
38 A counter argument is that because of the lack of available habitat (i.e., degradation of natural values on Crown land), wildlife have been forced to find easier food sources in valley bottoms. A conservation land or protected area (with management emphasis on habitat improvement) viewed from this perspective could divert pressures away from agricultural areas.
that the Ministry recognizes agricultural land as a special area with specific objectives and opportunities.

**Inventory and Baseline Data**

Current wildlife inventories and baseline knowledge are lacking for the proposed WMA. Under such a situation, it is difficult to manage for individual species (both vertebrates and invertebrates), and to measure the effects a beneficial action for one species may have on a host of others species.

When funding is unavailable for inventories by government staff or contractors, land managers are frequently turning to volunteers (e.g., naturalist organizations) and local conservationists to complement the data and species records within conservation lands. Clearly, apparent knowledge gaps dictate the need for enhanced sharing and coordination of management between a number of governmental (including First Nations), non-governmental agencies, stewardship groups and individuals.

**Climate Change Effects on Wildlife**

It has been suggested that climate change will disrupt and alter the natural range of numerous species. For some species this may be beneficial, but for others this may cause displacement and greater competition for available habitat.

**Restoring and Maintaining Wildlife Populations**

The reintroduction of Rocky Mountain elk and California bighorn sheep in the 1970s and 80s has resulted in the establishment of self sustaining populations and has added to the species richness on the landscape. Moreover, they have created opportunities for hunting, wildlife appreciation, and scientific research. No further transplants of wild ungulates are planned for the proposed WMA; rather there should be an effort to improve habitat conditions for native ungulates, primarily for bighorn sheep and mule deer.

Some species will benefit from closer monitoring, habitat manipulation or re-introduction. Herptiles such as snakes and amphibians whose populations are of concern (i.e., red or blue-listed) may rebound if coordinated habitat improvements are initiated. Current species population imbalances (e.g., northern pocket gopher) could be offset if natural areas are returned to conditions that favour predators. It is not unrealistic to suggest that American badgers (apparently extirpated from the plan area) be re-introduced in the future.

Riparian and wetland areas are an important habitat feature within the proposed WMA. Streams within the plan area and riparian frontage on the Kettle and Granby rivers are fragile areas that must be retained and in specific circumstances restored. By focusing management efforts on protecting these sites, wildlife and aquatic species are given

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39 The reintroduction of beavers is one such mechanism to restore riparian and wetland areas.
additional opportunities for seeking food/water resources and cover, in turn increasing health and survivorship.

Adding the complexity of multiple uses that are currently present within the plan area (e.g., livestock grazing, logging, and recreational activities) it will be prudent for WMA managers to identify specific areas that could provide the stage for maintaining habitat values. The zoning strategy included in this draft management plan assists in focussing where habitat restoration efforts could be directed.

Beyond habitat improvements, efforts should be focused on reducing the incidence of wildlife mortality along Highway #3. Mule deer are susceptible to death and injury when attempting to cross the highway. If sufficient opportunities for wildlife to cross the highway are not provided, then other habitat improvements can be viewed as only partially effective.

### Objectives for Wildlife Management

- **Restore and maintain wildlife populations, giving special attention to species at risk, species of management concern, and those that aid in climate change resilience.**
- **Restore wildlife habitat where appropriate, in an effort to assist in stabilizing or increasing populations of species at risk and species of management concern.**

### Strategies for Wildlife Management

- **Develop a co-ordinated, long-term approach to wildlife management with other government agencies and First Nations, with emphasis on species at risk and species of management concern, including:**
  - maintaining ecosystem representation;
  - conservation and use of wildlife populations;
  - inventory and monitoring;
  - research to clarify knowledge gaps relating to biology and ecology, such as carrying capacity modelling;
  - public outreach;
  - management of biodiversity;
  - access, connectivity and range management;
  - co-ordinating wildlife management objectives; and
  - factoring climate change effects into wildlife management.
Support initiatives (i.e., wildlife fencing, underpasses) that aim to reduce the incidence of wildlife mortality associated with Highway #3 and other roads.

Encourage the assistance of volunteers, visitors, and other provincial/federal agencies to collect wildlife data and support research efforts by special interest groups (e.g. bird watching clubs, hunter associations, naturalists, and academic institutions).

Complement existing wildlife inventories with a new emphasis on red and blue-listed species by enlisting assistance from other provincial/federal agency staff, First Nations, and volunteers.

Ensure management practices in grassland areas (i.e., range use, prescribed fire) do not have a negative impact on species or ecosystems at risk.

Provide opportunities for wildlife viewing, study and appreciation in areas that are conducive to offering both security to WMA visitors and to minimizing disturbance to wildlife and ecosystems.

Research potential effects of climate change on wildlife and wildlife habitat.

Educate WMA visitors in the potential negative impacts of climate change on wildlife diversity.

Support initiatives that control invasive species.

Fish

The Kettle River Basin provides excellent habitat for a variety of fish species, both native and introduced. Native species include the red-listed speckled dace, the blue-listed chiselmouth, rainbow trout, mountain whitefish, burbot, redside shiner, northern pikeminnow, lake and peamouth chubs, prickly and slimy sculpins, and longnose and largescale suckers. The speckled dace (Rhinichthys osculus) is found only in the Kettle River system. This species has been located both east and west of the existing Gilpin Grasslands Provincial Park frontage. Species introduced into the system include eastern brook trout, brown trout, sockeye, and common or European carp.

A riparian area along the Granby River and another along the shores of the Kettle River (adjacent to Boothman pasture) provide the best opportunity in the proposed WMA to protect and restore fish habitat. The Boothman pasture section (below Highway #3) contains a narrow strip of riparian vegetation (mixed deciduous and conifers) along the shores of the Kettle River. Currently, the area is fenced to ensure cattle do not impact

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40 Conservative angling regulations were put into effect for the Kettle River Basin in 2004 in an effort to rebuild depressed trout populations. The lower Granby River which has been closed to fishing for the past 4 years, is slated to re-open as a catch-and-release fishery in 2008.
streamside vegetation and increase bank erosion. The small riparian area on the Granby River is an intact ponderosa pine and black cottonwood ecosystem with no land use other than occasional foot traffic associated with anglers, hunters and hikers.

Because of the bisection of most of the major streams that drain into the Kettle River by Highway #3, only one (Sand Creek) of the five named creeks in the proposed WMA is now fish bearing. Despite the absence of fishery values in major streams in the plan area, stream health can be negatively affected by land uses occurring within the proposed WMA. A host of impacts (e.g., turbidity, sediment and abnormal nutrient loading, high water temperatures caused by reduction of riparian cover, reduced water flow and water diversion) on theses streams as a result of land use activities can have effects downstream on the Kettle River thereby affecting fish health.

Undoubtedly, climate change will impact the fish and aquatic realm within the Gilpin-Morrissey WMA. Increases in temperature, reduced precipitation, altered fluvial invertebrate composition and declining water levels could disrupt many aspects of fish life stages. Reproduction success (e.g., egg survival) could be reduced or its timing altered. In addition, nutrient recycling and loading could transform the chemical compositions of streams, favouring some species, while becoming detrimental to others.

| Objective for Fishery Management |
| Protect, restore, and maintain current fish habitat within the proposed WMA. |

| Strategies for Fishery Management |
| Ensure land use activities do not negatively affect fishery values that lie adjacent to the proposed WMA. |
| Promote restoration activities on major streams that have been impacted by land use activities. |
| Limit activities in the Granby River riparian area (a designated WHA and zoned as a Special Habitat Feature Zone) to those that are low impact and do not degrade the sensitive nature of the vegetation in this area. Ensure livestock grazing does not encroach on this area. |
| Continue to maintain the integrity of the riparian area on the Boothman pasture and monitor livestock grazing in this area to ensure impacts are minimized. |
Encourage studies that confirm the existence of fish species at risk (e.g., speckled dace) in the Kettle River and how the proposed WMA might benefit habitat requirements of rare fish species.

Water

There are portions of four domestic watersheds and two community watersheds\(^{41}\) (one is wholly contained) within the plan area of the proposed WMA. The Kootenay Boundary Land Use Plan provided direction for ensuring that water quality and quantity is maintained and safeguarded through the land use planning area by proper management of resource extraction, regulating recreational activities, and monitoring/creating protocols for development projects.

Livestock grazing, motor vehicle/mechanized uses, points of diversion, logging, mining exploration and maintenance of existing utility corridors within the proposed WMA, when viewed in isolation, may be having a negligible effect on watershed values; however, collectively the impacts can be significant. These changes impact not only fish and wildlife habitat, but also water supply and quality. Applying best management practices to all aspects of current and future resource and recreation/development activities in the plan area will minimize impacts to watershed values.

Water management within the proposed WMA will be consistent with the objectives outlined in the British Columbia Water Action Plan.\(^{42}\) Moreover, resource and technical staff from other divisions of the Ministry of Environment (e.g., Water Stewardship Division) will be utilized to build partnerships and capacity in communities in order to continue to provide safe and sustainable water resources.

Climate Change and Water Resources

Climate change impacts could drastically alter the water quality and quantity within the WMA. It is expected that because of global warming, increased precipitation in the form of rain, instead of snow, will incite greater incidence of stochastic flooding events, alter freshet periods, and reduce snow pack levels. Longer, hotter, and drier summers could exacerbate drought conditions and eradicate ephemeral springs. Furthermore, most fish species are sensitive to changes in water temperatures and historic low water levels in the Kettle River may be exacerbated by climate change, further impacting fishery values.

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\(^{41}\) Watersheds that provide water for human consumption can be classified into two types. Community watersheds are officially designated under the *Forest and Range Practices Act*. This designation covers important water supply areas for incorporated user groups such as municipalities. These groups generally utilize large water systems, built to high standards and may incorporate filtration and disinfection facilities to comply with Ministry of Health regulations. Domestic watersheds occur where streams are licensed for human consumption, but do not qualify for designation as a community watershed (Integrated Land Management Bureau, 2007).

\(^{42}\) For more information see [http://www.elp.gov.bc.ca/soe/et07/03_fresh_water/action.html](http://www.elp.gov.bc.ca/soe/et07/03_fresh_water/action.html).
Objective for Water Management

- Assist in the protection and conservation of water resources within the proposed WMA.

Strategies for Water Management

- Minimize in-stream, riparian and wetland habitat impacts from detrimental lands use practices in order to maintain water quality and quantity.

- Ensure new applications for points of diversion or water licences clearly detail mitigation for potential impacts to fish, wildlife and their habitats.

- Where appropriate, restore beaver ecology in an effort to increase the amount of surface and groundwater.

- Establish long term monitoring of significant streams and wetland areas particularly as it relates to perturbations associated with climate change.

- Inform visitors of the fragile/minimal water resources in the grassland portions of the proposed WMA.

Figure 4: Watershed context
Promote Best Management Practices in situations where development is occurring within or adjacent to the WMA environment.

Utilize expertise from other provincial Ministries (e.g., Ministry of Forests and Range) and divisions within the Ministry of Environment (e.g., Water Stewardship Division) when dealing with water related issues.

Land Use and Tenure Management

Wildlife Management Areas are created with the primary purpose of maintaining and enhancing fish and wildlife species and their habitats. Other uses may be accommodated, however, provided they do not conflict with the purposes for which the WMA was designated. Within the context of the proposed Gilpin-Morrissey WMA, certain tenured activities such as cattle ranching, trapping, guide-outfitting, logging, mining, apiaries, and other resource development may continue to be accommodated.

This section identifies and provides background on tenured uses within the proposed WMA and outlines management direction to ensure these uses are compatible with WMA objectives.

Range Use (Cattle Grazing)

Context of Range Management and Tenure

Range tenures on Crown land are administered by the Operations Division (Range Branch) of the Ministry of Forests and Range. Through the Range Program, the branch allocates and administers hay cutting and grazing agreements and grazing leases on Crown range across the province. Range practices are regulated under the Forest and Range Practices Act. A variety of planning mechanisms are in place that allow for grazing activities to occur on Crown land. Range Use Plans and Range Stewardship Plans are prepared in coordination with the range tenure holder.

A range use plan must include the following:

- A map of a scale and format satisfactory to the minister that:
  - shows the area for the agreement under the Range Act that pertains to the plan
  - specifies the location and type of range developments in that area

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43 Range is any land supporting vegetation that can be consumed by both domestic livestock and wildlife and is managed as a natural ecosystem.
44 For more information on Range Use Plans see http://www.for.gov.bc.ca/hra/Publications/legislation_policy/RangeUseandRangeStewardshipPlans.pdf. Tenure is defined as a grazing licence, grazing permit, hay cutting licence or hay cutting permit issued under the Forest and Range Practices Act.
specifies the pastures that are in that area

- A schedule that describes for each pasture to be used for grazing of livestock:
  - the livestock class
  - the number of livestock
  - the period of use

- Specific actions to be carried out in the area under the plan to deal with issues identified by the Minister of Forests and Range.
- Conformity to prescribed requirements.
- Consistence with objectives set by government and other objectives that are established under the Act or the regulations and that pertain to all or part of the area subject to the plan.

**Local Range Use**

There is a long history of ranching within the proposed WMA and the broader landscape has been utilized for cattle grazing by a variety of ranching interests since the late 19th century. In the 1880’s, Ranulph Robert Gilpin established a ranch on the creek that now bears his name. Later, the Edward Boothman ranch came into existence. The Mehmal ranch, situated just south of the proposed WMA, has been ranging cattle in the area since the 1930’s.

The purchase of the Boothman ranch by the provincial government and the Esouloff and Tallarico properties by the Second Century Fund (now The Nature Trust of BC) in the early 1970’s provided an opportunity to address range use impacts, particularly of the Boothman ranch property, as the range was degraded by alien invasive plants (i.e., knapweed and toadflax). Cattle were removed from the Boothman property in 1972 and subsequent to the formation of the Coordinated Resource Management Group, cattle were re-introduced in the mid 1970’s under controlled conditions. An aggressive biological control (insect release) program for weeds was also initiated. Crown land portions of the range were then allocated a grazing period from early August to late November, with an average of 655 AUMs (Animal Unit Months).\(^{45}\)

The Order in Council (#1225) established in 1988 affirmed that the former Boothman ranch property and other portions of Crown land were to be jointly managed for the production of wildlife and domestic livestock grazing. Included with the OIC was a Memorandum of Understanding between the Forest Service and the Ministry of Environment for management of the above mentioned lands. Under a separate lease agreement with the Province, The Nature Trust lands were excluded from any cattle use.

There have been slight fluctuations of range tenure, AUMs, and allotment for cattle distribution on the range since the 1970’s. Today, the primary range tenure holder is the

\(^{45}\) The amount of dry forage resources required for one animal unit for one month. One animal unit is defined as a 1,000 lb (450kg) beef cow with a calf.
Mehmal Ranch (tenure #RAN073397) and their AUM allotment on the Overton-Moody Range Unit is 1,220 AUMs with a 169 cow/calf operation. The Mehmal Ranch conducts their grazing activities on Crown land, including Crown held lands in the proposed WMA, under a Range Use Plan. Other range tenures are registered on the Overton-Moody Range Unit (i.e., RAN076841, RAN073399, and RAN 076978). However, these tenures are applicable only to the cultivated Boothman pasture (south of Highway #3). RAN073399 tenure has not been renewed for three years and RAN076841 and RAN076841 were one year permits to graze on the Boothman pasture with provisions that irrigation be maintained and the existing hayfield remain in production (see section that deals specifically on the Boothman pasture).

A small portion of the proposed WMA resides within the Sand Creek Range Unit, but this unit currently does not have any existing range tenure. It was used as a temporary range area in 2007 while the pump system/power supply at Boothman pasture was repaired subsequent to damage following an extreme weather event.

**Range Use Cycle**

Currently, cattle under range tenure are released onto the Overton-Moody Range Unit in early May, (private land portions of Dead Horse pasture) and travel through various Crown land pastures as the seasons progress (i.e., as temperatures warm and conditions for forage in higher elevations become favourable). By mid summer, cattle are in the highest elevations of the range unit (Morrissey and Moody pastures) and as fall approaches cattle descend to lower elevations (Gilpin pasture). The cattle remain relatively dispersed throughout individual pastures, yet often congregate near water sources and salting areas (rancher placed). A corral is located within Gilpin Grasslands Provincial Park (near the convergence of Gilpin Creek and Highway #3) and cattle can often be observed loosely gathered on the slopes above the highway.
Assessment and Inventory of Range Values and Use

Over the past 10 years, several assessments and inventories have been conducted on the range area that is included within the proposed WMA. Ketcheson (1998) focused on an ecosystem (fauna) inventory of the Moody and Sand Creek range units, whereas Gayton (2004) and Knezevich (2006) investigated the inter-relationship between wildlife and cattle foraging and its past, current and potential future impacts on natural values (specifically grasslands). Recommendations to land managers were presented, but it is clear there remain discrepancies and disagreement amongst some agrologists on what approaches to management would best accommodate cattle use while maintaining/restoring habitat for wildlife and conserving high grassland values.

Relevant to this management plan are the findings of a recent Forest Practices Board special investigation of grasslands that have been subjected to long periods of grazing in British Columbia (the study focussed on upper grasslands in the South Central Interior). Some important conclusions were:

- Historical grazing has resulted in significantly altered grassland status today (i.e., it is far from its natural condition).
Recovery of grasslands towards a natural condition is slow, and in some cases may not be possible without further intervention.

Recent grazing practices have further slowed the recovery to natural condition on some sites.

Source: (Forest Practices Board, 2007)

Range Management Issues

Grassland Preconditioning

The practice of livestock range pre-conditioning has been suggested as one method to improve the productivity of certain grass species, which in turn can increase forage for wildlife. The basic principle implies that if a plant is left ungrazed, its nutrients are redirected from leaf growth to its root systems. If this cycle is interrupted (i.e. grass is grazed by livestock) the plant continues to produce leafy matter that can be subsequently beneficial to foraging wildlife after cattle are removed. Although the pre-conditioning concept provided some rationale for allowing late fall grazing on sections of the Gilpin pasture, pre-conditioning is best exercised during late spring/early summer. The current grazing cycle places cattle on the pastures to the west (Dead Horse, Valentine, and Morrissey) during the optimum time for pre-conditioning, so its effectiveness on the Gilpin pasture is most likely minimal.

Grazing Regimes in the Proposed WMA

Late fall and spring grazing, often the most controversial with respect to grassland health, both occur within the WMA. Fall cattle grazing (in Gilpin pasture) occurs primarily within neighbouring Gilpin Grasslands Provincial Park; nonetheless, it does occur on the eastern mid-slopes in the proposed WMA.

There is substantial research detailing both the benefits and costs of spring and late fall cattle grazing on grasslands. There is also general agreement of the potential impact of summer grazing in riparian areas and that uncontrolled grazing (grazing too early, too often, too severely, or at an important plant growth stage) is highly detrimental to grasslands. When wildlife requirements are factored in, particularly of bighorn sheep or mule deer this adds another level of complexity to regulating cattle grazing. If the primary purpose for the WMA is conservation of wildlife and habitat, then management must focus on providing the best conditions possible for native species to prosper.

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46 Grazing issues relevant to Gilpin Grassland Provincial Park are covered in the Management Direction Statement for the park.
47 This management plan is not intended to be a replacement or replication of the existing Range Use Plan in effect for the Overton-Moody Range Unit. A WMA designation places emphasis on wildlife and habitat, therefore typically requires a higher standard of range management practices that would otherwise be normally applicable on vacant Crown land.
The Boothman Pasture

Located on portions of DL 330 and DL 331, the 36 hectare Boothman pasture encompasses 3 fenced pastures, two of which are irrigated. The pastures have been cultivated to promote the establishment of fall rye. The Ministry of Forests and Range have invested considerably in a pump system and hydro power to the site to facilitate irrigation.

Currently, the Boothman pasture is not included in the range tenure that is active over the balance of the Overton-Moody range unit.

Range Management Innovations

Modern range management offers a host of innovative and cost effective mechanisms to minimize impacts of cattle grazing within grasslands and riparian areas, two defining characteristics of the proposed Gilpin-Morrissey WMA. The plan area for the proposed WMA is already utilizing measures to reduce cattle impacts on the landscape (i.e., range fencing, water troughs), but considering the need to manage first and foremost for wildlife and habitat, additional methods (described below) could be introduced.

Exclosures

Currently, two exclosures (fenced areas, generally of limited extent, enclosing vegetation and keeping out livestock or wildlife) are located immediately adjacent to the proposed WMA (within Gilpin Grasslands Provincial Park). These exclosures were placed in the area in 1975 following methodology outlined in Poulton and Tisdale (1961). The exclosures undergo some periodic monitoring and maintenance.

New exclosures (a suggested minimum of 4 hectares each) in the proposed WMA could be an added benefit to MoE/MoFR staff in the proposed WMA as they would provide opportunities for long term monitoring, research and public education awareness of grassland values. Other species can benefit from exclosures (i.e., avian, reptile and floral species particularly those considered at risk). The establishment of exclosures would include both riparian areas and upland habitat.

Range Fencing

Probably one of the most visible range management tools currently in place in grazing areas is wire fencing (barbed or smooth wired) to separate cattle from adjacent lands, riparian areas, sensitive sites, and roadways. Fences are structures which can have very long service lives (but often high construction and ongoing maintenance costs) and as structures they can be directed at specific conservation goals in grassland and riparian management. This is particularly true of problem areas such as stream crossings, water access points, and areas where bank damage has occurred from grazing. Range fencing is currently used in several portions of the proposed WMA (see Figure 6). In areas where
conservation of wildlife habitat is a priority, new range fencing could be established, such as The Nature Trust properties- DL 2736 and SL 14 and areas of significant riparian values, for example, portions of Gilpin and Morrissey creeks. Consideration must be given to proper fence design, as barbed wire fencing that lacks a top rail or smooth wire can injure wildlife (e.g., tangled in barbs).

Figure 6: Range Infrastructure

**Water Access for Livestock**

Cattle impacts on riparian areas are well documented and in an effort to mitigate impacts on stream channels and water quality, twelve water troughs are located within the proposed WMA boundary (another six are located within Gilpin Grasslands Provincial Park). These are either formalized catchments or fabricated structures that have diverted water funnelled into metal basins. Human constructed water catchments for domestic livestock can often create negative impacts to riparian areas because of the congregating of cattle in one place for an extended period of time (particularly in summer). Several

48 For more information view the Ministry of Forests and Range link at [http://www.for.gov.bc.ca/hfd/pubs/docs/Fpb/Rmf01/RMf-4030.htm#E11E59](http://www.for.gov.bc.ca/hfd/pubs/docs/Fpb/Rmf01/RMf-4030.htm#E11E59)
areas of the proposed WMA have been subjected to long term use by cattle for watering, and are demonstrating signs of ecosystem degradation.

A variety of designs to reduce cattle impact in watering areas are available to land managers that could improve riparian values within the proposed WMA. Fencing, in combination with gravity fed water (from an adjacent stream channel into a fabricated basin) has shown to be an effective method to reduce the damage to sensitive stream banks and vegetation.

Photo 1: Riparian area with trough/fencing (location Okanagan valley)

Photo 2: Current water catchment area in the proposed WMA
Likewise, rotational use (rest periods) of selected watering sites (e.g., fencing off one year and open the next) can provide an opportunity for vegetation to recover, shore areas to naturally re-armour, filtering systems to rebuild, and to improve habitat values for other uses.

**Rotations**

Within the Overton-Moody Range Unit, the current grazing schedule is based on elevation. As mentioned, the range use cycle begins in early spring and ends in late fall, with cattle moving to uplands as warmer temperatures prevail and descending to lower grasslands in the fall (noting that the actual rotation and schedule can vary year to year based on seasonal conditions).

Modern range management has devised various modifications to traditional grazing regimes and indeed the emphasis on retaining essential wildlife habitat in the proposed WMA indicates that new approaches should be considered in the future.

Rest rotations and deferred rotations could be contemplated within the proposed WMA; however, considerable investment (e.g., fencing individual pastures), continual monitoring, and physical movement of cattle, would have to be an essential part of any such rotational process. A less complicated approach to rotation would be for cattle to start in the Gilpin pasture (primarily within Gilpin Grasslands Provincial Park) in spring and move opposite to the existing grazing schedule or to remove cattle earlier from the existing late fall pasture (Gilpin pasture).

**Salting**

While not considered an ‘innovation’ in grazing practices, salting, if used correctly, can be a major benefit to both cattle and range values. Nevertheless, if placement and monitoring of salting areas is not implemented correctly then habitat degradation can result.

All animals require a base line level of salt and its presence in blood is essential in maintaining osmotic pressure in body cells for transfer of nutrients and waste products. Deprivation of salt (up to one year) will cause a marked breakdown in animal production. Livestock have shown that they are capable of regulating their own intake of salt if given a reliable source. Under range conditions, approximately 5 to 9 kilograms of salt per head per year is consumed. Salt consumption varies throughout the year, with intake normally elevated when forage is green (spring and summer) and water access is readily available. As a general rule, the more salt consumed, the higher the requirement for water.

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49 Rest and deferred rotations are defined in Appendix 2.
50 Knezevich (2006) suggested the switching of rotations between the Gilpin and Dead Horse pastures.
51 See the Appendix 2 for daily water requirements for cattle.
Proper placement and ongoing monitoring of salting areas is imperative if native vegetation (particularly within grassland and riparian areas) is to recover from the congregation of cattle (and wildlife) around salt blocks. Moving salt blocks continuously is one strategy that can mitigate localized impacts. Additionally, situating salting areas outside the proximity of riparian areas (a minimum distance of 400 metres) will avoid excessive browsing of important stream vegetation and reduce bank erosion.

### Objectives for Range Use

- **To ensure grassland, riparian and range values of the area are retained through active and pro-active range management.**
- **To recognize the importance of cattle grazing within the proposed WMA, its benefit to the economy, and the environmental contribution of cattle grazing to healthy grassland ecosystems.**

### Strategies for Range Use

- **Ensure management of the WMA is closely integrated with the Range Use Plan for the Overton-Moody Range Unit.**
- **Concentrate grassland/riparian restoration activities in areas of degradation to improve range condition.**
- **Identify areas that require continued monitoring and assessment and consider innovative approaches to manage cattle impacts (e.g., low impact water catchments structures, fencing riparian areas).**
- **Liaise with the Boundary Weed Committee and the Ministry of Forests and Range to address the issue of alien invasive weed spread.**
- **In coordination with MoFR, establish at least two additional large exclosures (greater than 4 hectares each) within the plan area (sites to be determined by range assessments that identify suitable areas).**
- **Take measures to discourage incidental cattle foraging on The Nature Trust lands (e.g., erecting of fences). With proper fencing, The Nature Trust lands (specifically the eastern properties) could serve as one large exclosure.**
- **Consider new rotations that encourage rest periods (recovery intervals) on individual pastures. This could be achieved via fencing, herding of cattle to one pasture or a combination of both.**
The allowance of existing late fall grazing should be re-considered on portions of the Gilpin pasture if pre-conditioning is detrimental to wildlife forage production.

The Boothman pasture should be considered as an area to be utilized for rest rotations or when delayed/early removal of livestock is desired on greater portions of the WMA.

The practice of salting should be conducted only when necessary within the proposed WMA. Salting locations should be closely monitored, moved frequently, located outside of Special Habitat Feature Zones, and not within 400 metres of riparian areas.

Increase public awareness about the direction to maintain cattle grazing on Crown land (specifically in the proposed WMA).

Support rancher involvement in stewardship initiatives, such as the Environmental Farm Plan.\textsuperscript{52}

Mining

There are portions of six active mineral tenures (and one entirely enclosed) within the proposed WMA. There are no mining operations or recent mineral exploration on the current tenures except the southern portions tenure # 524816. If carried out responsibly, with mitigation measures in place for fish and wildlife and their habitats, mineral exploration/development and extraction can occur within Wildlife Management Areas.

The West Kootenay-Boundary Land Use Plan identified that the area encompassing the proposed Gilpin-Morrissey WMA has the potential for mineral tenure related activities, subject to applicable legislation.\textsuperscript{53}

Any consideration of future mineral development or exploration within the proposed WMA should carefully consider maintaining the high ecological values contained within respective management zones (i.e., Special Habitat Feature or Priority Conservation zones).

\textsuperscript{52} For more information on the Environmental Farm Plan see \url{http://www.bcac.bc.ca/efp_programs.htm}.

\textsuperscript{53} Under section 4 (4) of the \textit{Wildlife Act}, written permission of the Regional Manager is required for any proposed use of land or resources in the WMA. Written permission of the Regional Manager can be in the form of a letter of permission or a permit under section 2(b) of the \textit{Wildlife Act Permit Regulation}. 

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50 Gilpin-Morrissey Proposed WMA: Draft Management Plan
Objective for Mining Related Activities

- Minimize the impacts of mining and mining related activities on fish, wildlife and their habitats within the proposed WMA.

Strategies for Mining Related Activities

- Work with the Ministry of Energy, Mines and Petroleum Resources (MEMPR) to help ensure tenure holders consider the special needs and habitat requirements of species resident within the proposed WMA.

- Ensure continued liaison with MEMPR in identifying and accommodating the requirements of current and future mineral tenure holders.

- When reviewing mineral development proposals, utilize zoning strategies incorporated in this plan as a means to identify areas that have high conservation value or important habitat features (i.e., species at risk).
Forestry

The proposed WMA lies within the Arrow Boundary Forest District and is part of the 48% of the province allocated as ‘Working Forest’. Approximately, 65% of the plan area is part of International Forests Products (Interfor) operations area, with the remainder allocated to British Columbia Timber Sales.

The direction from the Kootenay Boundary Land Use Plan assigned the Gilpin landscape unit an ‘Intermediate Biodiversity Emphasis Option’ citing the important ungulate winter range, red and blue-listed species, and high ecosystem representation. Forest development plans must therefore place emphasis on maintaining natural levels of biodiversity and minimize the risk of eliminating native species.

Pope and Talbot (the former forest licencee now Interfor) primarily focussed its harvesting over the past decade in the plan area at maintaining NDT 4 forest values, having now completed the majority of their harvesting with no scheduled operations for the next 5 to 10 years within the proposed WMA. Several road use permit logging roads associated with Interfor operations remain active within the plan area.

British Columbia Timber Sales (BCTS) indicate that although there are no immediate plans for forest harvesting within the proposed WMA boundary, the possibility exists for future operations. The majority of merchantable timber potentially accessible to BCTS within the proposed WMA resides within the Sand Creek drainage at upper elevations and north facing aspects.

With the increased occurrence of mountain pine beetle, harvesting/treatment of infected stands may become of a more immediate concern in the near future. Currently, 26 hectares have been affected by mountain pine beetle (red attacked trees) within the proposed WMA.

54 The Working Forest includes the 45 million hectares of publicly owned forestland outside of parks and protected areas. The objective of the Working Forest is to maintain access to Crown land and to define opportunities for investment.

55 Forest Development Plans (FDP’s) are intended to identify proposed roads and cutblocks that will be developed over a five-year period, while specifying measures to protect other forest resources in the area of the plan during operations. The Ministry of Environment is an essential player in the FDP process. Joint approval of the FDP would be required in the case of the establishment of a WMA.

56 BC Timber Sales (BCTS) is an autonomous organization with the Ministry of Forests and Range (MoFR). The activities of BCTS support the overall mandate of MoFR and specific goal of providing British Columbians with sustainable benefits from the commercial use of public forests.
As with other resource extraction activities (e.g., mining) that could occur within the proposed WMA, emphasis should be placed on encouraging forest development that limits the potential impact on Priority Conservation and Special Habitat Feature zones. The upper General Conservation Zone is an area most conducive for future harvesting activities.

**Objective for Forestry Development and Activities**

- **Forest management within the proposed Gilpin-Morrissey WMA is to focus on maintaining ecological integrity, native species and natural communities.**
Strategies for Forestry Development and Activities

- Ensure continued Ministry of Environment input on forest development plans that affect the proposed WMA.

- Work with BCTS and TSA licencee to focus harvesting related activities in the upper General Conservation Zone.

- Harvesting and road development in the Priority Conservation Zone should be kept to a minimum (except for the purposes of maintaining grassland values/open forest and the NDT 4 ecosystem).

Trapping and Guide-Outfitting

Trapping is a current commercial activity within the plan area, with two trapline territories (TR0815T002 and TR0815T001) covering portions of the proposed WMA. Although recent trends in the sales of fur have declined, trapping remains a viable form of supplementary income for local trappers. Trapping is also one of the many tools wildlife managers can utilize to regulate species populations.

One guide outfitting territory spans the entire area of the proposed WMA. All non-residents are required to be accompanied by a licenced guide/outfitter while hunting species such as deer, California bighorn sheep, moose, elk, cougar, black bear, lynx and bobcat. Management of guide outfitter activities within the proposed WMA would be consistent with the current Ministry of Environment’s Commercial Hunting Interests Policy.

The policy states:

That guide outfitters’ commercial interests in the harvest of big game species will be addressed by:

1. requiring non-resident hunters to hire a guide outfitter to hunt big game in the province, except when permits to accompany have been issued;

2. providing guided hunters with predictable, fair shares of the allocations of category A species in certified areas;

3. supporting the viability of the guide outfitting industry by committing to:

57 This is not a comprehensive list of all species requiring a guide for non-resident hunters, rather it is representative of the relevant species that occur within the proposed WMA.

58 A Category ‘A’ species means a big game species, population, or class for which guided hunters’ harvest is limited by quota in any portion of a region.
• the timely application of decision making processes regarding the transfer and disposition of guide territories;
• the timely review of the status of uncertified areas;
• creating and maintaining a regulatory framework that maximizes guided hunters’ success, enjoyment, and participation;
• the maintenance of exclusive guided hunting rights for guide outfitters; and

(4) removing unnecessary barriers to achievement of allocation prior to reducing allocation.

Trappers and guide outfitters play an important role in assisting Ministry of Environment staff in wildlife and habitat monitoring, development and implementation of conservation projects, violation and compliance reporting, and in public outreach and education on Crown lands. This beneficial and reciprocal relationship would be encouraged to continue within the proposed WMA.

### Objectives for Trapping and Guide-Outfitting

- Accommodate trapping and guide-outfitting activities while ensuring these commercial ventures complement existing conservation, recreation, and cultural heritage values within the proposed WMA.

### Strategies for Trapping and Guide-Outfitting

- Develop a WMA specific wildlife/landscape monitoring report (i.e., animals harvested, specific conservation issues identified) to be compiled and submitted by trappers and the guide outfitter to the Ministry of Environment on an annual basis.

- Ensure WMA management is consistent with the current Ministry of Environment’s Commercial Hunting Interests Policy.

### Private Land Interface

Predominantly, the northern boundary of the proposed WMA borders on Crown land, whereas the south-western and western boundaries abut the City of Grand Forks and private land adjoining the municipal limits. On the most eastern extent of the plan area, private land also lies alongside the proposed WMA. The most extreme southern

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59 The Nature Trust lands are viewed as private parcels, but their incorporation into the proposed WMA excludes them from this discussion.
boundaries border primarily on adjacent provincial parks (i.e., Gilpin Grasslands and Boothman’s Oxbow).

There are five parcels of private land that abut the proposed WMA on two or more sides (specifically DL 1826S, 1827S DL 2808S, DL 3395 and DL 587S).

Private land owners who have parcels bordering a conservation land (or provincial park) may view the situation as both a benefit (e.g., increased property values, less potential for future residential or commercial development) and as a potential problem (e.g., limited access opportunities, increased risk of wildfire/wildlife damage on property, and higher level of accountability for impacts of private land use on adjacent Crown land).

The Environmental Stewardship Division has developed draft “Best Management Practices (BMP’s) for Activities Adjacent to Parks and Protected Areas”. Although the proposed WMA would not be a ‘protected area’ under the Protected Areas of British Columbia Act, the BMP’s are applicable to the WMA and address potential impacts to the area’s conservation values.

In practice, when a proponent creates development plans for lands adjacent to or impacting on parks or protected areas, BMP recommendations should be combined with the most recent habitat inventories and assessments for the area. This should allow the proponent to perhaps refine their proposal for that site. Of particular importance to lands bordering a proposed WMA would be activities such as reducing wildfire risk, land clearing, access development, and recreational/commercial pursuits.

The Ministry of Environment remains committed to working with adjacent land owners in ensuring mutually beneficial and complementary land uses occur within interface areas.

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<tr>
<th>Objectives for Private Land Interface</th>
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- Ensure that activities on adjacent private land do not significantly impact values within the proposed WMA.

- Ensure that management initiatives on the WMA consider and reduce/minimize potential risks to adjacent land private holdings.

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60 DL 587S is owned by Pope and Talbot Inc. The property is currently for sale and the Ministry of Environment is interested in purchasing the parcel in coordination with, and assistance from, conservation partners; however, this is highly dependant on funding and priorities for acquisition within the Okanagan Region.

61 To date, most of the private land development on parcels that are bordered on two or more sides by the proposed WMA have limited built infrastructure (i.e., commonly not more than one residential or seasonal use fixed roofed structure). Considering the development pressures observed at nearby Christina Lake, many larger parcels could be subdivided in the future with a higher footprint of residential development, thus impacting conservation values of the proposed WMA or adjacent existing provincial parks.

62 See Appendix 6 for potential impacts.
Strategies for Private Land Interface

- Encourage private land owners residing adjacent or within close proximity of the proposed WMA to participate in the Stewardship Working Group (as outlined in the Community Involvement Section).

- In coordination with the Stewardship Working Group, develop a Best Management Practices document that is directly relevant to the proposed WMA.

- Support conservation initiatives of adjacent (or proximal) land owners.

- Liaise with adjacent land owners who are contemplating subdivision or multiple unit dwelling construction on private parcels bordering the proposed WMA to ensure conservation values are considered in development plans.

- Investigate opportunities for purchase of lands from willing vendors (in concert with conservation partners) that reside adjacent to the proposed WMA.

Utility/Transportation Rights of Way

Several statutory ‘Rights of Way’ (RoW)\(^{63}\) for the delivery of utility services transect the plan area (primarily in an east-west orientation). The 500 Kilovolt BC Hydro transmission line corridor serves as the northern extent of the proposed WMA boundary, while the southern extent of the plan area is bisected by the Terasen gas pipeline, the Cascade Water Power line, a Fortis power line, and a Telus fibre optics line. Highway #3 and the former right of way for the Victoria-Vancouver and Eastern Railway (now the Trans Canada Trail) also travel through this section of the proposed WMA.\(^{64}\)

Utility companies own the structures associated with the utility service (e.g., pipeline, towers, poles, junction boxes, etc.) yet the land they are placed on (i.e., the Right of Way) is owned by the Crown, and utility companies have rights to use the land for their infrastructure. These RoW’s may be reserved for the placement of future utility services. The Crown retains rights to use these RoW areas for activities that do not threaten or interfere with the utilities’ works, cause a hazard, or interfere with the rights granted to the utility company. The RoW is registered on the title of the property in perpetuity.

The Ministry of Environment acknowledges that utility companies conduct ongoing maintenance and occasional upgrading of the RoW’s through the plan area. Any works

\(^{63}\) A statutory right of way for the purposes of this plan can be either an easement without a designated dominant tenement registered under section 218 of the Land Title Act, or a ‘statutory right of way plan’, which is a plan prepared by a British Columbia land surveyor and deposited under section 113 of the Act.

\(^{64}\) Highway #3 and the Trans Canada Trail corridors are not included within the proposed WMA.
associated with RoW’s should be mindful of the conservation values (particularly of the management zones they are passing through) and measures taken to minimize impact on native flora and fauna and their habitat. Commonly, structures and work associated with RoW’s disturb an area and provide opportunity for alien invasive weed species to establish. Frequent travel on RoW’s (especially with motorized vehicles) encourages establishment of non-native plants far from their source.

Currently, the existing utility rights of way are used by the general public for access to areas of the proposed WMA. With the exception of the 500KV transmission line that serves as the northern boundary of the plan area, only non-motorized use only of these rights of way will be permitted.

<table>
<thead>
<tr>
<th>Objective for Utility/Transportation Rights of Way</th>
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<tbody>
<tr>
<td>➢ Recognize legal statutory rights of way and accommodate maintenance and upgrading of corridors when and where needed, provided measures are taken to limit disturbance to WMA values.</td>
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<tr>
<th>Strategies for Utility/Transportation Rights of Way</th>
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<tbody>
<tr>
<td>➢ Place emphasis on limiting soil and habitat disturbance on rights of way.</td>
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<tr>
<td>➢ Works by utility companies on existing rights of way should take preventive measures to stop alien invasive weed spread.</td>
</tr>
<tr>
<td>➢ Consider new rights of way (or expanding current RoW’s) through a formal authorization process with MAL/ILMB. A detailed site plan with mitigation, restoration and an ongoing monitoring schedule must be developed with any such initiative.</td>
</tr>
<tr>
<td>➢ Prohibit the use of motorized vehicles (except for utility corridor operations) along existing utility RoW’s contained within the WMA boundary.</td>
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**Agricultural Land Reserve**

Approximately 375 hectares\(^6^5\) of Agriculture Land Reserve (ALR) land are contained within the boundaries of the proposed WMA. The ALR is a provincial land use zone which sets aside areas for agriculture use. The ALR was established between 1974 and 1976, following the enactment of the *Land Commission Act* and through cooperative efforts with regional districts and municipalities. Local input on designating the ALR was gained through a public hearing process.

\(^6^5\) This includes 30 hectares of ALR that is contained within the Nature Trust property (specifically on portions of DL 494/493).
The ALR designation would be retained in those portions of the proposed WMA which are in the ALR presently. To date, the Boothman pasture is utilized for range and crop production. Registration sites for apiaries (beekeeping) are also located within the ALR portions of the plan area.

Contingent upon meeting conservation objectives outlined within this plan, future agricultural use (i.e., crop production) of ALR lands within the proposed WMA may be considered.

Figure 9: Agricultural Land Reserve context

<table>
<thead>
<tr>
<th>Objective for Agricultural Land Reserve</th>
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<tbody>
<tr>
<td>➢ Respect and continue to maintain the ALR designation on those portions of the WMA.</td>
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<tr>
<th>Strategies for Agricultural Land Reserve</th>
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<tbody>
<tr>
<td>➢ Support current ALR use of Boothman pasture and apiary registration sites.</td>
</tr>
</tbody>
</table>
Future agricultural use of ALR designated sites must place a priority on the conservation objectives that protect fish, wildlife and their habitats.

**Future Commercial or Industrial Uses/Activities**

Other industrial/commercial uses within the proposed WMA (or in close proximity to it) for uses not yet mentioned in previous sections may be considered (contingent upon impact assessments) in the future in an effort to diversify the local economy or adapt to new markets. These activities could include (but are not limited to):

- alternative energy sources - wind/solar generation
- run of the river power or dam projects (affecting riverfront areas of the WMA)
- new/expanding transportation/utility corridors
- motion picture film production and set development
- helicopter/flight training

Any proposals for new activities within the plan area would be required to demonstrate how the conservation and recreation objectives set out in this plan would be not be adversely affected.

<table>
<thead>
<tr>
<th>Objective for Future Commercial or Industrial Uses/Activities</th>
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<tr>
<td>Ø Ensure that any future commercial enterprise and industrial uses consider and make provisions for addressing the principal objective of the WMA; to conserve fish, wildlife and their habitats.</td>
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<table>
<thead>
<tr>
<th>Strategies for Future Commercial or Industrial Uses/Activities</th>
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</thead>
<tbody>
<tr>
<td>Ø All future proposals must clearly demonstrate how impacts to WMA values outlined in this plan would be minimized.</td>
</tr>
<tr>
<td>Ø Any future commercial/industrial uses and activities must be approved by the Regional Manager.</td>
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</table>
Recreation Values Management

Recreational activities are a common occurrence on most Crown land and many wildlife management areas provide a scenic and less disturbed landscape for visitors to enjoy recreational pursuits. The proposed Gilpin-Morrissey WMA has long been an area where residents of Grand Forks and tourists alike have undertaken a variety of recreational activities including all-terrain vehicle use, motorcycling, mountain biking, hiking, hunting, nature appreciation and wildlife viewing. A WMA’s focus on maintaining and enhancing wildlife and wildlife habitat presents challenges on how best to balance the current (and future) needs for recreation in the area while placing considerable emphasis on conservation of wildlife and fish species.

The following recreation values and issues have been identified through stakeholder and interagency consultation. The accompanying objectives and strategies are an effort to outline how both recreation and conservation can co-exist and in many respects complement each other. The measures used to address specific recreational issues draw upon the ‘Best Management Practices for Recreational Activities on Grasslands for the Thompson and Okanagan Basins’ that were developed in early 2004 (Province of British Columbia, 2004).

Motor Vehicle Activities and Access

There are approximately 62 km of roads throughout the proposed WMA plan area. The majority of these roads are non-status roads. The rest of the road network is comprised of road use permit roads. The Gilpin Creek and Sand Creek forest service roads (FSR’s) also pass through sections of the proposed WMA (see Map 4). The extensive road network is frequently utilized by motor vehicles (e.g., off-highway vehicles and 4x4’s) for recreation activities such as hunting, wildlife viewing, and scenic excursions.

Snowmobile use occurs in the upper elevations of the plan area. Predominant access for this use is via the Sand Creek FSR. Lower snow pack levels in recent years have limited the amount of snowmobile activity, especially on the south facing aspects of the proposed WMA.

Mountain Biking (Mechanized Use)

The terrain features of the proposed WMA are appealing to many mountain bikers. Often access is gained via non-status roads or forest service roads into the plan area which then lead to single track trails. The highest proportion of mountain bike trails exists in

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66 Road distance calculations were based on data supplied by the Ministry of Forests and Range.
67 For definitions of roads/trails see Appendix 4.
68 Off Highway Vehicles (OHV’s) included all-terrain vehicles (ATV’s) and motorcycles.
neighbouring Gilpin Grasslands Provincial Park; however, one popular downhill mountain bike route travels in a north to south direction from the Sand Creek drainage towards Grand Forks. A portion of the Trans Canada Trail (TCT), a high use cycling corridor, bisects the lower southerly portion of the plan area. The right of way for the TCT is not included within the proposed WMA.

**Section 46 of the *Forest and Range Practices Act***

New legislation under section 46 of the *Forest and Range Practices Act* draws attention to the damage caused by motorized recreation in natural areas. The “Protection of the Environment” section is designed to address serious environmental damage from activities such as off road vehicle use and other activities undertaken by the public on Crown land. This law is not meant to prohibit motorized recreation, rather to ensure that the public acts responsibly while using Crown land.

This new legislation\(^{69}\) can provide an interim enforcement/compliance measure within the proposed WMA while the feasibility of establishing the WMA is considered.

\(^{69}\) *Forest and Range Practices Act* Section 46(1.1) carries with it maximum fines up to $100,000.
Map 4: Access Context

Copies of maps are located at [http://www.env.gov.bc.ca/bcparks/planning/mgmtplns/gilpin_grass/gilpin_mp.html](http://www.env.gov.bc.ca/bcparks/planning/mgmtplns/gilpin_grass/gilpin_mp.html).
Motorized and Mechanized Use Issues

Motorized Impacts on Landscape Values

Frequent motorized vehicle use leads to the compaction of soil, erosion of soil, the spread of alien invasive weeds, and increased risk of fire in many natural areas. Noise and air pollution are also problems related to motorized vehicle use. Fuel and oil discharge can negatively affect water quality and soil moisture as well as contribute to greenhouse gases (which are the primary cause of climate change/global warming). Advances in off-highway vehicle technology are allowing vehicles to venture further into remote areas and climb extremely steep grades (e.g., where there are no trails). This can severely disrupt wildlife movement and species behaviour and in extreme cases cause direct mortality (e.g. road killed snakes). Moreover, the aesthetic impacts on grasslands can be long lasting.

A vast majority of the proposed WMA is used by responsible motorized vehicle enthusiasts; nevertheless, the damage from off-road use has left environmental impacts in specific portions of the proposed WMA. The Lost Lake area (located in the northwestern portion of the plan area) has been highly degraded by off-road vehicle and 4x4’s use (i.e., mud bogging). The increased use of single track trails and slope climbing by motorcycles has also created significant damage on grasslands visible from Highway #3 and the Gilpin Creek FSR. Access to these areas is often gained using the utility rights of way, lands immediately adjacent to the highway right of way, and the Trans Canada Trail (which is intended for non-motorized use only).

Mountain Bike Trail Development

The development and maintenance of mountain bike trails and ‘technical trail features’ (TTF’s) over the past decade within the plan are have been primarily without the authorization of agencies (i.e., Ministry of Tourism, Sports and the Arts, Ministry of Forests and Range) responsible for monitoring such uses and granting permission for alteration of Crown land for the purposes of recreation. The Ministry of Environment recognizes that recreational mountain biking offers significant health benefits and contributes to local economic development. If established, the administration of the site would be transferred to the Ministry of Environment, thus any monitoring/sanctioning of mountain bike trail use/development would require authorization by MoE. It is essential that trail development/maintenance does not impact wildlife and wildlife habitat values within the proposed WMA.

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70 TTF’s are features that incorporate natural or man-made jumps, drops, elevated bridges.
71 Any alteration of Crown land outside of parks and protected areas requires authorization through the Forest and Range Practices Act.
The Ministry of Environment acknowledges that one mountain bike trail located in the West Unit (see Map 5) is a popular route with local mountain bikers (this trail was created without authorization by the Ministry of Tourism, Sports and the Arts). Contingent upon a thorough environmental assessment, this trail may become part of a managed mountain bike route through the proposed WMA. In addition, there may be considerations for seasonal closures (if required) to protect important wildlife and habitat values.

**Disturbance to Livestock and Forage Impacts**

Recreational activities, specifically motorized and mechanized uses have the potential to impact range values within the proposed WMA. This often occurs unknowingly and unintentionally by visitors to Crown land. New trail development can encourage cattle movement to undesired locations, bicycles and vehicles are effective weed carriers which introduce invasive plants to new sites, and recreational users that fail to close gates or damage fences can endanger cattle. Other negative factors associated with motorized/mechanized uses include disrupting livestock by loud vehicle noises, and uncontrolled dogs (accompanying visitors) can place undue stress on cattle and lead to increased trampling of sensitive areas.

**Impacts to Native Wildlife and Habitat**

Disruption of migration patterns, avoiding human interference during breeding periods, and habitat fragmentation are just some of the negative impacts that can occur to wildlife as a result of motorized and mechanized recreation. New trail development or indiscriminate off road/trail use can damage sensitive nesting areas and at times irreparably harm vegetation that wildlife species are reliant on for survival.

Habitat destruction, direct mortality of plants, soil exposure facilitating weed spread and growth, altered drainage patterns, and weed introduction are among other negative aspects of off-road or irresponsible motor vehicle/mechanized uses.

**Redundant Roads**

There are select areas within the proposed WMA where existing roads (often running parallel and within close proximity to one another) lead to, or are close to, the same destination. Although not all redundant type roads are captured on current maps, a spatial examination (and on-site investigation) has identified that some roads could be restored to natural conditions, thereby reducing the road imprint on the landscape while still providing access to particular destinations. These redundant roads primarily are located in the West Unit of the proposed WMA (examples of such roads are illustrated in Map 5). Future road inventory may reveal similar redundant roads that could be restored to a more natural landscape within the greater plan area.
Access to The Nature Trust Lands

Property owned by The Nature Trust (TNT) of BC (i.e., DL 2736, SL-14, DL 493 and portions of DL 494) have been utilized by the public for access to Crown land. Owing to its close proximity to Grand Forks, the isolated TNT parcel (DL 493/494) is a popular route into the provincially owned portions of the proposed WMA. The main non-status roads which travel through DL 493/494 would remain open to motor vehicles and public access, whereas the one redundant road (as identified on Map 5) and all other roads (some may not be mapped at this time) would be closed to motor vehicles within DL 493/494.

The primary southern access to TNT lands contained within DL 2736 and SL-14 is through private property and existing gates (for a gravel pit operation) preclude public access into TNT property at this location. Although the upper reaches of the Morrissey Creek area (north of the DL 2736 and SL-14) are non-status roads that would remain open, the intent would be to restrict access from the north boundary of the TNT property into DL 2736. Existing range tenure holders would be permitted to travel across DL 2736 and SL-14 into Crown portions of the proposed WMA. However, general public motor vehicle access on these two TNT parcels would not be permitted (unless authorized by the Regional Manager). Foot, horse, and mountain bike use would be permitted on the non-status road; however, permission to cross neighbouring private land would be required.

Range Tenure Use Roads

As mentioned, The Nature Trust property (DL 2736 and SL-14) has been traditionally used by range tenure holders to monitor and maintain cattle operations on neighbouring
Crown land pastures. The non-status road in this portion of the proposed WMA, along with an access road for grazing purposes on the lower flats of the Boothman pasture (currently locked and gated) would remain for range tenured use only. Additional access provisions on these roads would require Regional Manager consent.

**Identifying Restoration Areas**

There are two sites identified within the proposed WMA that require immediate restoration in an effort to address the aesthetic and ecological impact from off-road motor vehicle use. The Lost Lake wetland area has been significantly altered from its natural state by mud bogging and the accumulation of refuse associated with its popularity as a social gathering spot. The second site is located just north of Highway #3, where off-road vehicles (specifically motorcycles) have created numerous single track routes through native grassland. Signage, fencing, enhanced enforcement and monitoring of these sites would be a short term strategy to address environmental impacts and increase public awareness/knowledge about the importance of responsible off-road vehicle use.

*Photo 4: Degraded wetland at Lost Lake*
Identifying other sites that demonstrate early signs of increased use and the potential for more widespread degradation is a key long term strategy in addressing irresponsible off-road use. Similar to the approach on more degraded sites, signage and fencing could be a proactive management tool.

**Access and Zoning**

The proposed WMA has been divided into two units (East and West) to provide an easier scale to view the access context. The zoning strategy has been overlaid on the existing access areas to illustrate where specific management activities for maintaining and enhancing wildlife and wildlife habitat could be focussed. Restoration/re-naturalization[72] efforts would be focused on Special Habitat Feature Zones (SHFZ’s) and in the Priority Conservation Zone (PCZ). See Maps 5 and 6 for specific locations of coloured polygons represented below.

**Special Habitat Feature Zone (SHFZ)**

Color codes correspond to zoning map

Contingent upon environmental impact assessment, all non-status roads[73] in the SHFZ’s, would remain open to motorized and mechanized uses. New recreational trail or road development would not be considered and the restoration of impacted areas would be a high priority as would the identification and subsequent re-naturalization of redundant

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[72] Re-naturalization involves restoring the former road surface via planting of native flora, natural barricading to impede further use, and signage (where applicable).

[73] Non-status roads are illustrated on access maps.
roads. Signage, fencing, and increasing public awareness of the rare values within this zone would also be an integral part of access management.

**Priority Conservation Zone (PCZ)**

Contingent upon environmental impact assessment, all non-status roads within the Priority Conservation Zone (with the exception of the specific direction for The Nature Trust properties mentioned below) would remain open to motorized and mechanized uses. Roads under ‘road use permit’ are under the administration of the Ministry of Forests and Range (for the purpose of facilitating forest licencee operations) and could be subject to management regimes that accommodate future harvesting, silviculture requirements, stand maintenance or other obligations under the *Forest and Range Practices Act*. Future planning/works on ‘road use permit roads’ would be conducted in coordination with the Ministry of Environment.

New trail development (for non-motorized uses- e.g., mountain biking) would be not be allowed within this zone. Mountain bike trails already in place (see Map 5 and 6) may be considered for formal designation, contingent upon environmental assessment.

The eastern Nature Trust properties (i.e., DL 2736 and SL 14) of the PCZ would be restricted to non-motorized use only (provided users are aware that entry to these lots from the south is via private land). Range tenure holders would be permitted to use motorized vehicles on the non-status roads through DL 2736 and SL 14 for the purposes of maintaining livestock/range infrastructure on Crown land beyond (see Map 5). The western Nature Trust property (DL 493 and portions of 494) would remain open to motorized and mechanized uses (provided users remain on non-status roads as identified on Map 5).

A focus of long term management would be on identifying redundant roads and efforts at re-naturalizing specific roads within the PCZ.

**General Conservation Zone (GCZ)**

Within the General Conservation Zones all non-status roads would remain open to motorized and mechanized access unless an environmental impact assessment of specific roads yields features that would negate such use. Road use permit roads (under the jurisdiction of MoFR) within this zone would follow the same direction outlined for the PCZ. Future trail development (for non-motorized use only) may be considered within this zone. Nearer to the interface with the Priority Conservation Zone, signage would be placed informing visitors of the environmental sensitivity of adjacent lands.

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Note: Access development/maintenance associated with mineral, range or forest harvesting tenure could be carried out in Priority Conservation Zone and the General Conservation Zone (with Regional Manager consent), with more stringent access provisions associated with the Priority Conservation Zone. New road development associated with tenured activities would not be encouraged within the Special Habitat Feature Zones.
Map 5: West Unit Access and Zoning

Copies of maps are located at http://www.env.gov.bc.ca/bcparks/planning/_mgmtplns/gilpin_grass/gilpin_mp.html.
Map 6: East Unit Access and Zoning

Copies of maps are located at http://www.env.gov.bc.ca/bcparks/planning/mgmtplns/gilpin_grass/gilpin_mp.html.
Objective for Motorized and Mechanized Recreational Access

- Reduce and minimize the impact on wildlife, grassland, forest and wetland/riparian values from motorized (i.e., Off-Highway Vehicles/ 4X4’s) and mechanized uses (i.e., mountain biking) within the proposed WMA.

Strategies for Motorized and Mechanized Recreational Access

- Re-naturalize identified redundant roads.

- Conduct an environmental impact assessment on non-status roads within the plan area to ensure natural values of the WMA are not compromised by motorized/mechanized uses.

- Focus habitat restoration (signage, fencing, re-planting) within the Special Habitat Feature Zones and the Priority Conservation Zone.

- Ensure the public is aware that access across and within private land (with the exception of The Nature Trust lands) is not within the jurisdiction of the Province.

- Provide motor vehicle access provisions through The Nature Trust parcels (DL 2736 and SL 14) for tenured or authorized uses only (approval granted by Regional Manager). The Nature Trust parcels (DL 493/494) are to remain open to public vehicle access (on non-status roads only- as mapped).

- Single track trails for mountain biking (as identified) would remain open to non-motorized access (pending environmental impact assessment). Provisions (such as seasonal closures) may be put in place in the future to help protect wildlife values.

- Apart from those non-status roads deemed unsuitable for motorized access following an environmental assessment, access (motorized) on non-status roads would remain provided that it is acknowledged that these roads would not be physically maintained by the Ministry of Environment.

- Educate the public that Forest Service roads and road use permit roads are not within the jurisdiction of the Ministry of Environment.

- Future provisions may be granted for new road and access development to accommodate authorized industrial uses (except within the Special Habitat Feature Zone).
New trail development (for pedestrian or mountain biking) is to be authorized by the Ministry of Environment and permitted only within the General Conservation Zone.

Construction of ‘Technical Trail Features’ would not be permitted within the proposed WMA.

Horse use within the proposed WMA would be directed to non-status roads, designated trails, and, when conditions are favourable, (i.e., periods which avoid spring thaw and muddy conditions), on off trail/road areas (except within Special Habitat Feature Zones).

No motorized or mechanized off-road or off-trail use (e.g., travelling across open grassland) would be permitted within the Wildlife Management Area. This is consistent with current legislation outlined in the Forest and Range Practices Act [Section 46 (1.1)].

Hunting & Fishing

Hunting and fishing are both activities that occur and will continue to be accommodated within the proposed WMA subject to the Environmental Stewardship Division’s sustainable harvesting activities. Both hunting and fishing are recreational opportunities that provide and enhance recreational opportunities for British Columbian’s and visitors. In addition, these recreational pursuits are important management tools in meeting the long term conservation objectives (i.e., maintaining and restoring wildlife habitat, conserving provincially listed species at risk) within the proposed WMA.

The plan area falls within Region 8 (Okanagan Region), Wildlife Management Unit 8 - 15. All hunters and anglers are required by legislation to possess valid hunting and fishing licences. The annual BC Environment Hunting and Trapping Regulations Synopsis, Limited Entry Hunting Regulations Synopsis, and BC Freshwater Fishery Regulations Synopsis apply within the proposed WMA. Harvest levels of wildlife within the plan area is based on the broader Wildlife Management Unit (8- 15) objectives and is regulated through seasonal quotas and Limited Entry Hunting (LEH).

The Environmental Stewardship Division must manage hunting in a sustainable manner to ensure conservation objectives are not compromised. Harvest levels are adjusted according to fluctuations in wildlife populations, including natural predators. Potential impacts on species at risk are an important aspect of setting hunting regulations and involve careful consideration of ecosystem dynamics.

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74 First Nations who are resident of BC are not required to obtain any type of hunting licence under the Wildlife Act. First Nations who have an aboriginal or treaty right to hunt for sustenance or ceremonial purposes may do so in all conservation lands subject to conservation requirements and public safety concerns.

75 Trapping is a commercial activity and is discussed in the Guide/Outfitting and Trapping section.
Recent province-wide stewardship initiatives with conservation partners, such as the British Columbia Wildlife Federation (BCWF) could assist in promoting responsible hunter and angler use of the proposed WMA. In addition, the BCWF has members who retain first hand knowledge of local animal populations. As a result, the BCWF and local fish and game associations may have effective and practical ideas for helping to prevent the decline of wildlife populations in the plan area.

<table>
<thead>
<tr>
<th>Objective for Hunting and Fishing</th>
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<tr>
<td>➢ Continue to provide and encourage hunting &amp; fishing within the WMA.</td>
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<tr>
<th>Strategies for Hunting and Fishing</th>
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<tbody>
<tr>
<td>➢ Assess, monitor, and regulate hunting and fishing in co-operation with First Nations, hunters, anglers, and special interest groups (e.g., local fish and game associations) to ensure conservation objectives are met.</td>
</tr>
<tr>
<td>➢ Obtain updated wildlife and fisheries data in order to manage for sustainable wildlife and fish populations and appropriate hunting/angling levels within Management Unit 8-15.</td>
</tr>
<tr>
<td>➢ Review ‘open season species’ on an annual basis with the Fish and Wildlife Branch with emphasis on conservation of species that are known to occur within the proposed WMA (this can include imported game birds such as pheasants and quails).</td>
</tr>
<tr>
<td>➢ Review any proposed changes in hunting regulations with First Nations (as per MoU(^{76})) and recreational hunters.</td>
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<tr>
<td>➢ Encourage the Conservation Officer Service and BC Parks rangers to maintain regular patrols during hunting and fishing seasons.</td>
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<tr>
<td>➢ Support province-wide stewardship initiatives between the Environmental Stewardship Division and hunter/angler organizations (e.g., BCWF) in an effort to advance conservation objectives of the WMA and seek external knowledge and expertise in WMA management.</td>
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\(^{76}\) A Fish and Wildlife ‘Memorandum of Understanding’ between the Ministry of Environment (Okanagan Region) and the Okanagan Nation Alliance is currently under development.
Interpretive Themes and Nature Appreciation

Public appreciation and use of the proposed WMA’s natural values should not threaten fish, wildlife and their habitats. The Ministry of Environment has established guidelines for those who wish to appreciate the province’s rich floral and faunal diversity in a cautious and non-intrusive manner and these can be readily applied to activities within the plan area. Appendix 5 has an abbreviated version of these guidelines.

There is an excellent potential for interpretation within the proposed WMA. Highlighting the rich colonial and ranching history and First Nations heritage values of the area, amongst the backdrop of provincially rare grasslands and species at risk could be achieved in a variety of ways.

Interpretive panels (such as kiosks or interpretive signs) placed at key locations within the proposed WMA could focus on restoration activities, local fauna and flora, and landscape history. Such an initiative would complement current interpretation and informational displays that are situated along the Trans Canada Trail.

Locally based interpretive services (e.g., resident naturalists or professional wildlife viewing guides), elementary and secondary school field trips, and recreation centre programs could all utilize the landscape of the proposed WMA and nearby provincial parks for nature education/appreciation. A permit (or letter of authorization) would be a requirement for such activities (at the discretion of the Regional Manager) in an effort to ensure the conservation, recreation and heritage values are not compromised within the WMA.

The internet is becoming an effective medium in which to promote conservation lands and protected areas. In coordination with the local community (City of Grand Forks, Chamber of Commerce) and the regional government (Kootenay Boundary Regional District) the WMA could be showcased using the world-wide web. Pamphlets and WMA trail and natural features maps could be produced (in coordination with partners) and distributed at local tourism outlets, government service centres, and other public buildings. This could serve as an educational and informational tool for potential visitors, while enhancing tourism opportunities.

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<tr>
<th>Objectives for Interpretation and Nature Appreciation</th>
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<tbody>
<tr>
<td>➢ Promote nature appreciation and interpretation, providing these activities are conducted in a manner consistent with WMA objectives.</td>
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<tr>
<th>Strategies for Interpretation and Nature Appreciation</th>
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<tr>
<td>➢ Develop a wildlife viewing plan so all potential impacts and benefits are considered during specific projects that affect the WMA.</td>
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</table>
Encourage WMA stakeholders and partners to work with the Province to develop interpretation signage. This signage should focus on the recreational, cultural, and natural values of the area and suggest how people can minimize impacts on fish, wildlife and their habitats.

Develop informational brochures and web based information about the WMA (in coordination with local partners and governments).

Ensure all organized interpretive activities that are conducted within the WMA receive approval/consent by the Regional Manager.

Future Commercial Recreation Opportunities

With local communities seeking prospective niches within the tourism sector, provincial Crown lands, specifically protected area and conservation lands are often the backdrop for commercial recreation opportunities.

Realistically, the proposed WMA is too small to support numerous tourism business opportunities. The sensitive and fragile nature of much of the proposed WMA’s landscape precludes supporting a multitude of commercial recreation activities. Low impact commercial ventures (such as non-motorized assisted wildlife viewing, nature photography, naturalist hikes) could be feasible within the plan area. Nevertheless, nature-based business opportunities that may arise in the future should be thoroughly assessed for their potential impact on the WMA’s unique environmental features.

<table>
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<tr>
<th>Objective for Future Commercial Recreation</th>
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<tr>
<td>➢ Ensure that new commercial recreation opportunities do not impose negative effects on the proposed WMA’s natural, cultural and recreational values.</td>
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<tr>
<th>Strategies for Future Commercial Recreation</th>
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<tr>
<td>➢ Limit new commercial recreation services to low impact proposals that do not require infrastructure to be located in the WMA.</td>
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| ➢ Encourage any proposed ecotourism infrastructure to be located in nearby communities. |

| ➢ Apply relevant sections of the BC Park’s Impact Assessment Process for new recreation services with specific concerns for the impact on species at risk and protection of sensitive landscape values. |

| ➢ Encourage stewardship of WMA values by all commercial operators and users. |
Ensure that commercial activities in the WMA remain consistent with the Protocol Agreement: Shared Environmental Stewardship Principles between the MoE (Environmental Stewardship Division) and the Wilderness Tourism Association.

Cultural Heritage Values Management

First Nations

The subject area of the proposed WMA was frequented by people from the Sinixt and Okanagan nations. The easily navigated valleys associated with the Kettle and Granby rivers and extensive grassland/upland forested areas would have been used by First Nations as preferred travel corridors, for winter horse pasture, seasonal lodgings and for hunting and fishing.

To date, there are four registered archaeological sites within the plan area (with the high potential of many more undiscovered sites). Additional registered archeological sites are located adjacent to the proposed WMA (several of which reside within neighbouring Gilpin Grasslands and Boothman’s Oxbow provincial parks). It is believed that both early railway and road construction (i.e. Crowsnest Highway) obliterated some culturally significant sites representative of First Nations occupation and use. Nevertheless, the area retains important vestiges of aboriginal life before colonial times, a period stretching back thousands of years.

Because of the highly sensitive nature of cultural heritage sites, future scientific/archaeological research and study within the proposed WMA should be conducted in strict accordance with the Heritage Conservation Act and actively involve consultation with First Nations government. The Environmental Stewardship Division would also encourage the Okanagan Nation Alliance to conduct a Traditional Use Study (TUS) of the plan area. A TUS would assist land managers in determining the best approach to conserving cultural heritage and traditional use values within the proposed WMA, while integrating wildlife management objectives.

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77 The Sinixt (or Arrow Lakes People) are not officially recognized by the Province as part of the formal treaty/land claim process. Descendants of the Sinixt people live in Idaho, Washington, and British Columbia.

78 Both registered and unregistered (not yet formally recorded) archaeological sites are protected under the Heritage Conservation Act.

79 A TUS site is any geographically defined site (on land or water) used traditionally by one or more groups of aboriginal people for some type of activity. This data not only includes physical sites (i.e., archaeological sites) but also non-physical sites (i.e., spiritual sites). First Nations who have completed traditional use studies hold the detailed information regarding traditional use sites and values identified within their asserted traditional territories.
Non-aboriginal

Early European explorers, traders and settlers passed through the Gilpin-Morrissey on their way from the settlement at Kettle Falls in Washington. This route was upgraded by Edgar Dewdney in the 1860’s, and became formally known as the Dewdney Trail which led prospectors to the Rocky Mountains.

Unfortunately, much of the former trail surface in the proposed WMA was destroyed with the construction of the railway, and later the highway. Remnant portions of the Dewdney trail are still visible in Gilpin Grasslands Provincial Park. A stone wall (adjacent to Boothman pasture) constructed during the early 1900’s as part of early road construction is also a unique historical feature of the proposed WMA.

The former ranch buildings associated with the Gilpin ranch (circa 1880) are all but gone from the area. Footings and other evidence of out-buildings and the former customs house remain within Gilpin Grassland Provincial Park.

Many of the creek names (Dan O’Rea, Morrissey, Ben Stubbs, Hurley) within the proposed WMA keep alive the memory of early pioneers that made this area home for most of their lives.

Preserving the integrity of remaining historical features associated with the onset of the European era is important from a public education perspective, but also as a means of measuring change on the land over time. As an example, an historic photo (see below) of the early landscape features along the Kettle River near Grand Forks gives today’s land managers a realistic conception of the extent of riparian cover, water levels, and forest/grasslands on adjacent hillsides.

Photo 6: Historic photo of the Kettle River, east of Grand Forks

(Province of BC, 2007)
Objective for Cultural Heritage Values

- To preserve and safeguard the park's First Nations and non-aboriginal cultural heritage values in their natural setting and condition.

Strategies for Cultural Heritage Values

- Provide logistical and technical support to the Okanagan Nation Alliance in efforts to conduct a comprehensive Traditional Use Study of the proposed WMA.

- Continue to liaise with the Archaeology Branch and First Nations in order to restrict the distribution of culturally sensitive information and track management of inventories.

- Ensure any activity occurring within registered heritage sites are carried out in accordance to the Heritage Conservation Act.

- Monitor the condition and integrity of the cultural heritage values of the WMA on an on-going basis.

- Assure confidentiality of inventories by developing a data access protocol between the Environmental Stewardship Division and the Okanagan Nation Alliance.

Community Involvement

Supporting community stewardship and developing partnerships is a vital element in conserving the cultural, recreational and ecological features within the proposed WMA. Prior to, and during, the development of this management plan, community members stated a willingness to support initiatives that protected the values of the Gilpin-Morrissey area. The past and current initiatives to improve both recreational and environmental qualities in the plan area were well received (e.g., the Wilderness Watch program, volunteer clean-ups, and local tours highlighting the importance of the natural values of the area).

Opportunities to engage the variety of stakeholder and special interest groups that are currently active within the Grand Forks area could be coordinated and facilitated by the Ministry of Environment. The existing spectrum of stakeholders includes, but is not limited to:

80 The Wilderness Watch Program is coordinated and supported by the British Columbia Wildlife Federation. Its purpose is aimed at reducing the incidence of theft and vandalism in local wilderness areas.
As part of WMA management, the Ministry of Environment would encourage and assist in the facilitation of a ‘Stewardship Working Group’ that would meet periodically to discuss issues relevant to the WMA. Local, regional and First Nations government would also be encouraged to participate. The Stewardship Working Group would provide an opportunity to discuss strategies outlined within the WMA management plan and to deal with emergent issues. Utilizing the expertise and knowledge of stakeholder groups and government representatives in such a forum would significantly improve the effectiveness of the Ministry of Environment’s management of wildlife and habitat within the WMA.

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<thead>
<tr>
<th>Objective for Community Involvement</th>
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<tbody>
<tr>
<td>Encourage community involvement in the management of the WMA based on the goals, objectives, and management strategies outlined in the management plan.</td>
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<tbody>
<tr>
<td>Assist in the establishment and facilitation of a WMA Stewardship Working Group that would meet bi-annually. This group should be open to all who have interest in the WMA and should be guided by the goals, objectives and management strategies of this plan. All initiatives and activities will be approved by the Regional Manager or designate.</td>
</tr>
</tbody>
</table>

| The working group would explore means to raise funds in support of stewardship initiatives. |
| An example of the stewardship activities and initiatives the group could facilitate are: |
| - Trail and road maintenance (non-status roads) and monitoring |
| - Restoration of degraded sites |
| - Debris removal (barbed wire fences, discarded machinery) |
| - Interpretation and signage |
| - Inventory, monitoring and research activities |
| - Compliance reporting (i.e., Observe, Record and Report) |
Scientific Research and Traditional Ecological Knowledge

Environmental stresses as a result of climate change, wildfire, and recreation activity will certainly create greater interest in establishing a solid foundation of baseline scientific information and Traditional Ecological Knowledge (TEK)\(^\text{81}\) for the proposed WMA. Such data would equip land managers with the necessary background for developing effective management strategies for maintaining the proposed WMA’s ecological integrity.

The plan area could benefit greatly from having more inventories, scientific study and the use of Traditional Ecological Knowledge, and analysis of both flora and fauna characteristics, particularly those related to species at risk. Such projects should be actively sought, encouraged, and facilitated by Environmental Stewardship Division and other Ministries who have an administrative role in the proposed WMA.

<table>
<thead>
<tr>
<th>Objective for Scientific Research and Traditional Ecological Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage appropriate research and multi-agency participation relating to the gathering of scientific and traditional ecological knowledge for the plan area.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategies for Scientific Research and Traditional Ecological Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endorse only scientific and TEK study of the WMA which respects the interests and rights of First Nations.</td>
</tr>
</tbody>
</table>

| Tightly control scientific research (via Regional Manager consent) that is exploitive or invasive (collection of artifacts or specimens). |

| Ensure any material that is collected for scientific research remains the property of the Provincial Crown, regardless of where it is stored. |

| Elicit the assistance of non-profit/volunteer organizations (i.e., naturalists) to gather data on WMA resources as it relates to flora and fauna, with special emphasis on species at risk. |

\(^{81}\) Traditional ecological knowledge (TEK) is defined as the knowledge acquired by aboriginal or local peoples through generations of direct contact with the environment.
Management Services

Role of Environmental Stewardship Division and Conservation Officer Service

The Environmental Stewardship Division of the Ministry of Environment, based out of Penticton, would administer the Gilpin-Morrissey Wildlife Management Area.

The Conservation Officer Service (COS) has the primary authority to enforce provisions of the Wildlife Act, including those that would pertain to the proposed WMA. The COS would not be generally involved in the day to day management of Gilpin-Morrissey WMA, although they may be called upon to lead more detailed investigations and complex enforcement issues. The Parks and Protected Areas Branch and its field personnel (Area Supervisor and Park Rangers), would be given the primary management responsibility for the conservation land.

Every year seasonal rangers employed by the Ministry are required to perform patrols, windfall removal, wood cutting, structure maintenance, construction and repair, and gather flora and fauna information on conservation lands. Compliance and enforcement duties are another major component of their responsibilities. Beginning in the summer of 2008, there will be two seasonal park rangers based out of Grand Forks.

During the winter months, the WMA would be periodically inspected by park staff and the COS. Interagency coordination would aid park staff in determining the level of use in the WMA at this time, as well as observing and recording violators.

Ministry of Forests and Range

Grazing and forest tenure within the plan area would remain under the jurisdiction of Ministry of Forests and Range (MoFR). Roads (specifically road use permit roads and gazetted Forest Service Roads) would also remain under the jurisdiction of the MoFR. Although jurisdiction over range and roads (as mentioned above) fall within the purview of MoFR, the administration of the WMA by the Ministry of Environment (MoE) makes the MoE the primary management authority and first point of contact. While prior rights are granted, any new or renewed tenure under the jurisdiction of the MoFR require consent from MoE. Once MoE has advised the MoFR of any required conditions and

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82 Some Park Rangers have the ability to enforce specific sections of the Wildlife Act.
83 Activities related to grazing and forest tenure would be integrated with the conservation goals and objectives (as outlined in this plan) of the proposed WMA. The Regional Manager of Environmental Stewardship Division would be required to approve any new tenures or renewals of tenures and any change/alteration of range/forest tenure activities within the WMA.
provided consent, the statutory authority for MoFR can then proceed to issue the appropriate tenure related document/approval.

The Nature Trust of BC

The Nature Trust (TNT) of British Columbia is a charitable non-profit land conservation organization. TNT along with its many partners acquires and conserves land which has been determined as having significant biodiversity and ecological value.

A current lease agreement between the TNT and the Ministry of Environment for three parcels of land (totalling approximately 193 hectares) within the proposed WMA gives legal authority for management of the lands to the Ministry of Environment. However, ongoing management of the parcels is made in close coordination with the TNT.

<table>
<thead>
<tr>
<th>Objective for Management Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ To ensure the various management responsibilities are carried out according to the guidelines of this management plan and within the established policies and procedures of participating ministries and agencies (e.g., TNT).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategies for Management Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ As funding permits, provide summer and winter staff presence (i.e., COS and BC Parks) that reflects levels of visitor use.</td>
</tr>
<tr>
<td>➢ Enforce the Wildlife Act and regulations as required and coordinate with other government agencies with respect to compliance and information sharing.</td>
</tr>
<tr>
<td>➢ Provide consistent management in the WMA with existing lease agreement for The Nature Trust properties.</td>
</tr>
</tbody>
</table>
Plan Implementation

The plan implementation section provides information about the types of strategies that the Environmental Stewardship Division will implement as funding and resources permit.

This section will be completed subsequent to further public review, First Nations consultation and Ministry revisions.
Appendices:

Appendix 1: Species at Risk Nomenclature

**Red List:** Includes any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in British Columbia. Extirpated elements no longer exist in the wild in British Columbia, but do occur elsewhere. Endangered elements are facing imminent extirpation or extinction. Threatened elements are likely to become endangered if limiting factors are not reversed. Red-listed species and subspecies have- or are candidates for- official Extirpated, Endangered or Threatened Status in BC. Not all Red-listed taxa will necessarily become formally designated. Placing taxa on these lists flags them as being at risk and requiring investigation.

**Blue List:** Includes any ecological community, and indigenous species and subspecies considered to be of special concern (formerly vulnerable) in British Columbia. Elements are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed elements are at risk, but are not Extirpated, Endangered or Threatened.

The Red and Blue lists serve two purposes:

To provide a list of species for consideration for more formal designation as Endangered or Threatened, either provincially under the British Columbia Wildlife Act, or nationally by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

To help inform setting conservation priorities for species/ecological communities considered at risk in British Columbia. The rankings highlight species and ecological communities that have particular threats, declining population trends, or restricted distributions that indicate that they require special attention. These lists serve as a practical method to assist in making conservation and land-use decisions and prioritize research, inventory, management, and protection activities. For example, Operational Planning Regulations in the Forest and Range Practices Act use the Red and Blue lists in the development of the list of Identified Wildlife.

Red and Blue lists have been produced since 1992.

Further information on the development of the Red and Blue lists can be found in: For more information, view the BC Conservation Data Centre Species Explorer. [http://srmapps.gov.bc.ca/apps/eswp/](http://srmapps.gov.bc.ca/apps/eswp/).

Appendix 2: Supplementary Range Management Information

Animal Unit Months (excerpt from Range Regulations B.C. Reg. 116/2005)

For the purposes of the definition of "animal unit month" in section 1 (1) of the Act, the amount of forage required by
(a) a yearling of the genus *bos* is 0.7 of an animal unit month,
(b) a bull of the genus *bos* is 1.5 animal unit months,
(c) a cow of the genus *bos*, by herself or together with her unweaned calf is one animal unit month,
(d) a horse is 1.25 animal unit months

Deferred Rotation Grazing

(Excerpt from Draft, Remedial Measures Primer Pilot Version 1.0., 2007)

Grazing is deferred on several pasture units in a planned rotation. In year one, a pasture is grazed early until a predetermined utilization level is reached. During year two, grazing is deferred until seed ripe to allow maximum carbohydrate storage and trampling of seed into the ground. In year three, grazing is deferred to allow new seedling establishment.

Selective grazing and overgrazing are reduced by concentrating livestock in smaller pastures and forcing better overall utilization. Range condition has been shown to improve over time but questions have been raised about livestock gains.

A minimum of three pastures is required, necessitating additional fencing and water development. Managers must spend more time monitoring the range and moving livestock.

Rest Rotation Grazing

Rest-rotation was developed for Idaho fescue and bluebunch wheatgrass range, but has been adapted for use elsewhere. Similar to deferred-rotation, it has the addition of a year long rest period during year three to allow for establishment of new grass seedlings and build up of carbohydrate reserves.

The same advantages and disadvantages as deferred-rotation apply. A minimum of four pastures is required, necessitating additional development over deferred rotation. In cases of severe overgrazing, one year of rest may not be sufficient to allow plant recovery.

Some researchers regard the yearly rest cycle as a waste of forage. Because vegetative reproduction plays a major role in perennial grass survival, allowing time for seed
production and seedling establishment is questionable. However, the carbohydrate reserve cycle suggests that plants will maximize carbohydrate storage if allowed to pass through all growth stages. Plants which have good reserves will remain more competitive in a stand.

**Livestock Water Requirements**


<table>
<thead>
<tr>
<th>Type of Livestock</th>
<th>Winter Imp.Gal./day</th>
<th>Winter L/day</th>
<th>Summer Imp.Gal./day</th>
<th>Summer L/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milking cows</td>
<td>17</td>
<td>77</td>
<td>21</td>
<td>95</td>
</tr>
<tr>
<td>Cow-calf pairs</td>
<td>11</td>
<td>50</td>
<td>15</td>
<td>68</td>
</tr>
<tr>
<td>Dry cows</td>
<td>8</td>
<td>36</td>
<td>12</td>
<td>55</td>
</tr>
<tr>
<td>Calves</td>
<td>5</td>
<td>23</td>
<td>8</td>
<td>36</td>
</tr>
<tr>
<td>Growing Cattle (400-800 lb. or 180-360 kg.)</td>
<td>5-8</td>
<td>23-36</td>
<td>8-12</td>
<td>36-55</td>
</tr>
<tr>
<td>Finishing Cattle (600-1200 lb. or 270-540 kg.)</td>
<td>12</td>
<td>55</td>
<td>19</td>
<td>86</td>
</tr>
<tr>
<td>Bulls</td>
<td>8</td>
<td>36</td>
<td>12</td>
<td>55</td>
</tr>
<tr>
<td>Horses</td>
<td>8</td>
<td>36</td>
<td>12</td>
<td>55</td>
</tr>
</tbody>
</table>
Watering Directly from Watercourses: Examples

Excerpt from Watering Livestock Directly from Watercourses (Province of BC, 2006).

Steel panels complete the fence during low water to prevent livestock from entering the stream. They are removed during high water stream flows.

Wooden fence rails on the approaches to the access are preferred over wire fencing.
Appendix 3: Wildlife Fence Design

One Way Wildlife Gate

Excerpt from Fencing Factsheet, Ministry of Agriculture and Lands, 1996.

When deer encounter a fence, they often follow it until they find a gap that enables them to pass through the fence and continue in their intended direction. Ideally, one-way gates are positioned at 90-degree angle offsets in the fence so that when a deer follows the fence it will find the gate and pass through to the outside of the fenced area.
Appendix 4: Road/Trail Definitions for the Proposed WMA

Forest Service Road:

A road constructed, modified, or maintained by the Ministry of Forests and Range under the provisions of the *Forest Act*, or declared a Forest Service road. Forest Service roads are used to provide access to managed forest land.

Road Use Permit Roads:

An agreement entered into under the *Forest Act* that allows a person who has the right to harvest timber under a licence, agreement, or permit, to construct a road, or maintain an existing road on Crown land, other than a Forest Service road.

Non-Status Roads:

Several categories of resource roads can be built or established under the *Forest Act* or the *Forest and Range Practices Act*. Non-status roads (roads without tenure from the ministry or other agencies) are not within the jurisdiction or responsibility of the Ministry of Forests and Range except where the ministry is required to take action as an agent of the province. In these cases, activities on non-status roads must be limited to minimizing any site-specific risks (to users or the environment) that come to the attention of the District Manager of MoFR. However, restoring access is not an acceptable objective of any such work.

Single Track Trails:

A single-track trail is one where users must generally travel in single file (pedestrians and mountain bikes).

The trail bed of single-track trails is typically 12 to 18 inches wide. Single track trails tend to wind around obstacles such as trees, large rocks and bushes. The tread of single track is almost always natural surface.

Redundant Roads:

An existing road that may or may not start from one common point and then travel to the same destination (often within close proximity to its partner road).
Appendix 5: Wildlife Viewing Ethics

Keeping vehicles on roads – off-road traffic damages vegetation, causes soil erosion, disturbs wildlife and may reduce habitat usefulness for wildlife.

Staying on trails – many animals experience less stress and can better adapt when human use is predictable, for example, when hikers and cyclists stay on trails.

Do not approach or chase animals – unnecessary movement uses energy that may be needed for their survival.

Using binoculars – by staying farther away stress on wildlife is reduced.

Controlling pets – to avoid wildlife harassment and provide better viewing opportunities.

Leave the environment unchanged – practicing no-trace camping and a pack it in/pack it out philosophy.

Do not feed or touch animals – feeding can create an unhealthy reliance on people, touching young animals may cause mothers to abandon them.

Reporting environmental abuse – recording the location, date, time, vehicle description and licence plate number of the offender.

Excerpt from Wildlife Viewing in British Columbia (Province of BC, 2007).
Appendix 6: Potential Impacts of Adjacent Land Use

Adapted from Best Management Practices for Activities Adjacent to Parks and Protected Areas (Province of BC, 2005).

<table>
<thead>
<tr>
<th>Activities</th>
<th>Examples</th>
<th>Possible short term impacts</th>
<th>Possible longer term impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire &amp; Suppression</td>
<td>- fine effects based on severity/intensity</td>
<td>- increased erosion &amp; sedimentation</td>
<td>- alters forest stand structure, patch size distribution</td>
</tr>
<tr>
<td></td>
<td>- fireguards &amp; blading</td>
<td>- altered hydrology in burn &amp; ‘hardened’ areas</td>
<td>- reverts succession to earlier seral stage, invasives may increase</td>
</tr>
<tr>
<td></td>
<td>- access roads &amp; trails</td>
<td>- invasive plant encroachment</td>
<td>- impacts to wildlife from cumulative disturbance</td>
</tr>
<tr>
<td></td>
<td>- landings and helipads</td>
<td>- temporary disturbance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- stream crossings (bank &amp; riparian damage)</td>
<td>- visual quality impact</td>
<td></td>
</tr>
<tr>
<td>Access Development</td>
<td>- roads, tracks &amp; trails (boulder probe skid trails, ATV &amp; mt. bike</td>
<td>could see habitat fragmentation &amp; movement corridors gone (loop roads?)</td>
<td>- wildlife populations impacted possibly see increases or decreases in numbers, changes in richness &amp; types of spp.</td>
</tr>
<tr>
<td></td>
<td>routes, hiking &amp; game trails, etc)</td>
<td>- invasive plant encroachment</td>
<td>- impact on interior forest dependent wildlife spp.</td>
</tr>
<tr>
<td></td>
<td>- linear developments with vegetation removal</td>
<td>- human disturbance</td>
<td>- altered predator prey relationships</td>
</tr>
<tr>
<td></td>
<td>(energy transmission lines, gas pipelines, fibre optics lines, etc)</td>
<td>- altered hydrology due to hard surfaces, possible erosion issues</td>
<td>- changes in wildlife spp. to more tolerant types</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- impacts to wildlife from construction disturbance</td>
<td>- invasives may increase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- visual quality impact</td>
<td></td>
</tr>
<tr>
<td>Land Clearing</td>
<td>- forest harvest</td>
<td>- increased erosion &amp; sedimentation</td>
<td>- alters forest stand structure, patch size distribution</td>
</tr>
<tr>
<td>(fire is listed</td>
<td>- industrial development (from gravel pits to cabins &amp; resorts,</td>
<td>possible</td>
<td>- reverts succession to earlier seral stage (or if planted to new spp., possibly changed totally?)</td>
</tr>
<tr>
<td>separately as burnt</td>
<td>marinas, from communications towers to waste transfer stations, etc)</td>
<td>- altered hydrology in cleared &amp; ‘hardened’ areas</td>
<td>- impacts to wildlife from permanent disturbance, loss of habitat</td>
</tr>
<tr>
<td>land is reclaimed</td>
<td>- agriculture &amp; range</td>
<td>- possible</td>
<td></td>
</tr>
<tr>
<td>or allowed to</td>
<td>- subdivision development</td>
<td>- possible waste-pollution issues</td>
<td></td>
</tr>
<tr>
<td>rehabilitate)</td>
<td></td>
<td>- temporary disturbance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- visual quality impact</td>
<td></td>
</tr>
<tr>
<td>Recreation</td>
<td>- campgrounds (day use picnic sites, beaches, playgrounds, tent sites,</td>
<td>- increased erosion &amp; sedimentation</td>
<td>- changes in wildlife spp. to more tolerant types</td>
</tr>
<tr>
<td></td>
<td>etc)</td>
<td>possible</td>
<td>- invasives may increase</td>
</tr>
<tr>
<td></td>
<td>- hunting/fishing</td>
<td>- possible waste-pollution issues</td>
<td>- seasonal impacts to wildlife when humans in area (longer term get changed behaviour from “fearful” response - e.g. waste issues &amp; garbage bears)</td>
</tr>
<tr>
<td></td>
<td>- ATV's &amp; mt. bikes</td>
<td>- human disturbance</td>
<td>- possible impacts to watercourses &amp; erosion issues from associated forest damage &amp; trail development</td>
</tr>
<tr>
<td></td>
<td>- hiking/birding/camping</td>
<td>more from motorized activities (able to get farther into the wilderness, noise issues for</td>
<td></td>
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<tr>
<td></td>
<td>- skiing (heli &amp; cat and non-motorized)</td>
<td>other users, wildlife become habituated or sensitized to noise, etc</td>
<td></td>
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<tr>
<td></td>
<td>- raft &amp; float tours, kayaking/boating</td>
<td>- altered hydrology in cleared &amp; ‘hardened’ areas</td>
<td></td>
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<tr>
<td></td>
<td>- hang gliding/para sailing</td>
<td>- invasive plants</td>
<td></td>
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<tr>
<td></td>
<td>- llama/horse treks</td>
<td></td>
<td></td>
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</tbody>
</table>
References


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http://www.agf.gov.bc.ca/resmgmt/publist/300series/307400-1.pdf


Province of British Columbia. 2007. ‘Fisheries Inventory Data Queries’. [http://a100.gov.bc.ca/pub/fidq/main].


Province of British Columbia. 2007. ‘Biogeoclimatic Ecosystem Classification (BECWeb)’, [http://www.for.gov.bc.ca/hre/becweb/].


Front cover photos (Province of BC, 2007) (Knezevich, 2006).
# Personal Communication

<table>
<thead>
<tr>
<th>NAME</th>
<th>Agency/Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldershot Resources Ltd.</td>
<td>Mineral Tenure</td>
</tr>
<tr>
<td>Babiarz, Rob</td>
<td>Ministry of Forests &amp; Range</td>
</tr>
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<td>Baliko, Werner</td>
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<td>Barclay, Al</td>
<td>BC Timber Sales</td>
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<tr>
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<td>Bridge, Gwen</td>
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