

Manitoba Sustainable Development
Forest Practices
Guidebook

**FOREST MANAGEMENT
GUIDELINES
for
TERRESTRIAL BUFFERS**

First Published: 2010
Valid until: 2022

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January 2017

Developed by Manitoba Sustainable Development

The following organizations are acknowledged for their contributions:

Canadian Kraft Papers Industries Limited

Louisiana Pacific Canada Ltd.

Spruce Products Limited

Copies of this publication are available at:

www.manitoba.ca/conservation/forestry/forest-practices/practices/fpp-guideline-pdfs.html

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PREFACE

MANITOBA FOREST PRACTICES

This guidebook has been developed as part of Manitoba Sustainable Development's Forest Practices Initiative.

A primary goal of the initiative is to advance best practices using guidelines and standards for sustainable forest management activities in Manitoba. These guidelines present alternative procedures or standards that can be applied to satisfy principles the guidelines are based on. Guidelines are then used to develop prescriptions. Specific guidelines are enforceable when included as conditions of a work permit. Forest practices guidebooks ensure all forest resource values are appropriately addressed for the full range of forest activities.

Forest practices guidebooks are references available for resource managers, timber operators, natural resource officers and auditors. Others include provincial guidelines, forest management plans, annual operating plans and standard operating procedures, which are developed independently by each forest industry.

Forest practice guidebooks are developed by committee members from Manitoba Sustainable Development; one regional resource representative and one member each from Manitoba Water Stewardship, Fisheries and Water Quality branches. Committees also include a forest industry member from each forest management licensee, from Spruce Products Ltd and from Fisheries and Oceans Canada.

Each guidebook has a complete set of guidelines for a specific forest practice, pertinent references to science, legislation, policy, agreements and licences, as well as recommendations for planning, implementing, monitoring and enforcing this forest practice.

The aim of recommendations is to be:

- measurable
- practical
- based on scientific evidence and traditional knowledge
- flexible and applicable in a variety of ecological conditions
- clearly presented for consistent interpretation and application
- supported by technical terminology and definitions
- current, amended as needed and reviewed every five years

Guidebooks can be found on the Sustainable Development Forestry and Peatlands Management Branch website manitoba.ca/conservation/forestry/forest-practices/practices/fpp-guideline-pdfs.html.

Send comments and recommendations to forestguidelines@gov.mb.ca.

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FOREST MANAGEMENT GUIDELINES for TERRESTRIAL BUFFERS

Purpose

This document provides minimum buffer widths and other key considerations for maintaining important and sensitive natural, cultural and recreational features. These features require mitigation when planning and implementing forestry operations.

Background

Manitoba's forests contain a rich diversity of natural resources that are important to Manitobans for many different reasons. Manitobans expect managed forests to contribute to healthy ecosystems, maintain biodiversity and conserve wildlife populations. They expect managed forests to provide opportunities for recreational, cultural, spiritual and aesthetic enjoyment, both commercial and non-commercial in nature. They also understand that harvesting forest resources provides tangible and important economic benefits.

Manitoba's forests must be managed in a sustainable manner to meet the needs and demands of all Manitobans. When planning forestry operations, all resource values must be recognized and integrated into any harvesting or renewal activities.

Table 1 in the Forest Management Guidelines for Terrestrial Buffers (see page 4) replaces parts of the Forest Management Guidelines for Wildlife in Manitoba (1989).

Goal

The goal of this guidebook is to manage forests in a way that maintains all values while ensuring a sustainable harvest of timber and other resources.

Objectives

The guidebook's objectives are to:

- Ensure the sustainability of other resource values while managing for timber resources.
- Protect critical wildlife habitat.
- Maintain wildlife habitat and travel corridors.
- Maintain visual barriers for recreational and aesthetic values.
- Ensure forest health issues are incorporated into terrestrial buffer prescriptions.
- Ensure that the functional values of the features are protected.
- Protect sites that are of cultural importance.
- Protect aesthetic and experiential features associated with public use facilities, sites and areas.

Species at Risk

Species at risk – protected under Manitoba's Endangered Species and Ecosystems Act and under Canada's Species at Risk Act – are managed through direction from official recovery strategies, action plans or other provincial directives. Proponents must report the occurrence of any species listed as extirpated, endangered, threatened or of special concern by provincial or federal legislation, to appropriate authorities.

Wildlife Features

A proposed forest harvest area may include features that are important or critical to local wildlife populations, or strategically significant to a wider range of populations. These features require special consideration to ensure their integrity and functional values to wildlife are maintained through protection or mitigation.

Table 1 outlines these wildlife features, the objective of the buffer, the buffer widths required and the effective period. Buffer width is determined according to the wildlife species implicated and factors including the value, uniqueness and abundance of the feature. Wildlife features that require planning for connectivity are planned for in a manner that protects their functional value through harvest block designs. The final determination of buffer width is approved by the Integrated Resource Management Team (IRMT).

Planning for Connectivity

In Table 1, the column titled Planning for Connectivity is to help planners develop prescriptions for the wildlife features. This planning may mitigate the shape of the harvest block to allow for security cover and greater use of the wildlife features.

The listed wildlife features for birds and bats do not require planning for connectivity because of their mobility and visual capabilities.

Snake hibernacula require planning for connectivity to mitigate safety concerns around the movement of garter snakes to and from the hibernacula.

Mineral licks require planning for connectivity because visual screens to the mineral licks provide security cover and increase the use of these wildlife features. Ungulates and other mammals use mineral licks in the spring and summer to obtain required minerals and nutrients.

Springs require planning for connectivity. Fresh water springs in certain locations are rare and used extensively by wildlife. Planning for connectivity may increase wildlife use.

Native grass meadows require planning for connectivity because elk are more likely to use these meadows if they can access and use them undetected and undisturbed.

Because active large mammal dens tend to be discovered only during harvest operations, any planning for connectivity to protect the dens from disturbances cannot be achieved.

Other important wildlife features may include calving areas, wallows or important travel corridors. The IRMT decides if planning for connectivity is required on a case-by-case basis.

Table 1 Wildlife Features and Associated Buffers

Wildlife Feature	Buffer Width	Objective of Buffer	Effective Period	Planning for Connectivity
Eagle, osprey and heron rookery nests *	200 m radius	Protect from sensory disturbance during breeding season.	April 1 to July 31	Not required
	100 m radius	Protect nest trees and maintain integrity of nesting site.	August 1 to March 31	Not required
Active stick nest (app > 60 cm.) owl, hawk, raven etc	50 m radius	Protect nest trees and maintain integrity of nesting site.	When discovered during operations	Not required
Bat caves	200 m radius	Protect from sensory disturbance and physical harm. Protect distinct feature and maintain integrity of surrounding habitat.	All year	Not required
Snake hibernacula	200 m radius	Protect from sensory disturbance and physical harm. Protect distinct feature and maintain integrity of surrounding habitat.	All year	Is required
Mineral licks and springs	50-200 m from the outer perimeter of the feature	Provide security cover. Protect from disturbance. Distance to be determined by IRMT/mitigation specific to site circumstances.	All year	Is required
Native grass meadows	To be determined by IRMT	Provide escape cover for elk. Protect intrinsic value, if grassland is a rare type of plant community such as fescue prairie.	All year	Is required
All active large mammal dens	50 m	Protect animals from harm.	When discovered during operations	Not required
Other (important wildlife features)	To be determined by IRMT	Variable depending on the feature.	To be determined by IRMT	May be required

* The buffers for these wildlife features take priority over the ones in the Forest Management Guidelines for Wildlife in Manitoba.

Some features are not included in this table because they are covered by provincial legislation. As specified in the Forest Use and Management Regulation Section 4 (b) under The Forest Act, below:

Restricted zones

4. Restricted Zones

The following are restricted zones:

(a) Crown lands in provincial parks and provincial recreational areas as listed in Schedule C but not included in clause 3(b); and

(b) all Crown lands on a strip up to 150 metres in width depending on land topography along both sides of provincial trunk highways, provincial roads, railway right-of-way, hiking trails, riding trails, portages, streams, rivers and lakeshores;

(c) all Crown lands comprised of islands of less than 10 hectares in area situated in rivers and lakes.

Eagle and Osprey Nests (Figure 1) – Eagles and ospreys usually nest in tall trees near water. Buffers are required to protect the nest trees, perching trees and feeding areas during the breeding season when the birds are most sensitive to human activity. The Forest Management Guidelines for Riparian Management Areas (2008) do not necessarily identify the full buffer required for eagle, osprey, heron and other active stick nests, when they occur in the riparian zone. Use the guideline that results in the most protection (widest reserve) being applied.



Figure 1 Eagle nest

Heron Rookery (Figure 2) – A rookery is the breeding ground for herons, where they nest as a group or a colony in trees. Disturbing a colony has the potential to interfere with the reproductive success of many individuals and nesting pairs.

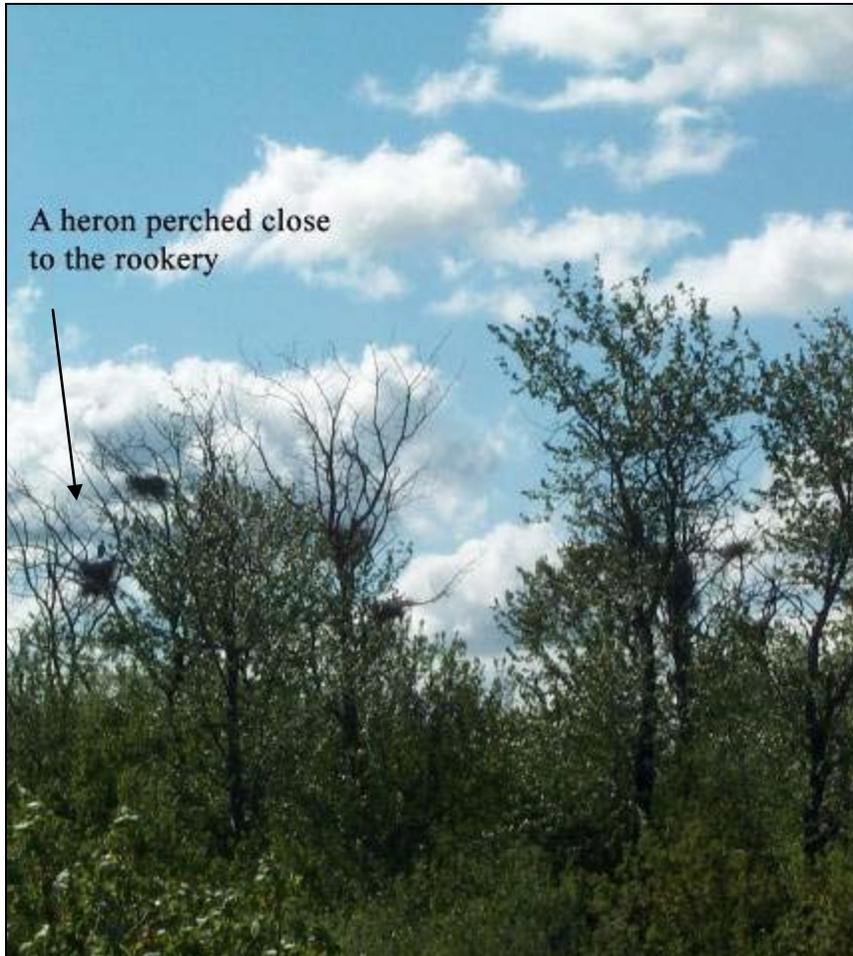


Figure 2 Heron rookery

Snake Hibernacula (Figures 3, 4) – A snake hibernacula is a secure area, usually some sort of cave or den, used by snakes during hibernation. They overwinter in these protected areas below the frost line in large, communal groups. Most hibernacula are dark and secluded to protect the snakes from harm by predators or human disturbances. However, these underground caves and fissures make the area more fragile and, therefore, more vulnerable to cave-ins by heavy equipment. As a result, the snakes require year-round protection from disturbances, particularly in the spring and fall when they are leaving or returning to the hibernacula.



Figure 3 Entrance to snake hibernacula



Figure 4 Snakes at the entrance to the hibernacula

Bat Hibernacula (caves) (Figures 5, 6) – Hibernating bats are very sensitive to disturbances. They require sites that provide relatively constant, low temperatures, with high humidity and no air currents. It's important that the entrance to a bat hibernacula site not be enlarged or blocked with logging debris. Any change in the size of a cave opening may result in changes in airflow and temperature, causing the bats to abandon it.

Unnatural disturbances can create a significant energy demand that may exhaust the limited fat reserves bats need to survive the winter (Asmundson and Larche, 1996). The caves require protection year-round because of the risk of cave-ins by heavy equipment.



Figure 5 Entrance to bat hibernacula (cave) in northwestern Manitoba, discovered during a winter harvesting operation, and not in a pre-harvest survey. Harvesting was immediately stopped and, when the bats were found, a buffer was placed around the opening.



Figure 6 Bat hibernacula

The dark spots are clusters of bats on the roof of the cave shown in figure 5.

Mineral Licks and Springs (Figures 7, 8, 9, 10) – Mineral licks are areas of mud pools, or puddles, fed by slow seeping springs and used by wildlife. Mineral licks occur in areas of both sedimentary and volcanic bedrock, but rarely in granite bedrock, except where overlain by calcareous glacial till. Well-established mineral licks typically appear as open, muddy areas and are usually characterized by well-worn trails radiating from them (Ontario Ministry of Natural Resources 2007).

Springs – The point where an aquifer intersects with the ground surface and discharges water (Dunster, 1996).



Figure 7 Aerial view of a mineral lick, showing wildlife trails

Mineral licks are not always in forested areas. The mineral lick pictured above is not a potential logging site, but shows wildlife trails leading to the mineral lick. The winter road, seen in the photo, was originally the proposed location for a summer road. However, the summer road was relocated because of the mineral lick.



Figure 8 Mineral Lick near Rainy Lake



Figure 9 Mineral Lick in treed area



Figure 10 Small mineral lick containing water

Native Grass Meadows (Figure 11) – This refers to an opening in a forested landscape, dominated by herbaceous species (typically grasses and other graminoids species), often with a significant shrub component.

Local conditions may vary, from xeric (dominant species are upland grasses, forbs and shrubs) to wet-mesic (dominant species are associated with wetlands and include sedges, rushes and other species that require irregularly flooded-to-saturated soil conditions). The soil texture of some native grass meadows south of Swan River is coarse.

Within a broader landscape context, these meadows typically form isolated patches in a forested matrix. As a result, they often provide refugia for species that require this type of habitat, either for a portion of their life cycle, or to get nutrition from the associated vegetation (Pedersen and Adams, 1976; Winn, 1976). Native grasslands may have intrinsic value when they supply a rare type of plant community such as fescue prairie. Care should be taken not to destroy this habitat through activities like stockpiling or road construction.



Figure 11 Native Grass Meadow in the Duck Mountains

Large Mammal Dens

Active large mammal dens in Manitoba are protected with a 50-metre buffer. However, locating the dens that need protection is difficult.

Bear and wolverine dens are used during the winter months, so are difficult to locate in the summer when the pre-harvest surveys are done. Wolf and coyote dens are also hard to spot in pre-harvest surveys because they occupy such a small space of the area being observed. The fact that these dens are usually found in the riparian areas, or reserve zones – close to bodies of water – decreases the likelihood they'll be discovered during pre-harvest surveys. Fortunately, it also decreases their chances of being disturbed during harvesting.

Bear Dens (Figure 12)

In autumn, bears begin to search for den sites. While female bears usually line their dens with grass, ferns or leaves, males do not. Females usually seek the protection of their dens earlier, while males often wait until the first snowfall before entering a den. Bears generally emerge from their dens with the coming of spring and warmer weather.

A bear den may be located under a tree stump, beneath a clump of blown-down trees, in an overturned log, a hole, a hillside or a cave. Most dens are only large enough to accommodate a bear curled up. The same bear dens are often used many years in a row.

Wolverine Dens

Wolverine dens in Canada are usually located in the northern boreal and tundra regions. They're mostly found in tunnels in the snow that are formed naturally around rock configurations.

Wolf Dens

Wolf dens are usually built close to water, in soils that allow for easy digging (e.g., sand or gravel). They are also located under old stumps or in rock crevices. As well, wolf dens can be found on gravel and sand-ridge landforms – elevated above the landscape and well-drained – but still within 200 to 300 metres from water.

Wolf pups are born in dens in the spring. Wolves may change dens throughout the year, moving their pups a kilometre or more, for reasons such as a parasite infestation of the den or a disturbance by humans or other animals. The same wolf dens are often used many years in a row.

Coyote Dens

Coyotes have many different dens they use year-round. However, these dens are particularly useful in the early spring and summer when they're raising their pups. Some coyote dens are dug under large trees, or formed in craggy openings in outcroppings of stones. However, most of them are earth excavations found on the side of a hill, usually close to water.

Coyote dens can also be found on gravel and sand-ridge landforms elevated above the landscape, such as abandoned rail-lines or side slopes in undulating terrain. These sites are generally well-drained, but can still be within 200 to 300 metres from water. Coyotes prepare multiple dens and are not hesitant to pick up and relocate from one to another.



Figure 12 Bear den on the north shore of Athapapuskow Lake

Other Important Wildlife Features – These refer to habitats that are necessary for wildlife species and also affect their future population potential.

The absence of these habitats may not necessarily prevent the species from being in the area, but may affect how much the area is used (Manitoba Natural Resources, 1989). In cases like these, important wildlife features are identified by the regional IRMT. They may include calving or rutting areas and wallows (Figures 13, 14).

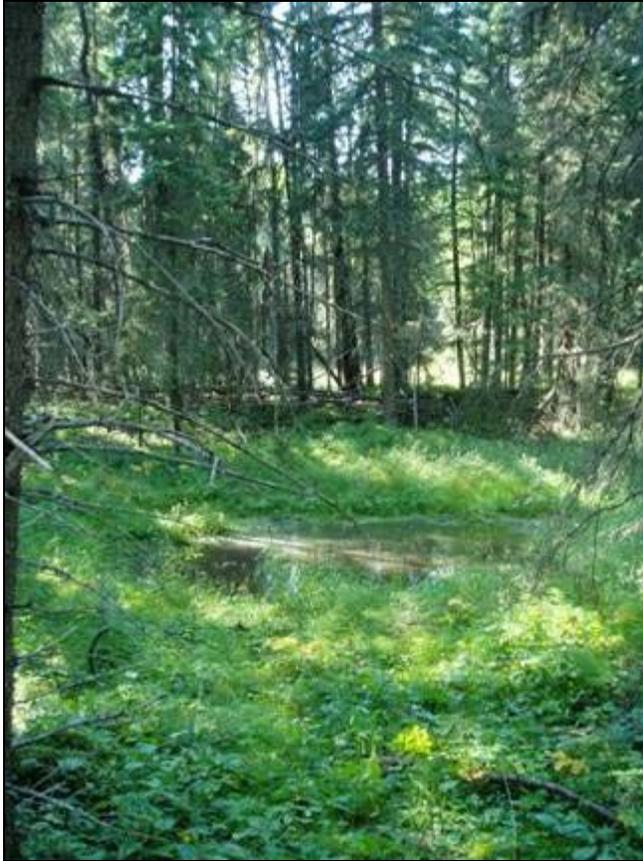


Figure 13 Landscape view of a wallow



Figure 14 Wallow

Physical Features

A proposed forest harvest area may include, or be next to sites, developments and other features important to Manitobans for their cultural, recreational and economic significance. These features require special consideration to ensure sensitive sites are protected and related spiritual, aesthetic and experiential values are maintained.

Table 2 lists physical features, the objectives of the buffer, the required buffer widths and the effective period. Proposed buffer widths are generally determined by communications between proponents, affected stakeholders and First Nations communities. The final determination of buffer widths (including where a range is indicated) is made by the IRMT.

Table 2 Physical Features and Associated Buffers

PHYSICAL FEATURES	BUFFER WIDTH	OBJECTIVE of BUFFER	EFFECTIVE OPERATING PERIOD
Residential and Commercial Lots	50-200 m from the edge	Visual and aesthetic screening	All Year
Intensive Public Recreation Areas and Sites	50-200 m from the edge	Visual and aesthetic screening	All Year
Trapper's Cabin (away from water)	50-200 m from the edge	Visual and aesthetic screening	All Year
Research and Permanent Sample plots	100 m from the edge	Maintaining integrity of research	All Year
Designated Recreation Trails	0-50 m from the edge	Visual and aesthetic screening Safety	All Year
Sink Holes in Karst Topography	15 m from the edge	Safety Water quality Maintaining integrity of unique habitat	All Year
Cultural/Heritage Sites	To be determined by IRMT	Preservation of feature	All Year
Provincial Parks and Protected Areas	To be determined by IRMT	Visual and aesthetic screening Maintaining integrity of feature	All Year

The features listed in Tables 1 and 2 were either identified in a pre-harvest survey or known before the survey.

Provincial trunk highways, provincial roads, railways and portages are buffered according to the Forest Use and Management Regulation Section 4(b) (1988) under The Forest Act.

Insects and Disease

When considering terrestrial buffers, a proponent assesses the occurrence of insects and diseases in the existing forest. The proponent may propose alternative buffer widths from the requirements listed in tables 1 and 2, depending on the type and severity of the forest health concerns. Non-host tree species are used for retention in the block and buffer.

Occurrences of insects and disease may affect the future state of buffers. An important consideration in changing terrestrial buffer requirements is the trade-off between the risk of disease to nearby healthy stands, and the need to maintain wildlife habitat, wildlife travel corridors and visual barriers. The final determination of buffer width will be subject to IRMT approval.

Implementation

Forest Management Guidelines for Terrestrial Buffers will be used by proponents in developing Crown land and may be amended based on results of new information brought forward for formal review.

Forest companies will:

- Use the Forest Management Guidelines for Terrestrial Buffers in the development of their operating plans (OP).
- Conduct pre-harvest surveys to document occurrences of all terrestrial features and communicate this information to Sustainable Development and its stakeholders.
- Propose the buffer prescription for a feature in their Ops.
- Where the occurrence of a feature is identified after a harvest operation has begun, immediately implement a revised prescription for the remainder of the harvest.
- Evaluate aspects of these guidelines to ensure their harvest objectives and targets (within the OP prescriptions) are being met.

Sustainable Development will:

- Review and approve buffer prescriptions.
- Evaluate aspects of these guidelines to ensure harvest objectives and targets (within the OP prescriptions) are being met.
- Conduct post-harvest surveys to assess whether the approved buffer prescriptions have achieved the objectives set out in Tables 1 and 2.

Regional Integrated Resource Management Teams:

- Maintain the authority to revise buffer width based on site-specific evaluations.
- Discuss with proponents the Other Important Features row in Table 1, to ensure that appropriate prescriptions and procedures are included in OPs and work permits.

Glossary of Terms

Active large mammal den – any den with adults/offspring in or around the den (includes bears, wolverines, coyotes and wolves)

Active large stick nest – any stick nest with birds/chicks in or around the nest (includes owls, hawks and falcons)

Calcareous – soils high in calcium or magnesium carbonate, derived from limestone

Connectivity – a measure of how well different areas (patches) of a landscape are connected by links such as habitat patches, single or multiple corridors, or stepping stones of like vegetation (Dunster, 1996)

Critical wildlife habitat – habitat crucial to the size, distribution or stability of a wildlife population in an area – degradation of this habitat can cause significant reduction of a wildlife species within a local geographic area (Manitoba Round Table for Sustainable Development 2001)

Designated recreation trail – a trail managed or maintained for a specific type of recreational use (For example, a trail may be maintained by a local group who use it for a particular sport/activity like cross-country skiing, snowmobiling, hiking, horseback riding, bicycling or hunting.)

Forest practices – activities conducted during all stages of forest management (Examples are surveys, harvesting, road construction and silviculture.)

Guidebook – a collection of policies, guidelines, procedures and standards related to a specific forest practice

Guideline – an alternative procedure or standard that can be applied to satisfy a principle the guideline is based on (Specific guidelines are enforceable when included in the conditions of a Work Permit.)

Integrated Resource Management Team (IRMT) – A regional team organized to review natural resource issues and comprised of members of Sustainable Development (Ecosystems Protection, Forestry, Fisheries, Lands, Parks, Natural Areas, Regional Operations, Water Quality and Wildlife)

Intensive public recreation areas and sites – a variety of outdoor, facility-oriented, road accessible, recreational opportunities in natural-looking settings in Manitoba's provincial parks. (Permitted activities include recreational trails, low and medium-density, road accessible cottaging, full-service campgrounds, and services like sewage lagoons, and fire management and control.)

Karst – describes landforms and processes associated with dissolution of soluble rocks such as limestone, marble, dolomite, or gypsum; characterized by underground drainage, caves and sinkholes (Dunster, 1996)

Mitigation – actions taken during the planning, design, construction and operation of works and undertakings to alleviate adverse effects on the land base

Policy – a deliberately chosen course of action (Policy, in this document, refers to governing principles and corresponding procedures and standards of the provincial government.)

Procedure – a step or series of steps taken to implement a policy or guideline

Permanent sample plot (PSP) – a research plot established for ease of location and ability to repeatedly measure conditions (Measurements in the plot are taken when it's established and then repeated at intervals to monitor changes over time.)

Prescription – authoritative recommendation about a particular course of action

Recovery strategy and action plan – a plan that gives details about the actions or conditions necessary to promote a species recovery

Sinkholes – depressions formed when underlying limestone bedrock is dissolved by groundwater (Sinkholes vary greatly in area and depth and may be very large. The two main varieties are those caused by the collapse of a cavern roof and those caused by the gradual dissolving of rock under a soil mantle [Encyclopedia Britannica online 2007].)

Standards – descriptions of targets or goals (may be general or specific) used to measure the success of procedures

Ungulate – any animal in the group Ungulate: hoofed, grazing mammals, many of which have horns (e.g., deer, elk, moose and caribou)

Wallow – a shallow depression or pit in the ground that is:

- a) created by ungulates through digging, trampling or rolling
 - ranges in size from two metres to several metres wide and typically less than 20 centimetres deep
 - may be dry or wet
- b) an existing depression used by ungulates to wallow in

Ungulates will roll in wallows to cover themselves in dust or mud to provide relief from biting insects. Wallowing also serves a social function during the breeding season. A male ungulate (e.g., moose, elk) urinates in the wallow and rolls in it to attract females.

A wallow, characterized by disturbed vegetation (grasses/sedges/low shrubs) caused by pawing, digging or rolling, may be found in forested and non-forested areas. The site often emits a strong odour of urine and may have tracks, hair or droppings nearby.

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