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Guidelines for

Good Forestry Practices

Supporting Documentation to the

Woodland Conservation By-law (08-026)

The Region of Waterloo

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Guidelines for Good Forestry Practices

1. Introduction

The Region of Waterloo Woodland Conservation By-law (08-026) regulates the destruction or injury of trees in woodlands greater than one hectare for the purpose of sustaining a healthy natural environment while also having regard to good forestry practices. The Woodland Conservation Bylaw does not prohibit all tree harvesting and is not intended to deny landowners the enjoyment and reasonable use of forest resources on their property. By requiring the application of good forestry practices to harvest trees, the Woodland Conservation By-law promotes healthy forests and seeks to ensure they continue to provide the social, economic and environmental benefits for all landowners and residents alike. As the Tree-By-law outlines several exemptions for the removal of dead or hazard trees, own use and activities or applications made under other legislation (i.e. Planning Act), these guidelines should be read in conjunction with the provisions of By-law 08-026.

2. Application of these Guidelines

These guidelines are intended to complement the definition of “Good Forestry Practices” and provide a practical framework for responsible forest management. While they do not form an official part of the Tree By-Law, they serve as a supporting document that outlines best practices for tree harvesting, maintenance, and renewal. These practices are widely recognized as essential for sustaining forest health, protecting ecological vales, and ensuring long-term productivity. These guidelines are not intended to be all encompassing or represent an exhaustive list of Good Forestry Practices.

The primary purpose of these guidelines is to assist landowners who are considering forestry activities by offering a structured approach to sustainable forest management. Additionally, they serve as a reference for defining acceptable forestry practices when assessing permit applications under the Woodland Conservation By-Law. The Region’s Tree By-Law Officer will use these guidelines as a tool in determining whether proposed forestry activities align with good forestry practices. However, the final decision on what constitutes good forestry practices remains at the discretion of the Tree By-Law officer.

These guidelines are largely adapted from A Silvicultural Guide to Managing Southern Ontario Forests, a comprehensive resource developed by the Ontario Ministry of Natural Resources. Given the evolving nature of forestry science and policy, these guidelines may be updated periodically to reflect new research, emerging best practices, changes associated with climate change or changes in regulatory requirements.

3. Good Forestry Practices

The proper implementation of harvest, renewal and maintenance activities known to be appropriate for the forest and environmental conditions under which they are being applied and that minimize detriments to forest values including significant ecosystems, important fish and wildlife habitat, soil and water quality and quantity, forest productivity and health, and the aesthetics and recreational opportunities of the landscape.

In essence, Good Forestry Practices safeguard forest values by preserving key stand components and minimizing environmental impact during harvesting. Well-managed tree harvesting ensures the sustained health of the forest, maintaining its ecological benefits while supporting a steady supply of forest products that generate both short and long-term economic return for landowners

4. Key Components of Good Forestry Practices

Careful planning for all stages of forest management is perhaps the most important component of Good Forestry Practices. Establishing both short and long-term management objectives and adhering to several fundamental rules is necessary to help landowners meet those objectives while minimizing environmental damage, maintaining species diversity and retaining significant wildlife habitats.

Practice	Description
Seek Professional Advice	❖ Engaging professional forestry expertise is strongly recommended for landowners planning forest management activities. ❖ Good Forestry Practices must include a silvicultural prescription prepared by a Registered Professional Forester or Associate member of the Ontario Professional Foresters Association (OPFA)

Practice	Description
	under the Professional Foresters Act, 2000. A well-developed forest management plan or silvicultural prescription can help achieve short and long term goals such as optimizing timber yield while ensuring long-term ecological sustainability. ❖ Hiring a certified tree marker will help identify the appropriate trees to both cut and preserve. A professional tree marker will help identify trees that should be harvested and those that should be reserved to maintain a healthy and diverse forest structure. They will take into consideration ecological features and values, terrain, habitat and apply it across the forest in a consistent manner. ❖ Additionally, landowners can access self-help resources and best management practices provided by various agencies. Consulting with the Region's Tree By-law offices is also encouraged to ensure compliance with local regulations and alignment with Good Forestry Practices.
Determine Landowner Objectives	❖ Identify long term objectives for future stand conditions as well as short term management objectives. ❖ These can include production of high-value wood products, fuelwood for personal use, encouraging old-growth characteristics, reducing losses to insects, fire management, rare species protection, recreation, nature appreciation and more ❖ Objectives must be realistic and should take into consideration all other forest values
Site and Stand Inventory	❖ Is the process of collection of information on land characteristics, water/drainage patterns, trees, regeneration and other flora and fauna ❖ Used to create realistic management objectives and in the development of a silvicultural prescription
Select an appropriate silvicultural method	❖ Choosing the right silvicultural approach is critical for maintaining the long-term health and productivity of a forest. Certain cutting methods, such as diameter limit cutting and high grading are generally unsuitable. ❖ Retain recommended canopy closure ❖ Do not implement silvicultural prescriptions and activities unless they can be conducted without destroying other important forest values such as wildlife habitat and cover.
Paint Application	❖ Tree marking convention and paint colour application should be noted and consistent throughout property. ❖ Two distinct pain applications are required; a top mark and a butt mark.

Practice	Description
	❖ It is advisable to mark butt marks first for safety reasons; Ensure that butt marks are applied and located in such a way that they will be clearly visible during post-harvest inspection, at least 30 cm in length as a vertical line and initiate at grade. Apply enough paint to offset any fading that may occur. ❖ Place the butt mark in a seam or depression at the base of the tree where it would be difficult to scrape off the mark. Avoid painting moss or ice. ❖ Top marking should be visible from at least three sides to aid operators to carefully plan their operation for skid trail layout and directional felling. A horizontal line around the tree or dots/slashes at eye level. ❖ All trees including sawlogs, fuelwood and slash are to be marked. ❖ Marking small diameter trees even if locally unmarketable, facilitates in the layout of access trails, directional felling and more as it is better to damage a marked tree than a desirable tree. ❖ An unmarked tree is a desired residual tree unless otherwise specified in the prescription. ❖ Recommended Paint colour application Yellow or Orange – Trees to be removed for harvest Red – Boundary line/reserve marking Blue – Trees to be retained i.e. Crop/Mast tree, Wildlife, Nests Black or Grey – When mistakes are made, cover up paint
Retain a diversity of tree species, ages, sizes and stands.	❖ Preserving a variety of tree species, ages and sizes is essential for sustaining biodiversity and ecological resilience. Healthy forests contain a mixture of native species at different growth stages, providing habitat for wildlife and ensuring long-term regeneration potential. When planning harvesting activities, landowners should: 1. Retain healthy representatives of all native species within the stand 2. Ensure a mix of young, mature and old trees to support structural diversity 3. Protect rare or at risk species which may be subject to additional restrictions under the Ontario Endangered Species Act
Harvesting Considerations	
Limit activities to the appropriate season	❖ Plan to harvest during times that are least disruptive to other forest values including soils, wildlife and other vegetation.

Practice	Description
	❖ It is most desirable to harvest in the winter when the ground is frozen and there is snow cover to protect soils and understory vegetation. ❖ If winter harvest is not possible, cutting during dry periods in the late summer/fall may be the next best option. ❖ Avoid harvesting in the early spring or when conditions are wet or; ❖ Avoid the period between the end of March and August which is usually the time when sensitive migratory birds breed or nest. ❖ Certain species are protected under provincial and federal legislation such as the Migratory Birds Convention Act and the Fish and Wildlife Conservation Act.
Use directional tree felling	❖ Trees should be felled directionally such that they can be removed in a manner that minimizes disturbance to the forest site and limits damage to residual/remaining trees. ❖ Improper tree felling techniques can damage branches and bark on all trees including seedlings on the forest floor.
Roads, skid trails and landings	❖ Wherever possible, minimize the number of and width of roads, skid trails and landings. ❖ Roads and trails should follow the natural contours of the land and be located as far away as possible from environmentally sensitive features such as watercourses and wetlands. ❖ Skid trails and landings should be located on well drained sites and should avoid being located directly up or down a slope to minimize damage to vegetation. ❖ Skid trails and roads should avoid steep slopes (Roads >12%; Skid trails >20%)
Avoid stream crossings	❖ Stream crossings for roads and skid trails should be avoided where possible, or where not possible, be restricted to one location where the stream is narrow and has a rocky substrate. ❖ Trails and roads should approach at right angles to minimize impacts on stream banks and to prevent stream water from flowing down skid trails. ❖ Prior to any stream crossings, landowners must ensure that the requirements of legislation such as the Fisheries Act or Regulations under the Conservation Authorities Act for watercourse crossings are met.
Avoid harvesting on steep slopes	❖ To minimize erosion and sediment run-off which can damage forest soils and streams, tree cutting on slopes greater than 35% (or approximately 3:1 slope) should be avoided.

Practice	Description
Retain edge density	❖ Where interior forest habitat exists, it is desirable to retain an uncut buffer of forest edge. This helps to reduce windthrow and other damage to the forest interior and provides effective protection from the invasion of exotic species. ❖ Where an uncut buffer is not possible, planning for a higher density of trees on the outer edge of the forest is the next best option. ❖ Buffers of natural vegetation between cut areas and waterbodies, rare vegetation communities and significant wildlife habitat should be created
Protect wildlife habitat	❖ Avoid scheduling harvests during sensitive time frames that may impact; migratory birds, bats, fish and amphibians. ❖ Wildlife habitat can be protected by retaining nest, cavity and den trees and by ensuring that some nut-bearing trees remain. ❖ When safe to do so, standing dead trees provide important habitat for forest wildlife that use them for feeding, nesting, denning and escaping from predators. Fallen deadwood may also provide these benefits in addition to returning nutrients to the soil when they decay.
Use appropriate harvesting equipment	❖ Equipment should reflect the scale of the harvesting operation in order to avoid excessive residual damage that heavy machinery may inflict on the forest. ❖ Large and heavy equipment might not be suitable for removing only a few small trees nor would they be appropriate for use on steep slopes
Invasive and Exotic Species	❖ Clean equipment protocols should be in place to prevent the introduction of non-native species between work sites. ❖ Remove non-native species to help ensure long-term health of the forest stand

5. Requirements for a Silvicultural Prescription

A silvicultural prescription is a document which has planned series of treatments designed to change the current structure and composition of a forest to one that meets specific management goals while considering ecological, economic and social objectives. The following are minimum requirements that must be included in a silvicultural prescription adopted from OPFA Practice Bulletin No. 10.

General Information

- Landowner name, mailing address and contact information
- Woodland Address, township, roll number, lot number, concession and how to access the woodland

Map or Sketch

- North Arrow
- Roads and crossroads, access to harvest area and skid trail locations
- Streams, rivers, ponds and wetlands
- Dwellings, structures and other distinguishing features
- Property boundaries, outline of woodland and harvest area
- Proposed posting location of permit

Woodland Description

- Species composition, forest type, topography, drainage, soil texture, woodland size, average height of trees in stand, regeneration observations, description of stand history, site suitability and quality.

Management Objectives

- Description of the landowners' long and short-term management objectives for the woodland

Stand Analysis

- Number of basal area plots, species, size classes (Polewood, Small, Medium, Large and Extra—Large Sawlogs), acceptable growing stock, unacceptable growing stock, pre-harvest basal area and ideal basal area.
- Unacceptable growing stock should be removed before acceptable growing stock.
- Ideal residual basal areas for Waterloo Region

Tree Size Class	Polewood (10–24 cm)	Small Sawlogs (26–36 cm)	Medium Sawlogs (38–48 cm)	Large Sawlogs (50–60 cm)	X-Large Sawlogs (62 cm+)	Total
Ideal BA (m^2/ha)	4	5	5	4	2	20

Note: Total residual basal area should not be less than 18m^2/ha

Tree Marking Prescription

- Silvicultural system to be used and treatment instructions
- Description of marking for sawlogs, firewood, wildlife, fence lines and the colour of paint to be used to mark trees
- Identification of Integrated Resource Management (IRM) and Areas of Concern (AOC) considerations
- Identification of wildlife values and considerations such as stick nests, Species at Risk, mast trees and cavity trees

Summary

- Prescribe methods for conducting the harvest
- Quantity, species, size of trees to be harvested and estimated volume to be cut
- Follow up recommendations and timeframe for next harvest
- Any additional information

Authorization

- Date, signature and seal of a Qualified OPFA Member
- Date and signature of Certified Tree Marker
- Date and signature of property owner confirming their review and approval of the prescription

6. Other Good Forestry Practices

The practices outlined above primarily focus on the direct harvesting of trees. However, the long-term forest management objectives necessitate the incorporation of additional forestry practices aimed at the ongoing maintenance and regeneration of forest stands. These may include initiatives to promote, plant and sustain native species, manage invasive species, address pest infestations or diseases and perform task such as pruning or selective thinning. A professionally developed forest management plan will provide a detailed strategy for maintenance and renewal, tailored to the specific characteristics of the forest and the landowners goals.

7. Additional Information

A wealth of information on various forest management topics available from number sources. The Ontario Ministry of Natural Resources offers a comprehensive list of "Extension Notes", which include informative factsheets on a broad range of subjects such as agroforestry, forest stewardship, insects and pests, water and wetlands, wildlife and the

financial aspects of forest management. The complete series. Can be accessed for free through the Ontario Landowner Resource Centre at www.lrconline.com

The Ontario Woodlot Association publishes numerous resources that support landowner management of private woodlands available at www.ont-woodlot-assoc.org

8. The Role of the Region

The Region believes that tree harvesting activities and sound forestry practices can coexist harmoniously. Each landowner has unique forest management goals, and every forest stand exhibits distinct physical characteristics. Given this diversity, these guidelines serve as a framework to guide responsible management rather than a universally applicable list of practices.

Each Good Forestry Practices Permit application will be reviewed by a by-la officer on a case-by-case basis, taking into account the specific site conditions and circumstances. This ensures that the proposal aligns with good forestry practices. If the officer determines that a proposed harvesting plan does not meet these standards, they will first consult with the applicant to offer advice and guidance on how to revise the plan to meet the required standards, while still achieving the objectives.

Figure 1 on the following page outlines the general process for administering the Woodland Conservation By-law, emphasizing the importance of consultation. It is anticipated that most forestry operations will align with the practices outlined in these guidelines. While landowners are responsible for ensuring that their tree harvesting activities comply with good forestry practices, the Region's primary role is to assist by providing education and guidance.

Figure 1 Good Forestry Practice Permit Application Process