Silviculture
Best Management Practices






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Acknowledgements

In the Fall of 1991, a 22 member Technical Advisory Committee began a process to review and revise the Silviculture Best Management Practices for Florida. That process which is currently on going includes many hours of study, much debate and discussion, and visits to the field, all of which contributed to and are reflected in this revision of the BMP Manual. In that regard, this Manual represents the Committee's collective best efforts to establish and maintain sound, responsible, guiding principles for silviculture operations in the State of Florida.

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Foreword

Introduction

This manual establishes the Best Management Practices (BMPs) for silviculture operations in Florida. These practices are designed as the minimum standards necessary for protecting and maintaining the State's water quality as well as certain wildlife habitat values, during forestry activities. As such, they represent a balance between overall natural resource protection and forest resource use.

In addition, these practices were developed specifically for silviculture and are intended to be applied on all such operations. However, they are not intended for use during tree removal or land clearing operations associated with development or other activities that have non-forestry objectives.

Best Management Practices for Silviculture in Florida were first established in the mid 1970's in response to the Federal Clean Water Act of 1972. Those original BMPs were designed exclusively to protect Florida's streams and lakes from potential sources of pollution associated with forestry activities.

In 1991, Florida's Agriculture Commissioner established a BMP Technical Advisory Committee which included representatives from state and federal government, university, forest industry and environmental groups. This committee was directed to review the existing BMP Manual and revise the practices where necessary to reflect the scientific, social and economic changes that have taken place since the original BMP development.

With this revision, some of the original practices have been retained as part of the continuing strategy to achieve water quality goals. However, many of these practices have been expanded to address additional water resource features such as sinkholes, smaller lakes, canals and wetlands. In addition, general ecological considerations and wildlife habitat values have been included in specific BMP objectives, resulting in expanded versions of original BMP concepts such as Special Management Zones, as well as new ones such as BMPs for wetlands, and cypress harvesting.

Although many of the relationships between silviculture activities and impacts to natural resources have been well quantified, many others have not. Consequently, as significant new information has become available, it has been incorporated into the practices in this Manual. To that end, the BMP Technical Advisory Committee will continue to meet biennially, in concert with BMP compliance monitoring, to evaluate the status and progress of BMP implementation and effectiveness.

Because of the extensive revisions to this document, some of the technical terms used in the Manual have specific definitions that may differ from conventional or traditional meanings. The reader is strongly advised to review the Glossary of terms prior to reading the Manual or implementing the practices.

BMP Monitoring and Regulatory Requirements

Since 1981 the Florida Forest Service has monitored BMP implementation by conducting a biennial Compliance Survey. Like BMPs in general, the Survey has traditionally been heavily oriented toward forestry activities involving intensive pine management, near streams and lakes. With the new and expanded practices in this Manual, BMP compliance monitoring was also revised. Following the development of this Manual in 1993, a BMP Monitoring Task Force revised the Compliance Survey making it compatible with the new BMPs, and more technically and statistically sound. The revised Survey was first used in 1995 and includes significant procedural changes such as a numerical scoring system for determining BMP compliance, special criteria for identifying a significant risk to water quality, and an expansion of the Survey into all Florida counties. The Survey has determined a statewide, long-term average of 94% compliance with silviculture BMPs.

In addition, a BMP Effectiveness Study was completed using the Survey as a measure of BMP compliance and using stream bio-assessment techniques to measure water quality. The study concluded that where silviculture BMPs were properly applied water quality, aquatic habitat and overall stream ecosystem health were protected.

The BMPs in this Manual are intended for implementation on all silviculture operations regardless of whether or not the operation is subject to other regulatory standards or permits. Anyone who desires to conduct silviculture activities that are not in compliance with this Manual must necessarily seek and obtain a permit from the appropriate local, state and/or federal government agency prior to conducting the operation. In addition, the maintenance of State water quality standards is required during all silviculture operations.

For the purposes of this Best Management Practices Manual, the cutting and removal of timber and associated activities to prepare land for development are not considered silviculture (see Glossary) and are controlled by other governmental permitting processes.

Special Management Zones

Introduction

The Special Management Zone (SMZ) is a BMP which consists of a specific area associated with a stream, lake, or other waterbody that is designated and maintained during silviculture operations. The purpose of the SMZ is to protect water quality by reducing or eliminating forestry related inputs of sediment, nutrients, logging debris, chemicals and water temperature fluctuations that can adversely affect aquatic communities. SMZs provide shade, streambank stability and erosion control, as well as detritus and woody debris which benefits the aquatic ecosystem in general. In addition, the SMZ is designed to maintain certain forest attributes that will provide specific wildlife habitat values. Snags, den and cavity trees as well as mast producing trees, left in the SMZ, are necessary to meet habitat requirements for certain types of wildlife.

As described in the following sections, the SMZ is subject to specific criteria, that defines operational restrictions, and special management objectives. In addition, the SMZ has a specific width which is based on the size and type of waterbody involved, and on the Site Sensitivity Class (SSC). The SSC is based on the local soil type and slope percent, which indicate the general potential for erosion and sedimentation. For determining the SSC, Florida soils have been classified as A, B or C, with A being stable and C being highly erodible. Percent ground slope has also been classified as 1 through 6, with 1 being relatively flat and 6 being very steep (Appendices 2 and 3).

The SSC for a given site is a combination of soil and slope percent and is expressed as A1 through C6. For example, an A1 site would have stable soils and flat topography, whereas a C6 site would have highly erodible soil and steep slopes. Likewise, the SMZ width associated with an A1 site would be relatively narrow compared to the SMZ associated with a C6 site (Appendix 1).

The Special Management Zone has three principal components - the Primary Zone, the Secondary Zone and the Stringer. One or more of these components may apply on a given forestry operation, depending on the SSC and on the type and size of waterbodies on site. The following sections provide a detailed description of the three SMZ components and the practices that are acceptable or prohibited within each one. Practices that are acceptable within all components of the SMZ include direct seeding, hand planting or machine planting on the contour of the land, prescribed burning for site preparation on slopes less than 18%, and basal application of herbicides and insecticides.

Primary Zone

The Primary Zone applies to perennial streams, perennial lakes, sinkholes with perennial water, Outstanding Florida Waters (OFW), Outstanding National Resource Waters (ONRW), Class I Waters, and in some cases wetlands (see Wetlands Section). Although forestry activities are allowed, this Zone has significant timber harvesting restrictions, and varies in width from 35 to 200 feet per side, depending on the type and size of the waterbody (see Appendix 1 and Application of SMZs). The Primary Zone provides water quality protection to adjacent waterbodies by maintaining shade, and by reducing the disturbance to ground cover vegetation and leaf litter. In addition, this Zone also provides important wildlife habitat values particularly for those species that require snags, cavities, tall trees and other characteristics generally associated with older and less disturbed forest conditions.

Selective timber harvesting and other forestry operations are allowed in the Primary Zone, subject to the specific management criteria listed below. However, selective harvesting within this Zone is intended to be conducted in conjunction with harvesting of a specific adjacent area. In addition, forestry operations, particularly harvesting and skidding, within the Primary Zone should exercise special precautions to maintain as much of the natural forest condition as possible. A decision not to harvest at all within this Zone may provide additional natural resource benefits.

Primary Zone • Management Criteria

A) Clearcut harvesting is prohibited in the Primary Zone except for special conditions described in Appendix 11.

B) Clearcut harvesting is always prohibited within 35 feet of all perennial waters and within 50 feet of all waterbodies designated as OFW, ONRW or Class I Waters.

C) Selective harvesting may be conducted to the extent that 50% of a fully stocked stand is maintained. The residual stand should conform to the following:

- **1)** Trees should be left to maintain the approximate proportion of diameter classes and species present prior to harvesting, except that oaks (other than water oaks) and den trees may be favored. However, in mixed pine/hardwood forests the residual stand may be composed of up to 90% hardwood and 10% pine, and den trees may be favored.
- **2)** Repeated entry into a harvested Primary Zone in short time intervals for additional harvesting is prohibited.
- **3)** No trees will be harvested in stream channels or on the immediate stream bank.

D) Special emphasis should be given to the following, within the Primary Zone of the SMZ:

- **1)** Protection of very large trees and/or old trees.
- **2)** Protection of snags and cavity trees.

3) Protection of trees where any part of the canopy overhangs the water.

E) The following forestry activities are prohibited within the Primary Zone of the SMZ:

1) Mechanical site preparation.
2) Loading decks or landings, and log bunching points.
3) Main skid trails, except to approach a designated stream crossing.
4) Aerial application, mist blowing or operational application (See Glossary) of pesticides or fertilizer, including any drift from nearby applications.
5) Cleaning spray equipment or discharging rinse water from pesticide or fertilizer applications.
6) New road construction except when crossing a waterbody.
7) Site preparation burning on slopes of 18% or greater.
8) No plowed pre-suppression firelines.

Secondary Zone

The Secondary Zone applies to all intermittent streams, intermittent lakes and sinkholes with intermittent water. In addition, for perennial waterbodies, OFWs, ONRWs and Class I Waters, the Secondary Zone may apply as an "add-on" to the Primary Zone (Figure 1 and Appendix 1).

For intermittent waterbodies, the Secondary Zone is always at least 35 feet wide on each side of a stream or around the circumference of lakes and sinkholes. Depending on the SSC, the width of the Secondary Zone for intermittent waterbodies may be as much as 300 feet (See Figure 2 and Appendix 1).

The SSC is used to determine the width of the Secondary Zone, in the case of intermittent waters, as well as the necessity for the Secondary Zone, in the case of perennial waters, OFWs, ONRWs and Class I waters. Generally, the more erodible the soil and the steeper the slope, the wider the Secondary Zone, and/or the wider the entire SMZ. Appendix 1 lists the SSC for all combinations of soil and slope conditions, and provides the width requirements for the applicable Special Management Zone under each condition.

The Secondary Zone has **no timber harvesting limitations** - unrestricted selective harvesting and clearcut harvesting are both permissible anywhere within the Secondary Zone. However, the following operational restrictions apply:

Secondary Zone • Operational Restrictions

1) No mechanical site preparation.
2) No main skid trails (except for stream crossings), loading decks or landings.
3) Do not clean spray equipment or discharge rinse water from pesticide and fertilzer applications.
4) No new road construction except for stream crossings.
5) No plowed firelines except during fire suppression.
6) No site preparation burning on slopes of 18% or greater.

Stringer

The Stringer applies only to intermittent streams, intermittent lakes and sinkholes with intermittent water, and is composed of trees left on or near the bank along both sides of these waterbodies. The Stringer can provide limited food, cover, nesting and travel corridors for a number of animals, especially birds.

Stringers are most beneficial when connected to larger Special Management Zones where they provide benefits to water quality by reducing the risk of sedimentation and bank damage. The presence of a Stringer provides a physical barrier, helping to insure that heavy equipment operation in and around the water is minimal. Stringers also foster the use of designated crossings, and help equipment operators locate and identify streams and other water bodies during site preparation and skidding.

There are no specific requirements for species, size or spatial distribution of trees left in the Stringer. However, trees left in the Stringer should favor hardwood species, potential den trees and snags, and to the extent possible, provide a continuous, connected canopy except for designated stream crossings. All trees which occupy the immediate stream bank should be included in the Stringer.