

Lake Superior State
Forest Sustainable
Forest Management
Pilot Project

REPORT

12



Risk Assessment of Forest Management for the Lake Superior State Forest

Craig Howard

F e b r u a r y 3 , 1 9 9 9

Table of Contents

| | |
|--|---|
| 1. Introduction | 1 |
| 2. Documentation of Risk Assessment..... | 1 |
| 3. Identifying Environmental Risks | 2 |
| 4. Identification of Stakeholder Interests..... | 3 |
| 5. Evaluation of Risk..... | 3 |
| 6. Environmental Risk Management Decisions..... | 3 |
| 7. Comparison with Predicted Targets (Pre-established endpoints) | 4 |
| 8. Approved Activities | 4 |
| 9. Additional Information..... | 4 |
| 10. Outline for a Formal Risk Assessment | 5 |
| References..... | 6 |

1. Introduction

Risk assessment provides the decision maker with information on the likelihood, consequences and significance of risks, so that informed decisions about risk acceptance and control can be made. Environmental risk assessment is the process of identifying environmental hazards and their scope and developing and evaluating risk scenarios.

Environmental risk assessments should be conducted when forest management activities may have unacceptable results. Factors that may trigger the need for a risk assessment include:

- Change in activity patterns
- Change in regulations
- Discovery of external problems that may be related
- An expressed public concern

Other more general factors that may confirm the need for a risk assessment include:

- Increasingly rigorous “due diligence” requirements
- Demands of a more environmentally sensitive marketplace
- Government demands for more environmentally benign management practices
- The adoption of international standards

The planning system proposed by the Lake Superior State Forest (LSSF) Sustainable Forest Management (SFM) Pilot Project (Callaghan *et al.* 1999) does not specifically require that a formal risk assessment be conducted. However, the steps in a formal risk assessment are paralleled in the planning process. It is possible to conduct a formal risk assessment if any planned individual forest management activity is thought to require it.

2. Documentation of Risk Assessment

The reasons for the risk assessment, the methods used, the assumptions made in analysis, the results and recommendations all need to be documented. The proposed LSSF planning process does not explicitly document risk assessment as a separate function. However, the

documentation required in the planning and operational process will record the following items: public input into the identification of environmental indicators, the process for setting targets for each indicator, the practices used to achieve each target, the monitoring process used to evaluate the success in achieving each target and the review and analysis of the short-, medium- and long-term likelihood of sustaining each indicator.

3. Identifying Environmental Risks

The proposed LSSF planning system addresses the need to view environmental risk from “outside” the professional background by requiring public input in the development of criteria and indicators that are, in turn, used to evaluate the sustainability of forest practices. Implicit in this feature is the assumption not only that the public consultation process is necessary for keeping stakeholders informed, but also that it holds them responsible for expressing environmental concerns that may not have been considered adequately before. The public consultation process and the required public participation in the development of criteria and indicators serve as important processes for capturing “extraordinary” items that may not be considered otherwise.

Fine-filter and coarse-filter processes rely, to a large degree, on experience or other historical evidence to identify and support working assessments of environmental risk for “normal” forest management activities. That is to say, the coarse- and fine-filter processes should provide adequate, documented assessment of known environmental risks for known forest management activities.

The “coarse-filter” analysis should effectively address well known and understood environmental risks associated with forest management activities.

“Fine-filter” steps are designed to capture more specific environmental concerns. Unique area protection plans and species-specific management prescriptions are two examples of this process.

4. Identification of Stakeholder Interests

Stakeholders are explicitly included in the process of identifying criteria and indicators. They are consulted in the setting of targets for selected indicators and at several points throughout the planning process.

5. Evaluation of Risk

Each indicator selected is functionally evaluated within the planning process. Common activities with predictable environmental effects have normally been described in supporting information leading to regulations, guidelines, prescriptions or best management practices that have been designed to mitigate potential adverse environmental effects in an acceptable manner.

New or novel indicators are evaluated as part of the target-setting and practice-setting activities within the planning process. It is likely that, for some new indicators, the knowledge base supporting risk evaluation will be weak. It is especially likely when one is attempting to confirm a link between forest management activities and fluctuating levels of novel indicators. The planning system addresses this problem through a requirement to set and monitor targets for each indicator, followed by a requirement to review and improve the management of each indicator at the start of each planning cycle.

6. Environmental Risk Management Decisions

Decision making remains the responsibility of assigned staff of the Michigan Department of Natural Resources (MDNR) or their designates. They will be expected, before rendering a decision, to follow the direction of the forest management planning guide.

The requirement of the proposed forest management planning system to consider and monitor timber and non-timber values provides an opportunity to make risk management decisions for each identified indicator. It is expected that harvest, access, silvicultural or other operations

will be modified periodically to reduce the likely adverse effects to an acceptable level.

On a broader scale, the management system proposed also requires a regular evaluation of the influence of management activities on the forest estate over the short-, medium- and long-term. Although the model proposed will not address many of the indicators individually, it does project changes in sustainability of forest and habitat types.

7. Comparison with Predicted Targets (Pre-established endpoints)

The monitoring and reporting sequence for each indicator requires a comparison of the results at the end of a planning cycle with the predicted target.

8. Approved Activities

The forest management plan is a record of decision for the LSSF for a 10-year period. Activities approved in the plan should have met the requirements of an environmental assessment.

9. Additional Information

The proposed forest management planning guide includes information that addresses components of environmental assessments. That information, and its location in the planning guide, is as follows:

- the process for public consultation (Section 6.2)
- the process for the setting of targets and the establishment, monitoring reporting and evaluation of practices for environmental indicators in the forest management process (Section 4.4)
- the use of coarse- and fine-filter policies and practices in consideration of the management of the indicators (Section 6.4.3)
- processes for explicitly considering and documenting the consideration of non-timber values (Section 6.6.3)

In Section 10 of the present document, an outline for a formal risk assessment is provided.

10. Outline for a Formal Risk Assessment

In a case-study approach, it is likely that an outline for a risk assessment will include the following headings:

Introduction

Description of the Environment

Description of the Activity

Description of the Management Process
Lists of inputs and products

Identification of Hazard and Risk Scenarios

Identification of Values and Stakeholder Interests

Establishment of Likely Endpoints

Estimation of Effects

Calculation of Risk

Comparison with Other Activities

Determining Acceptability of Risks

The process is iterative in nature and, in general, reflects the decision-making process that is used commonly to accept, modify or reject any number of activities that occur normally in forest management.

References

Callaghan, B., T. Clark, C. Howard, and A. Hayes. 1999. A Forest Management Planning Guide for the Lake Superior State Forest. Report #13 from the Lake Superior State Forest Sustainable Forest Management Pilot Project. 89 p.

Canadian Standards Association. 1996. Z763-96. Introduction to Environmental Risk Assessment Studies. 42 p.

This report was completed as part of the requirements for a project funded by the Great Lakes Environmental Protection Fund. The objective of the project was to develop a new forest management planning system for the Lake Superior State Forest that meets sustainable forest management standards, specifically those of the Canadian Standards Association and the Forest Stewardship Council.

Project Partners:

Michigan Department of Natural Resources

Mater Engineering, Ltd.

Smartwood

BioForest Technologies Inc.

Craig Howard

Anne Hayes

Brian Callaghan (Callaghan & Associates Inc.)

Tom Clark (CMC Consulting)

Reports generated by this project include:

Project Summary: The Lake Superior State Forest Sustainable Forest Management Pilot Project

An Assessment of the Michigan Department of Natural Resources' Commitment to Sustainable Forest Management

The Lake Superior State Forest: A Description

Michigan Department of Natural Resources Operations Inventory: Survey Results

Roles and Responsibilities for Forest Management Planning in the Lake Superior State Forest

Public Participation in Forest Management Planning in the Lake Superior State Forest: Finding the Right Pathway

Establishing Criteria and Indicators for the Lake Superior State Forest

Workshop I Summary: Values and Indicators of the Lake Superior State Forest

Workshop II Summary: Establishing Targets, Practices and Responsibilities for the Indicators of the Lake Superior State Forest

Modeling Forest Management on the Lake Superior State Forest

Wildlife Habitat Projections for 15 Species in the Lake Superior State Forest

Risk Assessment of Forest Management for the Lake Superior State Forest

A Forest Management Planning Guide for the Lake Superior State Forest

Further information on this report or any of the reports listed may be obtained from:



BioForest Technologies Inc.
105 Bruce Street, Sault Ste. Marie, ON P6A 2X6
Phone: 705-942-5824 Fax: 705-942-8829
Email: bforest@soonet.ca