
Improving Practices, Reducing Harm

*Making best practices
a practical reality in
forest management*



A Forestry Field Audit in the Lower Spanish Forest

A Field Report Prepared By:



Sierra Legal Defence Fund

and



Wildlands League

A chapter of the Canadian Parks and Wilderness Society

November 2001



A Global Forest Watch Canada Report

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Making Best Practices a Practical
Reality in Forest Management

A FORESTRY FIELD AUDIT IN
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The third in a series of Field Audit reports prepared by:

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While being a publication of Global Forest Watch (GFW), GFW neither endorses nor rejects the recommendations as these go beyond the scope of the organization's mandate of monitoring activities within forests.

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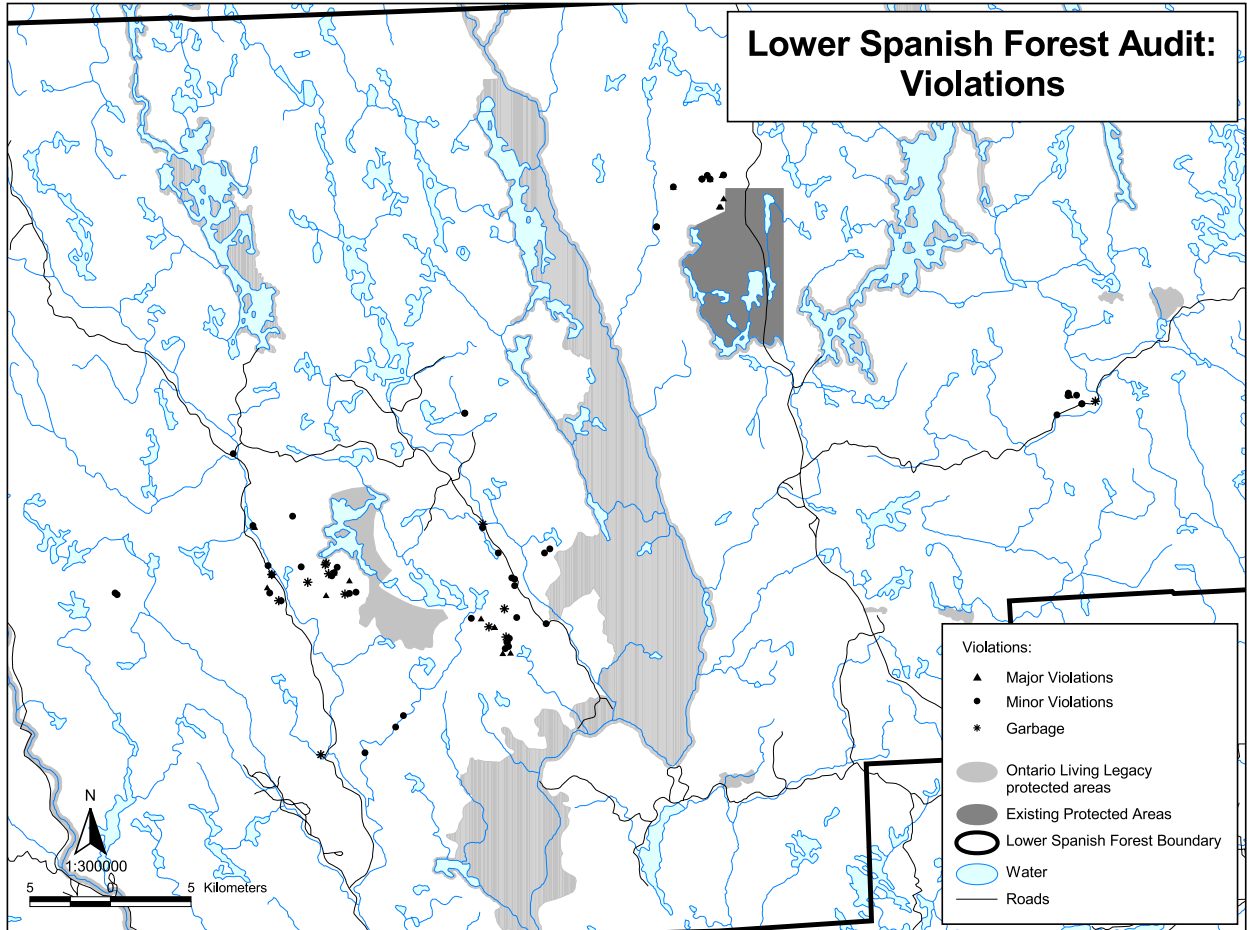


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Map of the Lower Spanish Forest Audit Violations



Location Map of the Lower Spanish Forest



Executive Summary

This report summarizes the results of a 1998-1999 field audit of recent logging operations in the Lower Spanish Forest northwest of Espanola, Ontario. The audit investigated compliance with legally binding forestry standards prescribed in Forest Management Plans (FMPs) and related documents approved by the Ontario Ministry of Natural Resources (MNR). The FMP was implemented by Domtar (formerly E.B. Eddy).

This report is the third in a series of quantitative field reports of forest industry compliance with forest management requirements produced by the Wildlands League and the Sierra Legal Defence Fund.

Summary of Field Audit Findings

Violations	Description
Logging in Area of Concern (AOC) Buffers	33% of the AOC sites inspected were violated.
Logging in Riparian Reserves	Of streams inspected, 88% of the reserves (3 metres of intact vegetation) were violated.
Inadequate Water Crossings	64% of water crossings resulted in sedimentation of streams, barriers to fish migration and/or alteration of watercourses.
Inadequate Pre Harvest Surveys	Leading to inadequate protection of identified wildlife values and waterbodies.

Of the 30 Areas of Concern (AOCs) examined, six (20%) of them showed minor violations, occurring when buffers were narrower than required by the FMP or when debris was found deposited in the reserve. Four (13%) violations were classified as major. Violations are considered major when the disturbance significantly detracts from the purpose of the reserve (when cutting in a buffer causes degradation of fish habitat).

The violations of riparian reserves typically involved skidders driving through wetlands, trees being cut down to the banks of small lakes and streams, and debris and slash being dumped into waterways. The combined violation rate of AOCs and riparian reserves examined was 59%.

A total of 53 stream or river crossings were investigated and 64% of the crossings either showed evidence of site damage, or were not examples of the “best practices” outlined in applicable guidelines, and therefore have the potential to adversely affect the waterway in the future.

An examination of the Annual Work Schedule (AWS) revealed that informal plan revisions agreed to by MNR might undermine the public participation process and compromise ecological values. These revisions included allowing roads through “No-Road Zones” and Moose Aquatic Feeding Areas (MAFA). Also discussed is the need for pre-harvest surveys to determine fisheries values to ensure that waterbodies and watercourses receive sufficient protection. If the fisheries value of a waterbody is unknown, a precautionary approach is advocated such that the waterbody is given the maximum applicable protection.

The compliance results presented in this report reflect the interpretation of forestry rules by the Sierra Legal Defence Fund and the Wildlands League. Post-audit field visits and discussions reveal that Domtar has a significantly different interpretation of the rules. The most significant differences in interpretation are related to which streams should receive reserves; the starting point from which reserve widths should be measured, and; activities permitted within reserves. Domtar’s interpretations generally favour less restrictive and less protective requirements.

Domtar asserts that the absence of any challenge of their practices by MNR implies that the regulator shares Domtar’s interpretation. We approached MNR to investigate this suggestion, but they declined to provide their perspective in this debate. The wide range of possible interpretation aptly illustrates the need for greater clarity of the guidelines.

The MNR’s Provincial Forest Technical Committee has completed a review of the guidelines used in forest management and an action plan is currently being developed by the MNR. This committee was created as an outcome of the Class Environmental Assessment on Timber Management and includes representatives of the forest industry, environmentalists, and others with an interest in forest management. A major outcome of the review is a proposed reorganization and simplification of guideline manuals, and clarification of guideline requirements (ArborVitae Environmental Services, 2000).

We have used the knowledge gained from these discussions, as well as experience gained from the balance of our audit program, to make overall recommendations. We are hopeful that they will be used by the Provincial Forest Technical Committee and the MNR as they work to revise forest management guidelines and their application framework.

RECOMMENDATIONS

These recommendations build on those made in previous reports, *Cutting Around the Rules* and *Grounds for Concern* with specific reference to policy initiatives that are currently underway or in the development stage.

-
- i) MNR has recently completed District Compliance Strategies for each of the 25 MNR districts in Ontario. These strategies should be reviewed in light of the findings of this and our previous audits to determine if the compliance problems described here would be detected and addressed through the implementation of these new strategies. If they would not then new mechanisms and/or staff resources should be allocated to this issue.
 - ii) MNR should issue timely reports to the Ontario legislature detailing the degree of compliance within each forest management unit as legally required under the Class Environmental Assessment for Timber Management on Crown Lands in Ontario.
 - iii) A public education program to involve Local Citizens Committees and the general public in logging inspections should be developed.
 - iv) The use of temporary bridges should be encouraged and expanded to other forest management units.
 - v) The issues of high water mark determination, and slope calculation procedure should be clarified as part of the guidelines review process in consultation with MNR biologists and other interested parties.
 - vi) FMPs and relevant guidelines should clearly articulate the prohibition of all operations in relation to harvesting, such as the dumping of slash, in areas designated as reserves. The clear language used in the Algoma 1995-2000 plan may be used as a template for improving plans and guidelines in this regard.
 - vii) The MNR should clarify the language in the relevant regulations to protect water quality during timber operations. The MNR should communicate to the forest companies that the *Riparian Code* applies to all waterbodies, including those not covered by the *Timber Management Guidelines for the Protection of Fish Habitat*, and including those not seen on 1:50,000 scale maps, particularly wetlands and small intermittent streams.
 - viii) The MNR should make it clear to forest operators that a minimum three-metre no-disturbance zone is required on all waterbodies. Trees within three metres of a waterbody should not be harvested.
 - ix) The MNR should develop a clear, simple set of guidelines to govern site impacts, such as rutting and compaction, associated with skidding. As a template, the Algonquin Forestry Authority (AFA) has come up with the following set of rules for operators to follow:

- 1) There are no restrictions when soil compaction is less than 30 centimetres.

-
- 2) If rutting is 31-60 centimetres deep (major), the maximum allowable distance of ruts is a total of 120 metres per skid trail.
 - 3) Rutting greater than 61 centimetres deep (extreme) is allowed for up to 30 metres on a skid trail. When compaction of the skid trail exceeds these guidelines, the trail will be closed until site conditions improve and the trail may be used without further compaction. If the rutting and compaction persists, the skid trail will be closed permanently and relocated.
- x) The MNR should conduct routine inspections of access roads and water crossings to ensure that the operators are in compliance with the guidelines. Companies should be required to conduct prompt repairs or rehabilitation where it is found that fish habitat has been impacted. It should be the responsibility of the company to ensure that prompt repairs or corrective action is taken when problems are observed in the field, irrespective of the age or origin of the road.
- xi) All cut blocks should be marked in the spring or summer preceding the planned cut. By implementing this scheduling condition, all small, or intermittent streams and wetlands missed by the mapping exercise will be identified on the ground and offered the appropriate protection.
- xii) Crews should be required to consider all alternatives before going ahead with a bridge or culvert installation, which will be in violation of the guidelines. Protection of the value identified, or the environment in general should be an over-riding concern when faced with inconvenience or expense on the part of the company.
- xiii) Domtar should develop an official internal directive (in writing) requiring retention of a substitute tree if a blue-marked tree is damaged, as part of their compliance standards. Various criteria should be included as mandatory considerations:
- 1) Skid trail layout should minimize haul area and reduce the probability of damage to residuals.
 - 2) Trees chosen, as replacement for retention, should be selected and located in a manner consistent with tree-marking guidelines for the shelterwood (e.g. % canopy closure, basal area, crown vigour characteristics, disease, etc.).
 - 3) Trees cannot be substituted if the marked tree was chosen for retention for its unique wildlife values.

The MNR should develop similar guidelines for operators across the province.

xiv) MNR should rigorously apply the conditions on exceptions to prescriptions. Amendments that undermine the protection of the values should not be approved. Stands that cannot be accessed profitably by the company without sacrificing values identified through the planning process should remain unallocated.

xv) When fisheries values are unknown because of lack of resources devoted to biological surveys the precautionary principle should be applied such that the AOC is given the maximum applicable protection.

xvi) The province should provide sufficient resources to the MNR to complete the surveying of the province's wetlands and should treat them in the same precautionary way as suggested for unsurveyed waterbodies in the interim.

xvii) The Forest Accord and the MNR Algoma investigation team recommended a review and consolidation of all existing codes, guidelines, and regulations concerning forest protection. This review has begun under the auspices of the Provincial Forest Technical Committee and should proceed to meet the terms of the Forest Accord, the recommendations of the MNR Algoma investigation team and the recommendations contained in the *1998/99 Annual Report of the Environmental Commissioner of Ontario*. The MNR should ensure that strong, unambiguous standards for forest protection are adopted through the ongoing review process. Where discretion or interpretation is necessary, a precautionary approach should be required such that forest values are protected.

1.0 Introduction

1.1 Ontario's Forests and How They Are Managed

Ontario is a province of forests. Tens of millions of hectares of Ontario's land area are covered by forests. These forests are many things to many people. They are a source of inspiration and wonder for many of us and play a large role in our identity as Canadians. For hikers, paddlers, anglers and hunters, they offer a bounty of recreational opportunities, while for timber companies, loggers, guides, tourist operators, trappers and others, they are a source of income, employment and products.

Ontario's forests also provide vital "ecological services" on which we all depend. They provide pure water and moderate the flow of rivers and streams. They help clean the air and maintain the planet's carbon balance, and they are home to thousands of species of animals and plants — many of which depend on areas of undisturbed old-growth forests. Finally, to their original Native inhabitants, Ontario's forests have been a "home" for many thousands of years.

The provincial government manages Ontario's Crown (public) forested land on behalf of the citizens of Ontario. It is supposed to do so in the public interest, ensuring that commercial logging activities do not interfere with the recreational, water quality, wildlife, fisheries and other forest-related values that are vitally important to all citizens of Ontario.

As logging rates have increased, there has been a growing public demand that timber interests be balanced with environmental protection measures in forest management. This demand exists at the international, national, provincial and local levels and is based on a desire to see some lands protected from industrial activities as well as a belief that logging activities must be socially, ecologically and economically sustainable.

Governments have responded with a variety of processes and policy reforms aimed at changing the way our forests are managed. In Ontario, these changes have been packaged together under the rubric of "sustainable forestry". In 1994, some of these policy changes were codified in new forestry legislation entitled the *Crown Forest Sustainability Act (CFSA)*. The *CFSA* requires the Minister of Natural Resources to ensure that forests are managed in a way that sustains environmental values (fish, wildlife, water quality, etc.), economic values (timber, trapping, tourism, etc.) and social values (recreational, heritage, etc.). Under the *CFSA*, the Minister of Natural Resources is made ultimately responsible for the approval of five-year Forest Management Plans (FMPs) and the one-year work schedules that result from these plans. As well as following these plans, forestry companies must adhere to site-specific environmental protection requirements outlined in various permits and approvals.

But along with this new sustainable forestry mandate, the Ontario government in recent years has been pursuing a vigorous deregulation and down-sizing program. Few departments have been harder hit than the Ontario Ministry of Natural Resources (MNR), the government agency that oversees the management and protection of public land in Ontario. The operating expenditures at the Ministry of Natural Resources have been cut by 21% from \$478 million in 1994/95 to a budgeted amount of \$376 million in 2000/01. The Ministry of Natural Resources capital expenditures have been cut by almost 55% between 1994/95 and 1999/2000. The ministry's staff has been cut almost in half from a total of 6,639 in 1994/95 to 3,380 in 2000 (Canadian Institute for Environmental Law and Policy, 2000). The forest planning and inspection departments have been particularly hard hit in the last few years.

These changes have led the Sierra Legal Defence Fund (SLDF) and the Wildlands League (WL) to question whether sustainable forestry initiatives have been effective in improving the care given to our public lands. The best way to answer this question is to examine whether sound forest management practices are being implemented on the ground. With this objective in mind, we investigate the degree to which forest protection requirements are adhered to during recent logging operations.

Our first two reports, *Cutting Around the Rules* (Algoma Highlands) and the *Grounds for Concern* (Magpie Forest and Algonquin Park), revealed unacceptably low compliance and enforcement levels. A thorough evaluation of the issues at the root of compliance with the current forest protection guidelines must include an exploration of the reasons for non-compliance from the point of view of the forest manager.

Following the field investigations in the Lower Spanish Forest by the Wildlands League and the Sierra Legal Defence Fund, joint discussions and field visits took place with forest industry staff, the Wildlands League and the Sierra Legal Defence Fund. We have concluded that there were problems with the interpretation of some key guidelines and recommend that they be re-evaluated and written more clearly to improve their implementation on the ground. It is hoped that the provincial guideline review process, coordinated by MNR's Provincial Forest Technical Committee, will eliminate these problems and improve forest practices.

The outcome of this study is important for several reasons. The Ontario government has transferred much of the responsibility for the management of public forests from the MNR to the forest industry. MNR involvement in FMP preparation, forestry monitoring and auditing has already been significantly reduced. There is widespread public concern that such a transfer may create significant risks to the long-term management and care of our public forests. It is therefore important to know if the current system is working and, if not, how it could be improved.

At a policy level the forest industry, environmental organizations and MNR are exploring new ways of improving forest management through the implementation of the 1999 Ontario Forest Accord. Many of the issues that the SLDF/WL audit program has identified need to be addressed within this new framework.

1.2 Study Background and Context

The Sierra Legal Defence Fund and the Wildlands League question whether sustainable forestry initiatives have been effective in ensuring the care of our public forest lands, in light of recent legal, policy and resource changes. An important component of this question is whether appropriate and required forest protection requirements are being implemented in the field. This study does not address the effectiveness of the government's forestry guidelines and regulations.

We began this examination in the Algoma Highlands and our first report, entitled *Cutting Around the Rules*¹ revealed unacceptably low compliance and enforcement levels in this region. The Ministry of Natural Resources responded clearly to our Request for Investigation under Ontario's *Environmental Bill of Rights*, supporting many of our findings and making recommendations that we return to in this report (refer to summary in Appendix A). However, we also encountered unacceptably low levels of compliance with habitat protection guidelines in Algonquin Park and Magpie Forest, which was documented in our report entitled *Grounds for Concern*².

The audit of forest management activities in the Lower Spanish Forest occurred during the summer of 1998, after the Algoma audit and before the audits of Algonquin Park and Magpie Forest. Unique to the audit of the Lower Spanish Forest was a subsequent discourse (in 1999) with industry on their perspective on the alleged violations noted by the audit team. In this report, the result of the Lower Spanish audit and the discourse with the forest industry is being used as a vehicle to examine and discuss the existing guidelines and issues related to interpretation and application of these guidelines.

The issues presented in this report also require examination within the context of recent developments within land-use and forest policy in Ontario. In March 1999, the Ontario government, members of the forest industry and the Partnership for Public Lands (Federation of Ontario Naturalists, Wildlands League and World Wildlife Fund Canada) reached an agreement that provides a framework for dealing with key forest management and public land allocation issues.

^{1,2} For copies of *Cutting Around the Rules* or *Grounds for Concern* please refer to www.sierralegal.org or www.wildlandsleague.org Internet websites, or contact either organization and request a copy.

This new framework is described in the *Ontario Forest Accord: A Foundation for Progress*. The Accord provides for immediate establishment of a 378 new protected areas, totalling over 2.4 million hectares. It also includes commitments to establish additional protected areas and to investigate the designation of intensive forest management areas, encourage independent market certification, review of fibre supply security and (most relevant to this report) review and improve forest management guidelines for the protection of wildlife habitat.

The spirit of the Accord also includes the intent that issues not specifically addressed by its terms may find solutions through multi-party dialogue. It is our hope that the issues identified and discussed here may be addressed in this manner.

1.3 The Study Area: The Lower Spanish Forest — An Ancient Pine Wilderness

The Lower Spanish Forestry audit examined harvest-related forest protection measures in some of Ontario's most valued forests. The Lower Spanish Forest Management Unit (574,000 hectares) contains both remote wilderness areas as well as more highly developed regions. It is located in central Ontario within the belt of mixed deciduous and evergreen forests that stretch from the Algoma Highlands to Algonquin Park along the north shore of Lake Huron (see map on page 4). The region's moderate precipitation and thin soils characterize this zone of ecological transition from the Great Lakes - St. Lawrence forests of the south into the boreal region of the north. The Lower Spanish Forest contains a diverse collection of wildlife and plant communities against the backdrop of some of the world's most spectacular remaining ancient red and white pine ecosystems.

1.4 Habitat Protection in Forest Management Planning

“A forest is more than just trees and timber. It is an ecosystem of trees, plants, animals, air, water, and soil. All the elements in a forest ecosystem depend on each other. If we damage any one of these elements, we risk damaging them all.”

MNR, A Guide to Forest Management Planning

The *Crown Forest Sustainability Act (CFSA)* itself does not contain specific forest and environmental protection requirements. Rather, these requirements are included in subordinate planning documents that are used to develop Forest Management Plans (five-year plans) and their associated Annual Work Schedules and approvals — all of which are legally binding. The planning documents include a variety of manuals and guidelines developed by the MNR which outline the various types of environmental protection requirements that are to be included in Forest Management Plans, Annual Work Schedules and other approvals.

It should be noted that in addition to environmental protection requirements that are included in forest plans and approvals there are a number of general environmental laws which apply to forestry activities. These include the federal *Fisheries Act* (which prohibits any harmful alteration of fish habitat); the federal *Migratory Birds Convention Act* (which prohibits the disturbance of any migratory bird's nest); the Ontario *Endangered Species Act* (which prohibits interference with the habitat of any endangered species, such as the bald eagle), the Ontario *Environmental Protection Act*, the Ontario *Water Resources Act* and the Ontario *Public Lands Act*. For a more detailed discussion of the process by which environmental protection measures are employed in Forest Management Planning please refer to the report entitled *Cutting Around the Rules* (1998) produced by the Sierra Legal Defence Fund and the Wildlands League.

1.5 Types of Environmental Protections in Forest Management

There are three main ways in which specific environmental protection requirements are imposed on forest operators. The first is through the identification of specific **Areas of Concern** (AOCs) in which logging operations can be prohibited or modified. The prescriptions associated with AOCs are described in the applicable FMP (and accompanying Annual Work Schedules). The second is through the application of **general standards** such as the *Code of Practice for Timber Harvesting Operations in Riparian Areas*, which protects areas adjacent to waterbodies, and the *Environmental Guidelines for Access Roads and Water Crossings*, which prescribe standards for road, bridge and culvert installations. These standards must be adhered to unless a specific exception has been provided in the FMP. The third is by including **specific environmental protection requirements** in approvals for certain types of activities, such as authorizations for fish habitat alterations under the *Fisheries Act*, approvals for navigable water crossings under the *Navigable Waters Protection Act*, or permits for various activities on public lands under the *Public Lands Act*.

2.0 Field Inspection Methods for the Lower Spanish Forest Case Study

A sub-set of the logging operations in the Lower Spanish Forest, which were undertaken during the 1996 to 2000 FMP, were investigated on the ground during the summers of 1998 and 1999. The audit was carried out in the south-central portion of the unit. All operations that had taken place within a 13 “tile” area were reviewed.

Tiles are geographic areas approximately 10 kilometres by 10 kilometres (similar in size to a township). Field staff relied on plans and documents provided by the MNR office in Espanola and maps produced by Domtar. The key documents include: the FMP and associated Annual Work Schedules (AWS), Domtar’s 1996-2000 allocation maps and the various MNR guidelines applicable to forestry operations. Area of Concern reserves (buffers) established through the FMP and riparian reserves required by the *Code of Practice for Timber Harvesting in Riparian Areas* (the *Riparian Code*) were inspected. As well, compliance with standards applicable to the construction and maintenance of water crossings was also audited. These standards are listed in the MNR’s *Environmental Guidelines for Access Roads and Water Crossings*, and are legally binding under the FMP, AWS or the Class Environmental Assessment for Timber Management on Crown Lands in Ontario (Class EA Decision). Our study sought to determine the degree of compliance with these basic standards meant to protect water quality, fish and wildlife. Anecdotal observations of apparent substandard road construction and maintenance, waste violations and violations of harvest prescriptions were also noted where encountered.

2.1 Audits of Areas of Concern

Areas of Concern (AOCs) outlined in the current Lower Spanish FMP were examined to determine the degree of compliance with the prescriptions specified for the AOC in question. The prescriptions applicable to AOCs differ from site to site, so each AOC was audited vis-à-vis the specific prescription applicable to it. These prescriptions are developed in conjunction with MNR guidelines, which suggest specific measures to protect values such as fish, moose, birds and recreation areas. All AOCs in the 13 tiles studied were examined unless field staff were denied access through road closures, because there were current operations on the site (which could pose a safety concern), or because the planned harvest had not yet been undertaken. AOCs were located in the field through use of company allocation maps and AWS maps. The company maps indicate the location of AOCs in the cut blocks, and indicate the operational prescriptions to be applied. Locations were crosschecked with a Global Positioning System (GPS) and topographic maps. The reserves and modified zones prescribed by the AOCs to protect wildlife and waterways were then audited on the ground.

When an AOC buffer width as measured in the field was found to deviate from the prescription required by the plan it was documented and classified according to the following criteria:

- ▶ Minor violations included no-cut reserves which were disturbed near the edge or violated in less than 10% of the length of the buffer. Dumping slash and debris in AOC reserves was also considered a minor violation.

- ▶ Major violations occurred when the disturbance was found to significantly detract from the purpose of the reserve. For example, where a 30-metre buffer meant to protect sensitive fish habitat had been breached by logging equipment causing sedimentation and barriers to migration, the primary function of the AOC was found to be significantly compromised. Also, a reserve that was consistently measured more than 20% narrower than required was considered to be a major violation.

The classification of violations was modeled after the MNR system for reserve violations outlined in its revised *Forest Compliance Handbook*.

2.2 Audits of Riparian Reserves (Waterway Protection)

The *Code of Practice for Timber Management Operations in Riparian Areas* states that the following specific practices are to be followed:

- a) Trees must not be felled into waterbodies at any time of year. No debris of any description is to be deposited in waterbodies.

- b) No logging debris is to be left on the banks of streams, rivers or lakes.

- c) Equipment operating adjacent to waterbodies shall not cause destruction or slumping of banks.

- d) Equipment is not to travel within streams or rivers during harvest or renewal operations so as to cause damage to banks or beds. Stream crossings are to be kept to an absolute minimum.

- e) Establishment of tertiary roads within riparian areas is only permitted in exceptional cases, where no other reasonable alternative exists.

- f) A narrow filter strip of approximately three metres of undisturbed forest floor or vegetation (not necessarily tree species) is to be left on the banks of waterbodies except where necessary to cross a stream.

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- g) Equipment is not to be refuelled or lubricated in riparian areas. Gasoline and oil for such equipment are not to be stored in riparian areas.

Therefore, in addition to the specific AOC reserves established for selected waterways and habitats on a site-specific basis, a minimum three-metre reserve is required along all waterbodies by virtue of condition (f) of the *Riparian Code*.

Accordingly, small streams and wetlands not protected by AOCs were also inspected when encountered in the field to determine if the three-metre reserves were intact along the banks of waterbodies as required. Violations of riparian reserves were also classified as major or minor. Where the three-metre zone was largely intact with a small number of trees disturbed, or where slash and debris was deposited in the reserve, or where there was evidence of a skidder driven through a wetland, the violation was considered minor. Destruction of stream beds occurring as a result of logging equipment driving through streams were considered major violations. For example, cases where the stream was disturbed throughout its length, with cutting and dumping occurring, would be considered major violations.

2.3 Audits of Stream Crossings and Road Construction

Streams that were crossed by a logging road were investigated for evidence of siltation problems, culvert installation and placement, diversion of water, dumping of debris, etc. Improper installation or maintenance of a water crossing, resulting in siltation of non-fish bearing waters was considered minor. These occurrences would constitute violations of the MNR's *Environmental Guidelines for Access Roads and Water Crossings*, compliance with which is mandatory unless explicit exception has been made in the FMP, by provisions of the *Forest Operations and Silviculture Manual* (FOSM) and the Class EA Decision. Siltation and barriers to the free migration of fish were considered major violations in fish-bearing waters since they are prohibited by both the *Timber Management Guidelines for the Protection of Fish Habitat* and the *Environmental Guidelines for Access Roads and Water Crossings*. Other major violations included cases where the streambed was destroyed or the course of the stream was altered, thereby impeding flow or causing persistent flooding.

All bridges in the tiles studied were inspected for compliance with construction and maintenance standards. Given the number and length of logging roads in the area, problems with road construction or maintenance (as well as a waste/garbage problems) were noted only when encountered. Siltation was considered to be a minor violation when occurring in non-fish bearing waters, and a major violation whenever fish were caught on site. This classification was based on the standards described in the MNR's *Environmental Guidelines for Access Roads and Water Crossings*.

2.4 Forest Management Planning and Annual Work Schedules

As part of the audit planning process the Forest Management Plan and Annual Work Schedules are reviewed. As a result of this review process, issues are discussed with respect to Forest Management Planning and AWS revisions. In particular, the protection of fisheries values in unsurveyed streams and possible impacts associated with revisions to AWSs are reviewed.

2.5 Anecdotal Observations of Other Violations

Conducting this audit gave our field investigators an opportunity to witness many of Domtar's operations on the Spanish Forest. Where our investigators encountered obvious violations to forestry rules or prescriptions, these incidents were recorded and are discussed in this report.

2.6 Follow-Up Visit and Discussion with Domtar Representatives

During the summer of 1999 representatives from Sierra Legal, the Wildlands League and Domtar visited some of the sites of identified non-compliance to better understand the underlying issues from an industry perspective. Domtar followed up the site visit with a letter describing their view of many of the alleged incidents of non-compliance based on their interpretation of protection requirements (attached as Appendix C). Both the site visits and correspondence from Domtar are discussed relative to observed non-compliance and the relevant forest operations guidelines.

3.0 Discussion of Audit Results

3.1 Area of Concern Reserves

Areas of Concern (AOCs) inspected in the Lower Spanish Forest were intended to protect values such as Moose Aquatic Feeding Areas (MAFAs), coldwater streams, self-sustaining trout lakes, headwater areas, canoe routes and heronries. A total of 30 AOC buffers were examined. Prescriptions for AOC reserves vary depending on the value to be protected. For example, coldwater streams are generally provided with a reserve and an adjoining modified zone ranging from 30 to 90 metres. The reserve is a 30-metre buffer in which harvesting operations are prohibited, and the modified zone allows partial harvesting only. MAFAs are to be surrounded by a 120-metre reserve measured from the treed edge of the waterbody.

Of the 30 AOCs examined, one-third of them violated the prescriptions required in the FMP (Table 1). Most of the violations involved the cutting of trees in reserves or the dumping of slash and debris in AOC reserves.

For example,

- In a 30-metre no-cut reserve meant to protect a coldwater stream, all trees and brush were removed up to the bank, and skidders had pulled logs through the stream, altering the streambed, diverting flow and causing flooding (see photo).



Table 1. Summary of Area of Concern Violations in the Lower Spanish Forest

Type of AOC	Reserve Intact	Minor Violations	Major Violations	Total Violations	Number of AOCs Audited
Moose Habitat	4	0	1	1	5
Fisheries Protection	13	5	3	8	21
Recreational Value	2	1	0	1	3
Heronry	1	0	0	0	1
Total	20 (67%)	6 (20%)	4 (13%)	10 (33%)	30

3.2 Riparian Reserves

All AOCs, as well as all small streams and wetlands encountered that were not protected by AOCs were inspected to determine if the three-metre reserves were intact along the banks of waterbodies as required. Various problems were discovered.

Of the 25 riparian reserves investigated, 22 (88%) were violated (Table 2). In many cases, the violations involved skidders driving through wetlands, cutting of trees right down to the banks of small lakes and streams, and dumping debris and slash into waterways. Furthermore, 32% of the small streams, lakes and wetlands surveyed (8 sites) contained evidence of skidders having driven in streams and wetlands.

For example, one significant *Riparian Code* violation included cutting right down to the shore of a small lake, and dumping of slash and debris into the water (see photo).



Table 2. Summary of the 3-Metre Riparian Reserve Violations in the Lower Spanish Forest

Reserve Intact	Minor Violations	Major Violations	Total Violations	Number of Reserves Audited
3 (12%)	13 (52%)	9 (36%)	22 (88%)	25

Total Waterway Protection

Taken together, the results of the 29 AOC inspections which affect waterways, and the 25 *Riparian Code* inspections reveal that, in total, 59% of the reserves meant to protect rivers, streams and wetlands were violated (Table 3).

Table 3. Summary of Waterway Reserve Violations (Area of Concern and Riparian Reserves) on the Lower Spanish Forest

Reserve Intact	Minor Violations	Major Violations	Total Violations	Number of Reserves Audited
22 (41%)	19 (35%)	13 (24%)	32 (59%)	54

3.3 Access Roads and Stream Crossings

A total of 53 stream or river crossings were investigated and 64% of the crossings showed evidence of site damage (such as stream course alteration, or barriers to fish migration) to the waterway, or were not examples of the “best practices” outlined in the guidelines, and therefore have the potential to adversely affect the waterway in the future. Table 4 summarizes the violations according to crossing type; Table 5 outlines the observed impacts associated with the improper installation of culverts and bridges, and careless operation of winter crossings.

Table 4. Summary of Stream Crossing Violations in the Lower Spanish Forest

	Acceptable Crossing	Minor Violations	Major Violations	Total Violations	Number of Reserves Audited
Culvert	13	20	4	24	37
Bridge	5	5	0	5	10
Winter Bridge*	1	4	1	5	6
Total	19 (36%)	29 (55%)	5 (8%)	34 (64%)	53

** a winter bridge is used to cross a wetland or stream without using a culvert or bridge when the waterbody is frozen over.*



This stream crossing in Solski Township had a seriously blocked culvert, resulting in flooding and siltation.

Table 5. Evidence of Site Impacts Associated with Stream Crossing Violations in the Lower Spanish Forest *

Siltation of Watercourse	Barriers to Fish Migration	Alteration of Watercourse
13	17	14

**the number of sites described here is greater than the number of stream crossing violations because many streams showed evidence of more than one of these impacts*

3.4 Adherence to Annual Work Schedules

A routine procedure that occurs between the local MNR office and Domtar in Espanola may be undermining the Forest Management Planning process for the Lower Spanish Management Unit. Annual Work Schedule (AWS) revisions are meant to allow flexibility for the company when operating conditions in the field are not consistent with those expected from the AWS and FMP. For the record, Domtar has shown sound judgment in its use of discretionary powers to alter the silvicultural prescription applied to stands. For example, red and white pine dominated stands exist throughout much of the Lower Spanish Forest. In several instances, the company switched from the clearcut prescription, which was allowed in the work schedules to a shelterwood prescription, which would facilitate the regeneration of pine in those stands that may have improperly assessed in the Forest Resource Inventory (FRI) maps. However, the approved Annual Work Schedule amendments for 1997 and 1998 also show some disturbing trends.

AMENDMENT EFFECT	# AMENDMENTS
Roads approved in No-Road Zones (NRZ)	8
Stream crossings added	12
Timing restrictions extended (for crossing coldwater streams)	3
Roads through Moose Aquatic Feeding Areas (MAFAs)	4
Road construction in stream buffers	2
Roads through headwater areas	1
Increase approved harvest of white pine	3
Add site preparation	6
Add roads	1
Add harvest blocks	1
Relocate crossing	3
Waive “plan and spec” requirements for bridge construction approval	2
Reassign AOC values (decreasing reserve width)	1
Total	47

These changes to the FMP, including changes to prescriptions on AOCs such as roads constructed through MAFAs, are made simply on the basis of verbal agreements between company and MNR staff, or through informal memos of which there is no public record.

Approval for the AWS amendments by the local MNR office seems to be frequent and automatic, without any evidence of public consultation with respect to the changes. For example, in the case of exceptions to No-Road Zones (NRZs), these 8 amendments amount to roads being constructed through 38% of the AOCs declared as NRZs because of an identified value to be protected, such as a remote tourism lodge. And this is in only two years of a four-year planning period. Similarly, amendments allowed roads through 11% of the moose habitat protection buffers declared. In the two-year period examined, not a single company request for amendment was denied, although in some cases, the MNR attached special mitigative conditions to the approvals.

Not only do these changes serve to undermine public participation in the Forest Management Planning process, they may also lead to a violation. For example, the AOC prescription for MAFAs which includes access restrictions prohibiting roads, has the following note:

“If no other road alternative exists, roads may be permitted in the AOC with MNR approval on an individual case basis.” (emphasis added)

In the 1996 AWS amendments, roads were approved through MAFAs by the MNR when alternatives to this option did exist, and even when those alternatives had been brought to the ministry’s attention by the company. In a ministry memo dated November 18, 1996 a biologist for the Lower Spanish Forest district made the following comments when considering whether or not to approve the company’s request for approval to locate a road through a MAFA:

“...[the amendment will have] minimal impact...however, accessing the wood from the south via a temporary bridge across AOC 7289 (unsurveyed stream) would also be a low impact option.”

Therefore, in this case, the approved amendment appears to be in violation of the condition requiring no alternative road to exist. Often, the only rationale given for sacrificing the values sought to be protected through the Forest Management Planning process is convenience with respect to operability and cost-saving on the part of the company.

Further problems arise with respect to the approval of roads through No-Roads Zones put in place to protect remote tourism values. The access restriction in the prescription for Remote Tourism Lakes (RTLs) prohibits roads within 400 metres of the treed edge and states that *further* restrictions may be necessary to protect the values. In no case was the AWS amended to increase protection around RTLs. The note attached to the prescription reads, “This restriction may be lifted if it can be demonstrated that access can be controlled by other means”. In the Lower Spanish Forest, and elsewhere, experience has shown that once roads are built, it is very difficult to prevent motorized access to lakes for recreation, hunting and angling.

Consider also the AWS amendments relating to NRZs in 1997. Between April and June of that year, four amendments were approved which allowed roads to be constructed through NRZs. In a memo dated June 19 from the MNR to Domtar (then E.B. Eddy), the area biologist made the comment that it would not be desirable to build roads through all NRZs, and that the company should not expect the MNR to approve the amendments in every case. They proceeded, however, to approve another amendment for a road in a NRZ later that month. By August, the company was requesting yet another similar amendment. The MNR biologist responded by requesting Domtar to produce a list of roads that had been abandoned in the past and had been successful in restricting access. Of the five examples described by the company as good work, site inspections showed that only one example of past abandonment had been successful at meeting access concerns. A letter to Domtar dated September 26, from the MNR biologist expresses these concerns in the following way:

“...Although we recognize E.B. Eddy’s (now Domtar) efforts to address access concerns, the bottom line is that once a road is constructed it is difficult to prevent access. The best alternative will always be to avoid road construction in sensitive areas. The creation and subsequent abandonment of tertiary road within designated NRZs should be considered to be the last and least desirable alternative. All other reasonable options must be exhausted prior to authorization of the road.”

Despite the concerns of the biologist, the MNR proceeded to approve two more roads through No-Roads Zones that year — in both cases no consideration of alternatives was noted. One of the amendments allowed road construction in the NRZ meant to prevent poaching of fish in lakes within Halfway Lake Provincial Park.

3.5 Anecdotal Observation of Violations: Shelterwood (Partial-Cut) Prescriptions

Compliance with shelterwood tree-marking standards was not the focus of this study. However, where irregularities were observed during field visits, these were noted for follow-up by MNR inspectors. Normal practice is to mark trees to be retained with blue paint.

Several stumps marked with blue paint were found and documented. Because of the serious nature of harvesting trees specifically marked for retention, we wrote the MNR to request clarification of the tree-marking procedure. MNR advised us that unless a specific exception is made in a Forest Management Plan, all trees painted with a blue ring are to be retained, while unmarked trees may be harvested. Violations of this prescription were noted at six different shelterwood stands. At one site a serious deviation from the prescription was noted. In a single stand, a total of eight large red pines were removed despite having been marked for retention.

4.0 Issues Regarding Guideline Interpretation, Forest Operations and Planning

This section discusses the issues that underlie the observed field violations, including different interpretations of guideline requirements by Domtar staff. Also discussed in this section are the good practices noted by the auditors in the field and the problems observed with the planning process related to protection of unsurveyed waterbodies and revisions to Annual Work Schedules. We first examine “Guideline Interpretation and Non-Compliance” followed by “Forest Operations Issues”, “Issues Regarding Forest Management Planning and Annual Work Schedules” and finally, “Examples of Good Practices Found in the Lower Spanish Forest”.

4.1 Guideline Interpretation and Non-Compliance

This section discusses guideline interpretation issues and makes recommendations for clarification where necessary.

4.1.1 Issues Regarding the Measurement of AOC Reserves

With respect to the issue of incursions into AOC reserves, WL/SLDF observes that Domtar’s interpretation of the technical aspects of measuring the prescriptions favours less restrictive, and therefore less protective prescriptions.



This is illustrated in the example of an unsurveyed stream, which travels through a wetland, as shown in the photo.

AOCs with unknown fisheries values are assigned the prescription of a slope-dependent modified zone. The modified zone permits selection harvest only and is measured from the high water mark. Steeper slopes require a wider AOC to prevent the effects of erosion and sedimentation associated with harvesting from impacting the waterway.

Slope	AOC Width
0-15%	30 metres
16-30%	50 metres
31- 45%	70 metres
46% +	90 metres

The major technical issues in dispute between the parties are the method of determining the high water mark and the point of measurement of slope calculation.

The guideline clearly defines the high water mark, “as the normal spring water level, which includes seasonally inundated areas associated with waterbodies.” In our opinion the term “seasonally inundated areas” includes wetlands bordering streams. However in Domtar’s opinion the high water mark is the edge of the “clearly defined channel or water’s edge.”

The determination of the high water mark is crucial in determining the amount of protection given to a waterbody. First, the high water mark is the point from which the buffer width must be measured. Second, it is the point at which the slope must be measured to determine the width of the slope-based reserve. In both cases, the restrictive definition of high water mark used by Domtar would result in a narrower buffer of protection, which may result in wetlands bordering streams not receiving protection by the AOC. Using this method, the modified cut zone would run through the wetland and end somewhere near the edge of the creek or waterway (see Figure 4.1).

Domtar’s stated opinion is that, “swamps and grassy areas provide excellent erosion/siltation protection.” From such a statement we can conclude that Domtar believes that the AOC is only designated to protect streams and not bordering wetlands. Sierra Legal and the Wildlands League feel that both should be protected and that wetlands should not be subjected to erosion and siltation from forest operations.

At issue here is what values are to be protected. In a narrow interpretation, only the stream itself will be protected. With a broad approach, the entire waterbody (wetland and stream) is to be protected. The wetland associated with the stream should be considered part of the ecological value to be protected. Wetlands are not simply to be used as buffers, but should be offered the protection associated with the value.

Domtar staff opinion: “The water’s edge is defined as the normal high water mark. Where there is a clearly defined channel or water’s edge, as in this case, the AOC should be measured from the edge of the creek.”

SLDF/WL opinion: The high water mark should be the edge of the wetland bordering the stream. When the original field visits was made in July there was standing water right up to the edge of the wetland grasses. Therefore the wetland can certainly be considered a “seasonally inundated” area.

Industry compliance with environmental protection measures on Crown land should be easily measurable by concerned citizens, particularly in the new climate of “industry self-regulation”. Therefore, the methods for determining these significant values of high water mark and slope need to be clarified. This need is consistent with MNR conclusions in their response to *Cutting Around the Rules*:

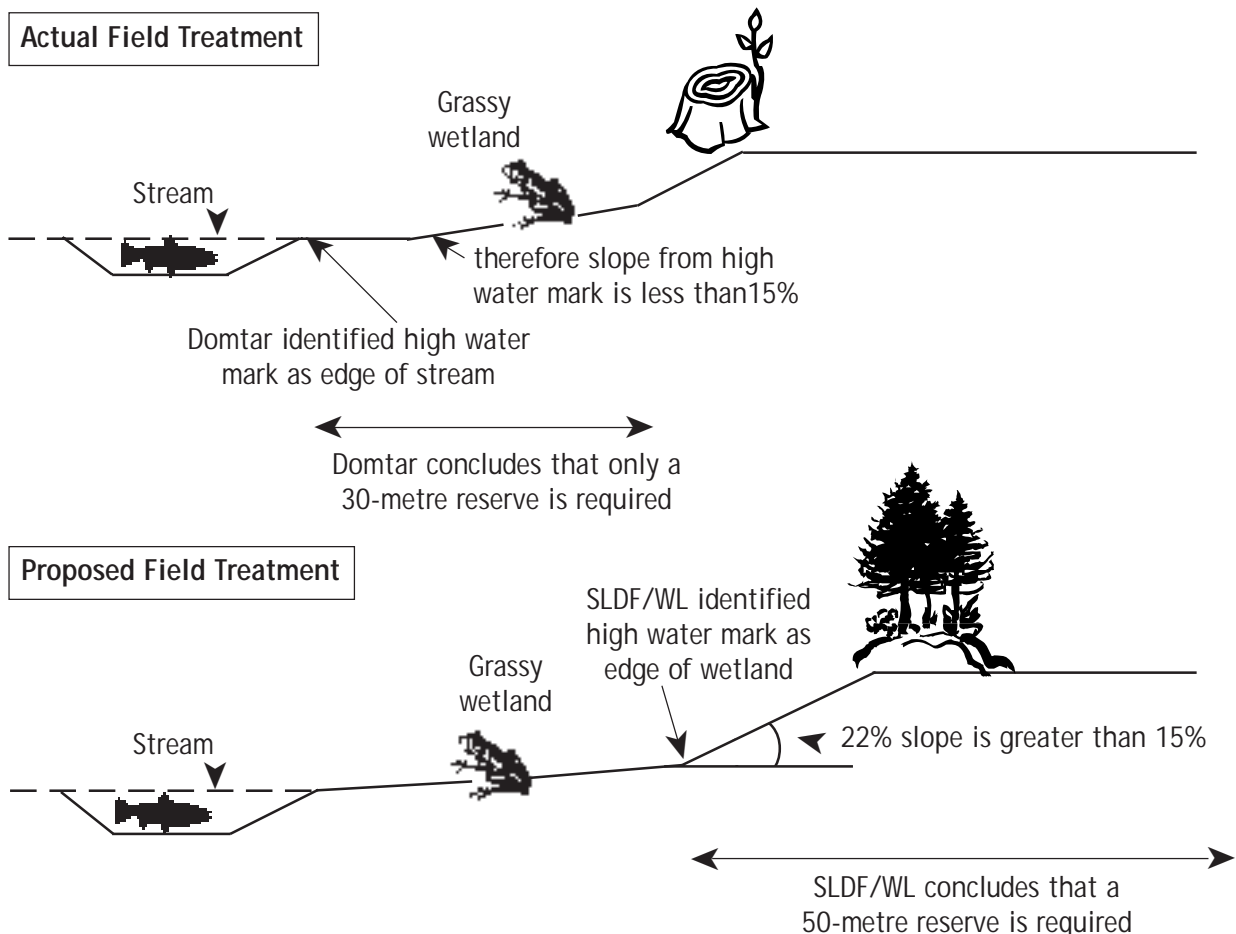
“The Ministry will be looking for ways to make it easier for the public to report what they think might be potential wrong-doings in the forest. This will help make the forest compliance system more responsive and effective.”

Domtar staff opinion: “The AOC width was determined by calculating the slope progressively as one moves away from the waterbody. In this case, the first thirty metres adjacent to the creek were flat, requiring a 30-metre Area of Concern....

“It should be noted that swamps and grassy areas like the one visited provide excellent erosion/siltation prevention control.”

SLDF/WL opinion: The slope should be measured from the edge of the wetland. This method would determine the slope to be a much steeper 22%, requiring a 50-metre modified zone extending upwards.

Figure 4.1. Schematic diagram demonstrating the difference between the Domtar position and SLDF/WL position with respect to measurement of AOC reserves



RECOMMENDATION: The issues of high water mark determination, and slope calculation procedure should be clarified as part of the guidelines review process in consultation with MNR biologists and other interested parties.

4.1.2 Issues Regarding Disturbance Due to Harvesting Operations in AOC Reserves

A difference of opinion exists between SLDF/WL and Domtar over the practice of dumping slash and debris in AOC reserves.

There is a great deal of variance among post-*CFSA* Forest Management Plans in the level of detail describing what is actually prohibited on the ground. Prior to the *CFSA*, harvest approvals set out a list of specific conditions applicable to operations at a given stand or group of stands. They typically included conditions on skidding, tree marking, silviculture and AOCs. For example, the Supplementary Documentation of the 1995 Algoma FMP sets out the conditions, which are attached to harvest approvals. These include specific prohibitions on any disturbance in reserves.

Under the *CFSA*, stand-specific harvest approvals containing specific operational conditions are no longer issued. Instead, operators are directed to comply with the *CFSA* and its regulations, the Annual Work Schedules, the *Forest Operations and Silviculture Manual* and any operations prescriptions applicable to the area. A comparison of the direction given for operations in AOC reserves in the two plans shows a wide difference in approach.

In the 1995-2000 Algoma Forest Management Plan the following condition appears:

Where an AOC is identified as having a **reserve** in which no timber management operations are permitted, company staff or their contractors will ensure that **no disturbance** occurs within this reserve area. The definition of disturbance shall include but not be limited to: felling of trees, piling logs or pushing debris into the reserve area, leaving garbage or machine parts within the reserve area or running machinery within the reserve area.

In 1996 to 2015 Lower Spanish Forest Management Plan (Section 4.9.2) the following makes up part of the text under the heading “Operational Prescriptions for AOCs”:

In general, harvesting, renewal and maintenance operations are prohibited in reserves and restricted in modified areas as specified for individual AOCs.

In the section of the plan that specifies the prescriptions for individual AOCs, some AOC harvest prescriptions clearly state “no harvesting is allowed” in reserves.

While it appears that both approaches are intended to prohibit all forestry operations in reserves, our observations indicate that in several situations, operations associated with harvest (debris piles, slash, etc.) are in fact occurring in reserves. The sites shown in the photos below were found to have logs, debris and trees felled into AOC reserves on the Lower Spanish Forest.



These photos illustrate the encountered practice of piling logs in AOC reserves and the felling of logs and dumping of slash and debris in reserves.

AOC prescriptions for reserves typically prohibit all forest operations in the reserve as defined in the CFSA, which includes all harvest related activities. Activities such as piling or dumping of debris and slash are clearly activities associated with harvesting.

The *Timber Management Guidelines for the Protection of Fish Habitat* clearly prohibits the felling of trees or deposition of debris in watercourses. One of the reasons for this is the increase in oxygen demand on the water column caused by decomposition of logging debris. The *Timber Management Guidelines for the Protection of Fish Habitat* states that, “the felling, slashing, skidding and yarding of timber near watercourses can result in debris entering the water.” The slightest impact on dissolved oxygen levels in a watercourse can have a detrimental effect on fish, particularly lake trout which are highly sensitive to oxygen depletion caused by nutrient enrichment.

Domtar staff opinion: “This is not an operational practice of the company however in our review of MNR policies and guidelines we were unable to find any reference to this practice as an infraction.... We believe our Area of Concern identification and marking procedures are sound and we would like to see the audit reflect this fact.”

SLDF/WL opinion: Typical AOC prescriptions for reserves are intended to prohibit all forest operations (defined in the CFSA as: “the harvesting of a forest resource, the use of a forest resource for a designated purpose or the renewal or maintenance of a forest resource, and includes all related activities”). Activities such as piling or dumping of debris and slash are clearly activities associated with harvest.

RECOMMENDATION: FMPs and relevant guidelines should clearly articulate the prohibition of all operations in relation to harvesting, such as the dumping of slash, in areas designated as reserves. The clear language used in the Algoma 1995-2000 plan may be used as a template for improving plans and guidelines in this regard.

4.1.3 Issues Regarding Interpretations and Application of the Riparian Code

MNR concluded, after investigating infractions identified by the Wildlands League and Sierra Legal in the Algoma Highlands, that the *Riparian Code* and related implementation documents are in need of revision due to perceived ambiguities. In the *Cutting Around the Rules* report, we identified the fact that the *Riparian Code* was being routinely violated and surmised that this was a result of it being improperly implemented in FMPs and related documents.

The field visits taken by SLDF/WL and Domtar revealed further differences in interpretation of the *Riparian Code*.

Application of the Riparian Code

The debate over the application of the *Riparian Code* centres on whether intermittent streams, wetlands and small lakes (such as the one in the Lower Spanish Forest shown on page 33) should receive protection.

Domtar staff opinion: “The main rule that we follow is to apply the code if the waterbody is shown on a 1:50,000-scale map.”

SLDF/WL opinion: The conditions in the *Code* should be applied to all waterbodies including wetlands and intermittent streams.

In contrast to the industry position that the *Riparian Code* is only to be applied in conjunction with the *Timber Management Guidelines for the Protection of Fish Habitat*, which according to MNR Fisheries Branch only protects waterbodies shown on a 1:50,000 scale map, we believe that the *Riparian Code* specifically states that it is intended to protect water quality generally. Sierra Legal and the Wildlands League believe that the industry interpretation is incorrect and violates the *Riparian Code* requirements to generally prohibit these activities in waterbodies, lakes or streams.

Conditions (a), (b) and (f) of Section 5 of the *Riparian Code*, reproduced below, make it clear that some of its provisions apply to “waterbodies” generally, not just those with fisheries values:

“ 5. Other

The following specific practices are to be followed:

- a) Trees must not be felled into waterbodies at any time of the year. No debris of any description is to be deposited in waterbodies.

-
- b) No logging debris is to be left on banks of streams, rivers or lakes....
 - f) A narrow filter strip of approximately three metres of undisturbed forest floor or vegetation (not necessarily tree species) is to be left on the banks of waterbodies except where necessary to cross a stream.”

Examination of the *Riparian Code* conditions reveals that a distinction was meant between “waterbodies” (a) and “streams, rivers, or lakes” (b). Therefore, “waterbodies” must be taken to include more than just streams, rivers and lakes, and should include small intermittent creeks as well as wetlands. In practice, Domtar does not apply the conditions of the *Code* to their operations around wetlands.

This more encompassing interpretation of the areas requiring protection under the *Riparian Code* is consistent with the intended purpose of the *Code* which was to protect water quality, rather than only providing protection for areas with fisheries values that already receive specific protection through the *Timber Management Guidelines for the Protection of Fish Habitat*.

“This code of protection was developed by MNR and MOE to expressly protect water quality. Therefore, the objective of this code is to protect water quality through describing good, on-the-ground timber management practices that are to be undertaken in riparian areas. This code is to be **used in conjunction with the *Timber Management Guidelines for the Protection of Fish Habitat* and the Fisheries Branch policy FL.3.03.01.**”

One important attribute of water quality is temperature, which is in part regulated by the shade of trees. The *Timber Management Guideline for the Protection of Fish Habitat* states the following in section 5.5:

“Maximum protection from heating requires that **the stand extend the full length of the stream and also protect feeder streams and springs.**”

This statement makes it clear; shade cover is needed to not only protect local fisheries but upstream non-fish bearing water which may feed into fish bearing waters. This is where the *Riparian Code* becomes a vital factor and one of the reasons it must be used in conjunction with the *Timber Management Guideline for the Protection of Fish Habitat*.

Furthermore, given that water temperature is in fact a water quality indicator then the *Riparian Code* was intended to protect water temperature. The *Provincial Water Quality Objectives (PWQO)* of the Ontario Ministry of Environment includes temperature as one of the water quality objectives for the Province of Ontario. The *PWQO* states:

“The natural thermal regime of any body of water shall not be altered so as to impair the quality of the natural environment. In particular, the diversity, distribution and abundance of plant and animal life shall not be significantly changed.”

Given that the *Riparian Code* does not list specific water quality objectives we must defer to the *PWQO* and conclude that temperature is an important factor in water quality and must be protected.



Cutting took place right up to a small lake.

The Three-Metre Riparian Reserve

Domtar staff have interpreted the *Riparian Code* as permitting harvesting within the three-metre riparian area as long as trees are not felled into the water. In our opinion, the harvesting of trees in the riparian zone definitely constitutes a disturbance.

Figure 6 of the *Riparian Code* (reproduced on page 34) illustrates the intent of the MNR in the creation of the “riparian reserve”. In the figure the first three metres of land adjacent to the waterbody, whether or not trees are present, remains undisturbed. The text of the figure explains that the operators have left a “minimum three-metre filter strip of undisturbed vegetation along the shore to serve as a protective barrier and filter from upslope activities.”³

³ *Code of Practice for Timber Management Operations in Riparian Areas*, OMNR, 1991. Figure 6. p.8.

RECOMMENDATION: The MNR should clarify the language in the relevant regulations to protect water quality during timber operations. The MNR should communicate to the forest companies that the *Riparian Code* applies to all waterbodies, including those not covered by the *Timber Management Guidelines for the Protection of Fish Habitat*, and including those not seen on 1:50,000 scale maps, particularly wetlands and small intermittent streams.

Domtar staff opinion: “Harvesting of trees is definitely permitted in the three-metre strip adjacent to the water. During your visit we explained that the *Code* recognizes that trees will be cut in this zone but it indicates that they should not be felled into the water. This is the system the Company follows.”

SLDF/WL response: While we welcomed the MNR Algoma investigation team’s recommendation to further clarify the *Code*, we believe that the requirement for an intact three-metre reserve along waterbodies is clear and mandatory. The *Code* states:

“a narrow filter of approximately three metres of undisturbed forest floor or vegetation (not necessarily tree species) is to be left on the banks of waterbodies except where necessary to cross a stream.”

We believe the company has misinterpreted the descriptive statement of the riparian zone as existing with or without tree species as permission to remove trees from this zone if they choose.

Failure to adhere the three-metre no-cut zone as required by the *Riparian Code* may harm streams, water quality, and fish habitat through erosion of banks and siltation of spawning grounds. The removal of tree cover will modify water temperature (through the removal of shade), warming water temperature locally and downstream.

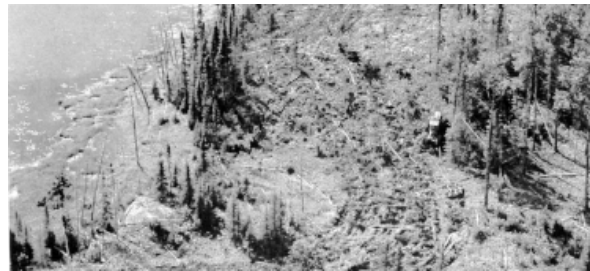


Figure 6 of the *Riparian Code* demonstrates a riparian reserve.

Ecological Benefits of a No-Cut Riparian Reserve

Trees protect the water from sedimentation: Trees offer a deep root structure that can act as an anchor to hold the soil in place. Once a tree is harvested the remaining stump and root system is open to infestation and rot and cannot be depended on to anchor the soil. Furthermore, the removal of the forest cover increases the water yield of the formerly forested area, which is aggravated by the loss or reduction of water consumption and evapotranspiration by trees. This increase in the water available for runoff can result in an increased risk of sedimentation of the stream or lake and deterioration of water quality (France, 1997; Gregory et al., 1991). Roads and the extent of harvest around a watershed can also lead to sedimentation and changes in water quality (British Columbia Ministry of Forests Research Program, 1995). A recent study of shoreline harvesting along three coldwater lakes in northwestern Ontario suggests that streams may be more likely than lakes to experience these severe impacts following harvest (Steedman and Kushneriuk, 2000; Steedman, 2000).

Trees regulate water temperature by providing shade: All water is potential fish habitat. If fish do not directly inhabit a particular watercourse or body of water, it is fairly certain that fish are inhabiting a downstream receptor of the water and thus may be affected by the water quality in the headwaters (Gregory et al., 1991). Water temperature is important to fish habitat and trees provide the important shade cover needed to regulate water temperature. Warming of headwaters due to removal of shade cover will affect downstream coldwater lakes and susceptible fisheries value like lake trout. There is also evidence that warm- and cool-water lakes and rivers are impacted by harvesting near the shore (France, 1997).

The littoral zone depends on input of material from a riparian area: It has been estimated that 90% of all lake organisms depend on the littoral zone, the land-water interface (OMNR, 1994). Leaves and other plant material from the riparian area provide a source of nutrients for plankton and aquatic insects. Coarse woody debris that enters the water from the shoreline creates a diverse habitat that is used by fish for feeding and breeding and provides a long-term source of nutrients to the water (British Columbia Ministry of Forests Research Program, 1995; Cole and Guyette, 1999). Harvesting shoreline forests decreases the input of plant material into the water, which decreases nutrient and substrate availability for aquatic organisms and reduces the amount of habitat for species that depend on the littoral zone (France, 1997).

Riparian areas provide important wildlife habitat and travel corridors: The ecological benefits of no-cut reserves to wildlife cannot be overstated. Riparian areas support a high diversity of plant and animal species, and are used by up to 70% of terrestrial animals at some point in their life (Naiman et al., 1993). Riparian areas provide habitat for many bird, amphibian and reptile species as well as aquatic feeding areas and travel corridors for mammals (British Columbia Ministry of Forest Research, 1995). The logging of trees in riparian areas will disturb this sensitive habitat and impede the movement of species through disturbed landscapes.

RECOMMENDATION: The MNR should make it clear to forest operators that a minimum three-metre no-disturbance zone is required on all waterbodies. Trees within three metres of a waterbody should not be harvested.

Skidding Guidelines

The location of skid trails within riparian areas can result in a high degree of soil compaction from heavy equipment moving in repetitive travel corridors. Run-off of surface water becomes channelled and concentrated. Increased runoff results in accelerated erosion, sedimentation and nutrient loading in watercourses. The MNR's *Timber Management Guidelines for the Protection of Fish Habitat* recognize that skid trails should be kept away from shoreland areas to minimize damage from runoff.⁴ No condition of the *Riparian Code* expressly prohibits the operation of equipment in wetlands. However, we feel that this practice is not in keeping with the spirit or purpose of the *Code*, and is clearly discouraged in the *Timber Management Guidelines for the Protection of Fish Habitat*.

In addition to clarifying that the ***Riparian Code applies to wetlands, and therefore the operation of equipment in wetlands would be prohibited***, the MNR should develop a protocol for operating within cut blocks which would provide an objective measure for when soil conditions have become too wet to continue skidding.

RECOMMENDATION: The MNR should develop a clear, simple set of guidelines to govern site impacts, such as rutting and compaction, associated with skidding. As a template, the Algonquin Forestry Authority (AFA) has come up with the following set of rules for operators to follow:

- 1) There are no restrictions when soil compaction is less than 30 centimetres.
- 2) If rutting is 31-60 centimetres deep (major), the maximum allowable distance of ruts is a total of 120 metres per skid trail.
- 3) Rutting greater than 61 centimetres deep (extreme) is allowed for up to 30 metres on a skid trail.

When compaction of the skid trail exceeds these guidelines, the trail will be closed until site conditions improve and the trail may be used without further compaction.

If the rutting and compaction persists, the skid trail will be closed permanently and relocated.

⁴ *Timber Management Guidelines for the Protection of Fish Habitat*, OMNR, 1988. 1.0 Introduction. p.4 and 4.1 Water Yield. p.6.

4.2 Forest Operation Issues

In some cases the non-compliance did not appear to result from interpretation of the guidelines but from not operating in a careful and prudent manner.

4.2.1 Construction and Maintenance of Access Roads and Stream Crossings

Routine Inspection and Maintenance of Access Roads

During the field visits with Domtar staff a major stream crossing was examined which presented a barrier to fish migration upstream of a speckled trout lake. In this case, the downstream end of the culvert was perched approximately 30 centimetres above the stream level. Domtar staff acknowledged that the culvert was a problem but noted that the road was constructed a long time ago.

According to the guidelines (reproduced below), the company is required to maintain access roads as long as the roads are in place. Culverts should be installed so the pipe has at least 10% of its diameter below the streambed. This will encourage formation of a shallow sediment layer in the pipe, and should ensure enough flow depth for fish migration.

Domtar staff opinion on site visit: Staff acknowledged that the culvert was a problem but noted that the road was constructed a long time ago (implying that Domtar was not responsible for maintenance).

SLDF/WL response: For the period that they are in use, the company is required to maintain its access roads in compliance with the guidelines. Routine maintenance activities should include inspection of culverts for blockage or placement problems.



The *Environmental Guidelines for Access Roads and Stream Crossings* contains the following “mandatory standards”:

- Waterways must not be blocked so as to impede the free movement of water and fish; and,
- Staff, as part of their normal field duties, are expected to observe, on an annual basis, the condition of water crossings on maintained roads, particularly with respect to the potential for washouts or blockages of culverts. Problems are to be reported to the appropriate road authority.

ACTION: (site-specific recommendation) The crossing should be reconstructed to allow the passage of fish.

RECOMMENDATION: The MNR should conduct routine inspections of access roads and water crossings to ensure that the operators are in compliance with the guidelines. Companies should be required to conduct prompt repairs or rehabilitation where it is found that fish habitat has been impacted. It should be the responsibility of the company to ensure that prompt repairs or corrective action is taken when problems are observed in the field, irrespective of the age or origin of the road.

Road Marking in the Winter

The field visits taken with the Domtar staff highlighted a widespread forest industry practice that has been a concern of SLDF/WL for some time. The treatment of intermittent streams and wetlands in allocation areas, which are harvested during the winter months, is particularly problematic, not only in the Lower Spanish Forest but also in other units audited. Tertiary roads or skid trails are built through small streams or wetlands during the winter cut when the flow of water is not apparent to the operators. However, when visited in the summer months, as was done this year in the Lower Spanish Forest, these small streams are often flowing rapidly, and the damage caused by roads or skid trails constructed through them is apparent. This has also been documented for wetlands, where cutting has proceeded right up to the water's edge or beyond, and skidders have operated within the area.



Domtar staff opinion: "Since there was no channel or water flow evident at this site the winter road was constructed over the swamp without the need for a culvert or other mitigation. This is approved practice. If during our road location or road construction, we had identified a channel or water flow at this site we would have taken other measures. This however, was not the case and we believe we made the right decision and no values were impacted."

SLDF/WL response: The MNR needs to resolve the issue of how small or intermittent, unmapped streams are to be protected during harvest through an approachable scheduling process.

Typically, in these situations the operators point to the fact that the cut block would have been marked in November or December preceding the cut (when water is low or snow cover prevents discovery), and that the small stream or wetland may not have been indicated on the company allocation maps. Marking involves field staff surveying the cut blocks on foot and painting (or flagging) trees which mark the boundaries of the AOC buffers, the edge of cut blocks and the locations of tertiary roads. If this initial ground surveying of the cut blocks were completed earlier in the season, the field staff would be certain to encounter any flowing water in the path of a proposed road.

RECOMMENDATION: All cut blocks should be marked in the spring or summer preceding the planned cut. By implementing this scheduling condition, all small, or intermittent streams and wetlands missed by the mapping exercise will be identified on the ground and offered the appropriate protection.

Site Specific Problems in the Application of the Guidelines

Other points of disagreement arose on the issue of technical violations of the *Environmental Guidelines for Access Roads and Stream Crossings*. A stream crossing visited by the field staff revealed a culvert not buried 10% in the streambed as required by the guidelines. This stream (see photo) was not surveyed by MNR for fisheries values so it is difficult to determine the impact this violation had on fish habitat.



In this particular case the culvert was resting on bed-rock so it was not possible to bury it to a depth of 10% of its diameter, as required by the guideline, given that a standard round culvert was used. However, the installation of an arch culvert would overcome this site-specific problem and allow for the natural stream bottom to be maintained in accordance with the guideline.

Domtar staff opinion: “We believe the culvert was installed properly given the site conditions and that no fish migration restrictions were created.”

SLDF/WL response: We feel that the site-specific problems with installation in this case do not excuse violation of the guidelines, particularly when the fisheries values of the stream have not been surveyed. The guidelines require installation crews to select a design appropriate to the site; arch culverts are preferred over pipe culverts where maintenance of the natural stream bottom is important.

RECOMMENDATION: Crews should be required to consider all alternatives before going ahead with an installation, which will be in violation of the guidelines. Protection of the value identified, or the environment in general should be an over-riding concern when faced with inconvenience or expense on the part of the company.

4.2.2 Shelterwood (Partial-Cut) Prescriptions Harvesting of Trees Marked for Retention

Approximately 94% of Ontario’s logging occurs by the clearcut method. This forest harvest technique removes the vast majority or all the trees from a site. The MNR normally requires partial cuts for relatively dense hemlock, white spruce, pine (red and white and red and white mixed) and many tolerant hardwood stands. One type of partial cut employed is the shelterwood system. This method is applied extensively in

the Lower Spanish Forest. The implementation of the shelterwood system is based upon the observation that in many cases, species such as poplar and soft maple can out-compete the softwoods (hemlock, spruce and pine) under the conditions of full sunlight that exist after clearcutting. Shelterwood cuts leave enough trees standing to provide seed stock and shade, both important for the re-establishment of a new conifer forest.

The shelterwood prescription is implemented through a system of tree retention through marking. Official MNR and Domtar procedure is to apply a stripe of blue paint around the tree at breast height and down the trunk of trees that are to remain standing. All other trees in the cut block may be harvested.

Several stumps marked with blue paint were found and documented. Violations of this prescription were noted at six different shelterwood stands. At one site a serious deviation from the prescription was noted.

Domtar explained that trees are removed when operation problems are encountered (i.e. tree located on skid trail). Domtar officials said that the removal of a tree marked for retention (“leave trees”) requires a replacement tree to be left standing according to an internal policy. Domtar staff were unable to produce a copy of the internal directive referred to.

Removal of trees intended for retention undermines the intent of the shelterwood system, which is to open a critical amount of canopy so as to facilitate the regeneration of shade intolerant species, primarily red and white pine. Furthermore, trees selected for retention may contain characteristics such as crown vigour which makes them good crop trees, may be spaced in such a way to provide proper canopy closure, or may have been selected for retention due to important wildlife values.

The public cannot possibly review whether standards are being properly adhered to in the field if the tree marking system is not being strictly applied and followed.

Domtar staff opinion: “...it was permissible to harvest a ‘leave tree’ if it was on a road right-of-way, on a skid trail where there was no alternate skid trail available, or if the tree was damaged during harvesting activities. If a ‘leave tree’ is harvested it was necessary to leave an unmarked tree to replace the marked tree...”

“It is normally the foreman that gives the cutter permission to fell a marked tree and the foreman identifies which tree or trees should be left to replace the marked tree.”

SLDF/WL response: It is reasonable that some retention-marked trees may be damaged during harvest but at the site in question field staff found eight large red pines in a small area. Retention of unmarked trees to compensate for cutting of marked trees is not the best solution. The unmarked retained trees may be in the wrong location to provide proper canopy closure, seed source or habitat. In addition, the lack of a prohibition on cutting blue-marked trees may encourage the operator to “damage” high value trees so that they can be removed.

RECOMMENDATION: Domtar should develop an official internal directive (in writing) requiring retention of a substitute tree if a blue-marked tree is damaged, as part of their compliance standards. Various criteria should be included as mandatory considerations:

- 1) Skid trail layout should minimize haul area and reduce the probability of damage to residuals.
- 2) Trees chosen, as replacement for retention, should be selected and located in a manner consistent with tree-marking guidelines for the shelterwood (e.g. percent canopy closure, basal area, crown vigour characteristics, disease, etc.).
- 3) Trees cannot be substituted if the marked tree was chosen for retention for its unique wildlife values.



RECOMMENDATION: The MNR should develop similar guidelines for operators across the province.

4.3 Issues Regarding Forest Management Planning and Annual Work Schedules

4.3.1 Annual Work Schedule Revisions

Amendments to Annual Work Schedules have become “routine” but may have ecologically significant impacts. For example, approval was granted in November 1996 to construct a tertiary road through an AOC buffer on the headwaters of Path Creek, a known brook trout system. The MNR biologist concluded that the road would have “no further impact” on the system, although he did not include this conclusion in the letter of approval to the company, he did also note that the company would have to “manage surface drainage to minimize water quality impacts.” By April of the following year, notes from an MNR inspection conclude that the site is of concern. “Surface flow down the hill may result in sedimentation of the headwaters...requires monitoring and possible mitigation.”

RECOMMENDATION: MNR should rigorously apply the conditions on exceptions to prescriptions. Amendments that undermine the protection of the values should not be approved. Stands that cannot be accessed profitably by the company without sacrificing values identified through the planning process should remain unallocated.

4.3.2 Fisheries Value Uncertainty and Surveying Incentives

In determining the level of protection to be accorded to particular types of waterbodies, the MNR relies on data relating to such factors as: the size of the waterbody, the species present and the slope of the adjacent shoreland areas. If adequate field data is not collected, there is a significant risk that a waterbody will receive less protection than appropriate.

The MNR stresses that implementation of the *Ministry's Policy for the Integration of Other Resource Values in Timber Management* (1985) **requires the identification** of areas in which other resource values exist. They also state that:

“it is imperative that planning of habitat inventory programs be closely coordinated with timber management planning in order to provide the requisite habitat information when it is needed for decision-making.”⁵

In the Lower Spanish Forest Management Unit there are many streams and lakes that remain unsurveyed. These waterbodies have not been formally assessed for fisheries values and Area of Concern prescriptions for these streams and lakes are much less strict than they might be if fisheries values were discovered upon survey.

For example, in the Lower Spanish Forest Management Plan unsurveyed streams and lakes greater than 10 hectares are provided with a 30-90 metre slope dependent modified harvest zone that allows for selective harvesting. According to the Forest Management Plan, a selection harvest allows conifer species to be cut in up to 50% of the length of the AOC in 20-metre increments. An AOC may be harvested up to the riparian zone (three metres high water mark) but clearcutting is not permitted. Unsurveyed lakes smaller than 10 hectares, while they may be important headwaters or contain ecologically important fisheries, are not given any protection beyond the riparian zone (clearcutting is allowed up to three metres from the high water mark).

If the streams were surveyed and found to contain fisheries values, they generally would be offered more protection from disturbance under the Forest Management Plan. For example, coldwater streams are provided with a minimum 30-metre no-cut reserve, plus a slope-dependent modified-harvest zone.

⁵ *Timber Management Guidelines for the Protection of Fish Habitat*, OMNR, 1988. 1.0 Introduction. p.4.

The Lower Spanish Forest Management Plan reveals the high number of unsurveyed waterbodies in the area. While 247 lakes and streams are given protection with AOCs, the Forest Management Plan notes that a further 329 lakes and streams are unsurveyed. A number of these waterbodies, if surveyed, could contain important fisheries values and should be surveyed before any harvest activity takes place near them.

Three brook trout were caught in an unsurveyed stream in Oshell Township. Brook trout are a sensitive species that only survive in coldwater streams. Therefore, if this stream had been surveyed, it would have been protected with a minimum 30-metre no-cut reserve. However, since it is classified as unsurveyed, it is not protected for fisheries values, and received little protection.

In another example, Mud Lake in Antrim Township was originally classified as an unsurveyed lake but was identified and changed to a “self-sustaining trout lake” during the planning period. For this reason, the lake was given a 400-metre No-Roads Zone to restrict access to the sensitive fishery. Fortunately, this new information was taken into account before the area was harvested.

The disturbing lack of data on waterbodies, coupled with the recent cuts to the operating budget of the MNR, means that there may be little opportunity for MNR staff to increase field site visits. Furthermore, there is currently little incentive for the forest industry to survey these waterbodies because such surveying may result in a decreased harvest if extra protection measures are required.

RECOMMENDATION: When fisheries values are unknown because of lack of resources devoted to biological surveys the precautionary principle should be applied such that the AOC is given the maximum applicable protection.

The other area that is affected by insufficient data is wetlands. Much attention has been paid to the development of Ontario’s *Wetlands Policy* (now part of the comprehensive *Provincial Policy Statement* issued under the *Planning Act*) that is intended to restrict or prohibit development in or near significant wetlands. However, the *Policy* is only useful if there has been a field assessment of the significance of wetlands and other natural features. The Lower Spanish Forest has not been surveyed for provincially significant wetlands. Therefore, none of the wetlands in the Lower Spanish have been declared AOCs and consequently receive no special protection through the Forest Management Planning process. As seen from the results of this audit, even the basic minimum protection, the three-metre riparian reserves, are often not respected in the case of wetlands.

The MNR recognizes that wetlands are important aquatic environments that can provide habitat for fish.⁶ In the *Timber Management Guidelines for the Protection of Fish Habitat*, it states that “shorelands” or areas adjacent to aquatic environments (including wetlands) providing fish habitat should be identified as AOCs.



RECOMMENDATION: The province should provide sufficient resources to the MNR to complete the surveying of the province’s wetlands and should treat them in the same precautionary way as suggested for unsurveyed waterbodies in the interim.

4.4 Examples of Good Practices Found in the Lower Spanish Forest

The auditors found two examples of the use of environmentally progressive practices that were not required by existing guidelines.

Temporary bridges are used occasionally in the Lower Spanish unit. This practice has the benefit of reducing stream disturbance. It also allows for better control of human access after operations are complete because no permanent road remains in place and the stream acts as a barrier. Forestry companies should be encouraged to use temporary bridges wherever possible.

The auditors also encountered a work crew that was rehabilitating a brook trout stream. A large culvert had been installed because the river was crossed by a primary logging road. The work supervisor explained that culverts narrow the stream channel and often cause the water to speed up, which then causes undesirable streambed modification on the downstream side of the culvert. Since brook trout prefer deeper and slower water, Domtar was having summer students work by hand to remove the braids in the stream to restore it for brook trout use. Domtar should be commended and encouraged to use these and similar technologies and practices to lessen the impact of forestry operations on the forest and aquatic environment.

⁶ *Timber Management Guidelines for the Protection of Fish Habitat*, OMNR, 1988. 1.0 Introduction. p.4.

5.0 Summary of Findings and Recommendations

The results of this audit show that the significant compliance and enforcement problems are occurring in the Lower Spanish Forest. These compliance problems are most evident for Area of Concern and Riparian Reserve areas but also require attention at watercourse crossings.

The results also indicate that the findings of the 1997 Algoma Highlands audit and the 1998 Magpie and Algonquin audits were not geographically unique. Rather, the data is consistent with the results of the previous audit.

Taken together, the audits reveal some serious problems in the application and enforcement of forest protection standards in these regions and perhaps on a more widespread basis throughout Ontario. These results and the issues they highlight must be addressed by the Ministry of Natural Resources and the forest industry. Detailed recommendations follow at the end of this section.

5.1 Better Enforcement and Clearer Regulations

As a result of the Algoma Highlands audit, the Wildlands League and the Sierra Legal Defence Fund asked the MNR to investigate a sampling of 12 suspected violations at 10 sites under the Application for Investigation provision of the *Environmental Bill of Rights* (see Appendix A). The MNR investigation team carried out a comprehensive and diligent study of the allegations and generally confirmed our results. Nine of the 10 allegations of incursions into AOCs or riparian reserves were verified (the one exception being a difference in opinion as to the boundary of an AOC). The one investigation of a water crossing confirmed our finding, while the one example of waste being left behind had been cleaned up before the MNR investigation took place.

The Environmental Commissioner, in her *1998/99 Annual Report*, praised the work of the MNR staff saying that “staff of the Ministry of Natural Resources carried out high quality work on this set of investigations”. She followed this praise with encouragement for the Ontario government to act on the recommendations of the investigation team. She also re-expressed general concerns about forestry monitoring and compliance, including reiterating 1996 recommendations that MNR provide adequate resources to enforce its regulations, regularly report on enforcement activities and on the effectiveness of self-monitoring by the forest industry.

The Ministry of Natural Resources has responded to staff cutbacks and lack of field resources by developing a new compliance and monitoring system that relies heavily on industry self-monitoring and compliance reporting. This new system has been developed without substantive public input or review (e.g. environmen-

tal organizations with forest experience such as Sierra Legal and the Wildlands League were not included in the development process) and is as of yet largely untested in the field. A good test of the likely effectiveness of the new system is to review it relative to the findings of this study, the recommendations made by the MNR Algoma investigation team and by the recommendations of the Environmental Commissioner. If the new system would prevent the mistakes described here and fulfill the recommendations of the two agencies then we can be assured that an industry self-compliance system is a workable mechanism to protect publicly owned forest lands. If it cannot prevent similar occurrences in the future and it does not address the recommendation of the Commissioner or the MNR investigative team then it must be reviewed and revised.

The Commissioner had raised some concerns that the process may require such revision. She states that:

“this investigation [MNR investigation under the *Environmental Bill of Rights*] also demonstrates the challenges faces by MNR compliance staff when they try to apply the Ministry’s new approach to compliance in real situations. Under this approach, penalties can vary depending on the degree of environmental damage and the past record of the forest operator. MNR compliance staff must not only verify that a rule was broken (e.g. trees were cut to the stream edge), but must also evaluate what the environmental damage was in each instance — for example, did the water temperature increase, was erosion significant, etc.? This approach assumes that inspection staff have extensive experience and expertise with recent forestry practices of a particular licensee — assumptions that may be hard to meet, given MNR’s reduced resources. Even the highly skilled investigation team in this particular instance found it difficult to evaluate the degree of environmental damage, since they couldn’t compare ‘before’ and ‘after’ situations. This variable compliance approach may also mislead forest operators, by implying that environmental rules can be broken without penalties in some cases.”

Clear rules with strong unambiguous language are needed and would leave little room for interpretation. As a practice the industry and MNR should adopt a precautionary approach when discretion or interpretation is required such that all the forest values are protected and our forests are managed in an ecologically sustainable manner.

5.2 Recommendations

In summary, our field results, taken together with the findings and concerns expressed by MNR staff and the Environmental Commissioner of Ontario, lead us to conclude that the integrity of Ontario’s public forests may be threatened by substandard compliance and enforcement. As a result, we make the following recommendations to address this situation:

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- i) MNR has recently completed District Compliance Strategies for each of the 25 MNR districts in Ontario. These strategies should be reviewed in light of the findings of this and our previous audits to determine if the compliance problems here described would be detected and addressed through the implementation of these new strategies. If they would not then new mechanisms and/or staff resources should be allocated to this issue.

 - ii) MNR should issue timely reports to the Ontario legislature detailing the degree of compliance within each forest management unit as legally required under the Class Environmental Assessment for Timber Management on Crown Lands in Ontario.

 - iii) A public education program to involve Local Citizens Committees and the general public in logging inspections should be developed.

 - iv) The use of temporary bridges should be encouraged and expanded to other forest management units.

 - v) The issues of high water mark determination, and slope calculation procedure should be clarified as part of the guidelines review process in consultation with MNR biologists and other interested parties.

 - vi) FMPs and relevant guidelines should clearly articulate the prohibition of all operations in relation to harvesting, such as the dumping of slash, in areas designated as reserves. The clear language used in the Algoma 1995-2000 plan may be used as a template for improving plans and guidelines in this regard.

 - vii) The MNR should clarify the language in the relevant regulations to protect water quality during timber operations. The MNR should communicate to the forest companies that the *Riparian Code* applies to all waterbodies, including those not covered by the *Timber Management Guidelines for the Protection of Fish Habitat*, and including those not seen on 1:50,000 scale maps, particularly wetlands and small intermittent streams.

 - viii) The MNR should make it clear to forest operators that a minimum three-metre no-disturbance zone is required on all waterbodies. Trees within three metres of a waterbody should not be harvested

ix) The MNR should develop a clear, simple set of guidelines to govern site impacts, such as rutting and compaction, associated with skidding. As a template, the Algonquin Forestry Authority (AFA) has come up with the following set of rules for operators to follow:

- 1) There are no restrictions when soil compaction is less than 30 centimetres.
- 2) If rutting is 31-60 centimetres deep (major), the maximum allowable distance of ruts is a total of 120 metres per skid trail.
- 3) Rutting greater than 61 centimetres deep (extreme) is allowed for up to 30 metres on a skid trail. When compaction of the skid trail exceeds these guidelines, the trail will be closed until site conditions improve and the trail may be used without further compaction. If the rutting and compaction persists, the skid trail will be closed permanently and relocated.

x) The MNR should conduct routine inspections of access roads and water crossings to ensure that the operators are in compliance with the guidelines. Companies should be required to conduct prompt repairs or rehabilitation where it is found that fish habitat has been impacted. It should be the responsibility of the company to ensure that prompt repairs or corrective action is taken when problems are observed in the field, irrespective of the age or origin of the road.

xi) All cut blocks should be marked in the spring or summer preceding the planned cut. By implementing this scheduling condition, all small, or intermittent streams and wetlands missed by the mapping exercise will be identified on the ground and offered the appropriate protection.

xii) Crews should be required to consider all alternatives before going ahead with a bridge or culvert installation, which will be in violation of the guidelines. Protection of the value identified, or the environment in general should be an over-riding concern when faced with inconvenience or expense on the part of the company.

xiii) Domtar should develop an official internal directive (in writing) requiring retention of a substitute tree if a blue-marked tree is damaged, as part of their compliance standards. Various criteria should be included as mandatory considerations:

- 1) Skid trail layout should minimize haul area and reduce the probability of damage to residuals.

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- 2) Trees chosen, as replacement for retention, should be selected and located in a manner consistent with tree-marking guidelines for the shelterwood (e.g. percent canopy closure, basal area, crown vigour characteristics, disease, etc.).
 - 3) Trees cannot be substituted if the marked tree was chosen for retention for its unique wildlife values.

The MNR should develop similar guidelines for operators across the province.

xiv) MNR should rigorously apply the conditions on exceptions to prescriptions. Amendments that undermine the protection of the values should not be approved. Stands that cannot be accessed profitably by the company without sacrificing values identified through the planning process should remain unallocated.

xv) When fisheries values are unknown because of lack of resources devoted to biological surveys the precautionary principle should be applied such that the AOC is given the maximum applicable protection.

xvi) The province should provide sufficient resources to the MNR to complete the surveying of the province's wetlands and should treat them in the same precautionary way as suggested for unsurveyed waterbodies in the interim.

xvii) The Forest Accord and the MNR Algoma investigation team recommended a review of all existing codes, guidelines, and regulations concerning forest protection. This review has begun under the auspices of the Provincial Forest Technical Committee and should proceed to meet the terms of the Forest Accord, the recommendations of the MNR Algoma investigation team (see Appendix A) and the recommendations contained in the *1998/99 Annual Report of the Environmental Commissioner of Ontario*. The MNR should ensure that strong, unambiguous standards for forest protection are adopted through the ongoing review process. Where discretion or interpretation is necessary, a precautionary approach should be required such that forest values are protected.

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Appendix A — MNR Investigation of Algoma Highlands Forestry Operations

MNR Investigation into Forest Operations in the Algoma Highlands Confirms Most of the Findings by Sierra Legal Defence Fund and Wildlands League Regarding Infractions

Under the *Environmental Bill of Rights* Sierra Legal Defence Fund (SLDF) and Wildlands League (WL) submitted a formal request for an investigation into alleged infractions in the Algoma Highlands Forest investigated during their 1997 audit and documented in the report *Cutting Around the Rules*. Pursuant to the request for investigation by SLDF and WL, the MNR investigation team conducted an investigation and reported on their findings. This Appendix summarizes the results of MNR's investigation.

The MNR investigation team report clearly verified that compliance problems existed at the areas for which the Wildlands League and Sierra Legal Defence Fund requested investigations under the *Environmental Bill of Rights*. The MNR report also attested to the fact that comprehensive and consistent “rules” for forest management are needed so that forest managers and the public know what forestry operators are required to do “on the ground”. This has never been more pertinent than now with the increased responsibilities held by Sustainable Forest License holders.

The MNR's investigating team made several recommendations which, if accepted, would help resolve some outstanding problems in forest management. The recommendation that the *Riparian Code* (and related documents) be amended to clarify that all permanent waters must be protected with a riparian reserve is commendable. Our interpretation of the plain meaning of the *Riparian Code* is that riparian reserves are *already* mandatory along all waterbodies (lakes, streams, wetlands, etc.) but given the MNR's view that further clarification is needed, we support such an effort so that it is abundantly clear that the *Code* is mandatory along all waterbodies. It is worth noting that we originally highlighted this problem with the *Code* on page 23 of our *Cutting Around the Rules* report.

Another recommendation, that the training needs of the forestry industry and government staff be revisited to ensure guidelines are followed and natural values properly identified, shows a commitment towards improved forestry management in Ontario, and should be implemented. The analysis of staff training needs should take place for all applicable workers, not just those in the Algoma Forest Management Unit. Also, the need for MNR authorizations to be made in writing rather than on an oral *ad hoc* basis was revealed by the investigation.

Our Algoma Forest audit illuminated that the rules governing on-the-ground forest management make up a complicated maze. And so we believe that the MNR's investigating team's recommendation that the application of where and when guidelines should apply needs to be “clear, consistent and communicated through planning and operational approvals” does not go far enough. The structure of environmental protection measures in Forest Management Planning is a tangle of rules that may, to the public, appear to be more or less at the discretion of the Forest Management Planning team.

Changing this perception will only happen if the majority of these measures are made simple, mandatory and clear. Adaptability in a system that is administered by government staff may arguably be viewed as giving professionals room to make good decisions, but providing that same elasticity in a system administered by for-profit corporations is imprudent. We therefore support the course of action recommended by the investigating team and believe that the whole structure and application of forest rules needs to be clarified to increase public confidence in the sustainability of forestry in Ontario. Implementing Recommendation 1 on pages 23-24 of our *Cutting Around the Rules* report would be a good start in this area:

Recommendation 1

- i) For all Areas of Concern and other reserves in public forests, the Ontario government should develop an effective inspection, reporting and audit system that will accurately assess the degree of compliance with forest protection laws, regulations and policies. Where compliance is lacking, enforcement activities should be undertaken.
- ii) The OMNR should provide sufficient staff to inspect and enforce compliance with environmental and forest protection laws and policies. Additional costs for such inspection and enforcement staff should be passed on to the timber industry.
- iii) Annual reports to the Ontario legislature detailing the degree of compliance in each forest management unit in Ontario should be required.
- iv) A public education program to involve Local Citizens Committees and the general public in logging inspections should be developed.
- v) The OMNR should consolidate all existing codes, guidelines, and regulations concerning forest protection into a single environmental-protection regulation applicable to all logging operations.

The table on page 52 outlines the nature of the 12 suspected violations found by the Wildlands League and the Sierra Legal Defence Fund at the 10 sites (11 major violations and one other [waste] violation) and a summary of the relevant MNR findings. As is evident from the table, 10 of the 12 suspected violations were confirmed by the MNR report. The following points summarize the suspected violations and the MNR responses:

■ **AOC AND RIPARIAN RESERVE DISTURBANCES:**

Incursions were found for 9 of the 10 allegations, falling into the following categories:

Voluntary compliance or repair order recommended: 3

MNR verbal permission not properly documented in writing: 3

Lack of clarity in MNR *Riparian Code*: 2

Violation minor and renewal activities already scheduled: 1

No violation found (AOC boundary unclear): 1

■ **POOR BRIDGE MAINTENANCE:**

The one allegation was confirmed and a repair order or bridge removal was recommended

■ **WASTE:**

The waste at the one site in question was removed prior to the MNR investigation

We are pleased with the comprehensive nature of the MNR's investigation and its recommendations for improving forestry standards, compliance and enforcement. However in subsequent field audits, such as those conducted in Algonquin Park and the Magpie Forest, we continue to find unacceptably high levels of non-compliance. Therefore, the progress initiated by the MNR's report still needs to be implemented in the field.

TABLE: Summary of Sites and Suspected Violations Investigated (Algoma)

Sites by Township ¹	Suspected Violations ²	Summary of Relevant MNR Findings
Sherratt 1 (18)	Area of Concern (AOC) Disturbance	<ul style="list-style-type: none"> ■ incursion into AOC as alleged ■ undocumented verbal authorization by MNR official ■ recommended that MNR must document in writing in future
Sherratt 2 (23)	Riparian Reserve Disturbance	<ul style="list-style-type: none"> ■ debris found in channel and banks as alleged ■ MNR must clarify <i>Riparian Code</i> regarding its applicability to unmapped streams
Sherratt 3 (13)	AOC Disturbance	<ul style="list-style-type: none"> ■ minor unplanned incursion into AOC confirmed ■ forest renewal activities already planned for site (no further measures needed)
Sherratt 4 (15)	Riparian Reserve Disturbance	<ul style="list-style-type: none"> ■ violation confirmed at site ■ voluntary compliance or Repair Order recommended
Scriven 1 (7)	AOC Disturbance	<ul style="list-style-type: none"> ■ violation confirmed at site ■ Repair Order recommended ■ removal of similar area of forest value from future harvesting recommended to compensate
Scriven 2 (11)	Riparian Reserve Disturbance	<ul style="list-style-type: none"> ■ violation confirmed at site ■ voluntary compliance or Repair Order recommended
Scriven 3 (12)	Riparian Reserve Disturbance	<ul style="list-style-type: none"> ■ debris on banks and over stream as alleged ■ MNR must clarify <i>Riparian Code</i> regarding its applicability to unmapped streams
Schembri 1 (6)	<ul style="list-style-type: none"> ■ AOC Disturbance ■ Riparian Reserve Disturbance ■ Poor Bridge Maintenance 	<ul style="list-style-type: none"> ■ incursion into AOC as alleged ■ incursion into Riparian Reserve as alleged ■ undocumented verbal authorization by MNR official (applies to both AOC and Riparian Reserve suspected violations) ■ recommended that MNR must document in writing in future ■ lack of care in stabilizing banks ■ Repair Order or bridge removal recommended to remedy erosion
Schembri 2 ³	Waste (not considered major)	<ul style="list-style-type: none"> ■ garbage removed prior to investigation
Schembri 3 (2)	AOC Disturbance	<ul style="list-style-type: none"> ■ AOC boundary improperly mapped (MNR and SLDF/WL had differing interpretations of location of AOC boundary)
SUMMARY: 10 sites investigated	SUMMARY: 11 major suspected violations and 1 other (waste) investigated	SUMMARY: Violations confirmed for 10 of 12 allegations.

¹ Note that the numbering system used here follows the system used in the Application for Investigation and the MNR's response. The number in brackets refers to the numbering system used in a table of all 32 major violation sites provided to the MNR District Office in a letter dated October 23, 1998.

² All classified as major in *Cutting Around the Rules* unless otherwise noted.

³ No equivalent number on major violation table (see footnote 1) as not considered major by SLDF/WL. Included in EBR application because it occurred at the same site as alleged major violations. Schembri 1 (suspected AOC, riparian reserve and bridge violations) and Schembri 2 (suspected waste violation) are actually the same location. We treat them as separate sites here to maintain consistency with the MNR report.

Appendix B — Reviewers' Comments

This report was distributed for review to the following individuals and organizations:

Craig Boddy, Domtar, Espanola, Ontario

Dave Euler, Forest Consultant and Wildlife Biologist, Sault Ste. Marie, Ontario

Wynet Smith, Global Forest Watch, Washington, D.C.

Ruth Nogeron, World Resources Institute, Washington, D.C.

Peter Lee, Global Forest Watch Canada, Edmonton, Alberta

The lengthy comments from Domtar staff are summarized in Appendix C and the points raised are addressed individually, and specifically, in the text of the report.

Compliance staff with the Ontario Ministry of Natural Resources declined to comment on a draft of this report or to take part in a meeting to clarify whether they supported Domtar staff's interpretation of forest protection requirements.

Other reviewers' comments, and the manner in which these were addressed, are provided below.

Peter Lee:

Comments: "It needs to made clear how tiles and sample sizes were chosen. These need to be explained. How many AOCs are within the 13 tiles and were they all audited?"

Action: The methodology section of the report was modified to clarify how the tiles were chosen and how AOCs were selected.

Dave Euler:

Comment: The real problem of dumping is debris into the water right? And not necessarily the land. On page 19 it looks as though the problem is that dumping anywhere on the AOC has occurred, while the significant aspect of this problem is the disruption of the streambed. Later in the report it is clear that dumping of debris in the water is a problem, and that violations of the AOC are mostly disruptions of the waterbody.

Action: The prohibition on dumping of debris is for the AOC itself, not just whether or not the debris ends up in the water. This prohibition is to ensure that forest activities do not take place too close to the waterbody. This was clarified in the text.

Ruth Nogeron:

Comment: There are inconsistencies in the use of " " and italics for citations, the capitalization for common names and species and title of publications, the use of italics in titles of documents and the use of % vs. percentage.

Action: These were corrected in the final document.

Appendix C — Domtar Correspondence



July 8, 1999

Mr. Tim Gray
Executive Director
Wildlands League
Suite 380
401 Richmond Street W.
Toronto, Ontario
M5V 3A8

Dear Mr. Gray;

I wanted to follow-up on your recent visit to the Lower Spanish Forest with a summary of what we discussed in our meetings and what was seen and reviewed in the field. To that end please find attached an overview with my comments and observations.

Although time limitations did not permit looking at every site audited, I trust we were able to clarify most of the issues raised in the audit executive summary. The summary and any detailed report that may be forthcoming will now be able to reflect our professional explanations and the realities of what was seen in the field.

If possible I would like to have the opportunity to review the summary and detailed report when you have completed it and before it receives wider distribution.

I believe interaction such as the field trips we took are beneficial for both of our organizations. I know the Domtar representatives felt they learned from the experience.

If you have any questions or if you would like to discuss the attached summary please call me at (705) 859-2020 ext. #380.

Yours very truly
Domtar Forest Resources

A handwritten signature in black ink that reads "Craig Boddy".

Craig Boddy
Superintendent - Spanish Forest S.F. L.

c.c. M. S. Litchfield
E.C. McManus

Summary of June 1999 Discussions and Field Visits Regarding the Wildlands League/Sierra Legal Defence Fund 1998 Audit of the Lower Spanish Forest

At our meeting in Toronto on June 7, 1999 Craig McManus, Martin Litchfield, and I met with Tim Gray, Claire McGlynn, Lara Ellis, and Dayna Scott to review the executive summary of the audit performed by Wildlands League and Sierra Legal Defence Fund during July and August 1998.

At that meeting it was indicated that information for the audit was obtained from the local Espanola Ministry of Natural Resources. Specific township maps from the 1996 - 2000 Lower Spanish Forest Management Plan and specific Annual Work Schedules, supplied by the MNR, were colour copied by the audit team. A copy of the Area of Concern prescription table from the FMP was also obtained from the MNR.

It was also indicated that the inspectors did not receive formal training from the MNR or other source on how to interpret the FMP or AWS maps or the Area of Concern information.

The inspectors obtained and reviewed copies of several MNR environmental guidelines such as the Timber Management Guidelines for the Protection of Fish Habitat, Timber Management Guidelines for the Provision of Moose Habitat, and Code Of Practice For Timber Management Operations In Riparian Areas.

The audit executive summary identifies 5 areas where the inspectors felt problems existed. They were:

- Areas of Concern
- Riparian Reserves
- Stream Crossings and Road Construction
- Shelterwood Prescriptions
- Waste

As a result of the discussions with Wildlands league and Sierra Legal Defence Fund, joint field inspections, and subsequent Company investigations I would like to talk about each of these areas.

Areas of Concern

In our Espanola discussions the Company identified the steps taken to develop each specific Area of Concern prescription. The main steps are - value identification; generic Area of Concern prescription development using manuals and guidelines; preparation in the FMP of a specific Area of Concern prescription for each value impacted during the 5 year term; and finally the marking of AOC's in the field.

It was explained that if a new value is identified during the planning period, by the Company, MNR, or by the public, an Area of Concern prescription is developed in conjunction with the MNR and applied to the value.

The draft audit executive summary identified that a number of the areas of concern audited were out of compliance.

I believe the joint field inspections on June 21st and 22nd clarified the situation that the Company was in fact marking reserves as required by the MNR and specified in the FMP.

One example that was looked at on June 21st was a moose aquatic feeding area. A road had been placed through a portion of the reserve. This is an acceptable practice if it is approved by the MNR. We provided you with the approval documentation for this site by fax.

On June 21st we looked at a site where the inspectors had thought that a bulldozer track had been discarded in a stream. Upon investigation the object turned out to be a very old wooden culvert.

On June 22 we looked at an area where we had applied a 30 metre AOC, measured from the waters edge, to protect a warm water stream value. We explained that the Area of Concern width was determined by calculating

the slope progressively as one moves away from the waterbody. In this case, the first 30 metres adjacent to the creek were flat, requiring a 30 metre Area of Concern. In this situation the 30 metres was provided by the grassy area that extended back about 40 metres from the creek at the point we were standing. This approach is the approved method of applying the fish habitat guidelines.

It should be noted that swamps and grassy areas like the one we visited provide excellent erosion/siltation prevention protection.

At this same site we had a discussion on the determination of the water's edge. We indicated that the water's edge is defined as the normal high water mark. Where there is a clearly defined channel or waters edge, as in this case, the AOC should be measured from the edge of the creek.

The executive summary also classified dumping of slash into a reserve as an infraction. This is not an operational practice of the Company however in our review of MNR policies and guidelines we were unable to find any reference to this practice as an infraction. We do understand that it is not permissible to cause trees or branches to be placed in the water.

On June 21st we visited a site identified in the audit as a slash dumping site and I believe it was shown that the tree in the reserve had actually blown down into the reserve and was not felled. In addition one white pine top was found on the edge of the reserve, not in the water. At this site it was also recognized that downed woody material along the roadside, such as branches, although not aesthetically pleasing could act as mitigation to erosion.

We believe our Area of Concern identification and marking procedures are sound and we would like to see the audit reflect this fact.

Riparian Reserves

In our discussions on the application of the riparian code of practice we indicated to you the rules that we follow to identify waterbodies where the code applies. These standards were provided to us by the MNR and we have, to the best of our ability followed these rules. The main rule that we follow is to apply the code if the waterbody is shown on a 1:50000 scale map. We understand that the audit team did its review assuming that the code applied to every pool of water or every intermittent stream.

We would like to see the audit results adjusted to reflect the fact that we followed the government rules in the application of the code.

Another key area in which I believe the audit has misinterpreted the riparian code has to do with harvesting trees in the 3 metre zone. Harvesting of trees is definitely permitted in the 3 metre strip adjacent to the water. During your visit we explained that the code recognizes that trees will be cut in this zone but it indicates that they should not be felled into the water. This is the system the Company follows.

We would like to see the audit corrected by removing reference to infractions relating to areas where the code does not apply according to MNR guidelines and with respect to the cutting of trees in riparian areas.

Stream Crossings and Road Construction

On the June 21st tour we viewed a culvert that had been identified in the audit as creating a fish migration problem. Based on observations at the site the culvert was at a good depth at one end while the other end was on bedrock and the water was very shallow in the culvert. This depth however, was equal to the natural depth of the creek just a few metres up stream where the creek was running over bedrock. We believe the culvert was installed properly given the site conditions and that no fish migration restrictions were created.

On our field viewing June 22nd we looked at two swamp crossings.

The first crossing we looked at was on the way into the area just west of Halfway Lake Provincial Park. This was a winter road going over a narrow swamp. Since there was no channel or water flow evident at this site the winter road was constructed over the swamp without the need for a culvert or other mitigation. This is approved practice.

If, during our road location or road construction we had identified a channel or water flow at this site we would have taken other measures. This however was not the case and I believe we made the correct decision and no values were impacted.

The second swamp crossing we looked at on June 22nd was on the main secondary road west of the park. We looked at this site on our way out of the area.

During construction of this crossing a small drainage ditch was created on the west side of the road to facilitate the swamp crossing construction. A culvert was installed, geotextile and corduroy logs were laid across the swamp and the road was constructed. It appears at this time that some pooling of water is occurring. However upon close inspection some water movement is still occurring as a result of the geotextile mat and the corduroy logs. The culvert will be cleaned or replaced prior to operations reentering this area. I believe this crossing was constructed as required by regulations and that no values have been impacted.

In order to accurately evaluate the audit findings it would be necessary to jointly visit each of the audited crossings since each crossing tends to present unique installation challenges. We would be prepared to do this if you have the time. I am confident that there would be a satisfactory explanation for the identified problems.

Domtar has worked diligently over the past several years to improve our water crossing techniques. We are particularly pleased with our bridge and large culvert crossings.

Your inspectors indicated that they were generally pleased with our larger bridge crossings. We also discussed the use of portable/temporary bridges. In some instances they are a useful method of crossing watercourses. Over time Domtar has increased the number of these structures in our inventory so that we can use them where needed.

We have experimented with a variety of other crossing types including arch and box culverts. These methods allow us to cross a stream without disturbing the streambed.

As noted in the executive summary, we have had our summer student forestry crew do some stream and lake improvement projects. The location of such projects is identified cooperatively between the Company and MNR.

Shelterwood (Partial Cut) Prescriptions

The audit summary indicates that a number of blue painted “leave trees” were discovered in shelterwood areas that had in fact been harvested.

At our meeting in Espanola it was explained that it was permissible to harvest a “leave tree” if it was on a road right-of-way, on a skid trail where there was no alternate skid trail available, or if the tree was damaged during harvesting activities. If a “leave tree” is harvested it was necessary to leave an unmarked tree to replace the marked tree.

On June 21st a site was visited where a few “leave trees” had been harvested. As required, replacement trees were left wherever a blue marked tree had to be removed. It is normally the foreman that gives the cutter permission to fell a marked tree and the foreman identifies which tree or trees should be left to replace the marked tree.

One stump appeared to have had the blue mark painted over with a dark colour of paint. This paint would have been applied by the certified tree marker to correct a marking error prior to the stand being harvested.

We would like to see reference to these matters removed from the audit as they are approved operational practices which ensure that the proper number of shelterwood trees are left on site.

Waste

The draft audit summary identified some waste problems on the Lower Spanish Forest. A number of these areas were checked on June 21st.

One waste site was in fact an area where new culverts had been delivered for use in future road construction. It is operational practice to deliver new/used culverts to specific sites to prepare for the upcoming road construction program.

In another location 2 snow removal devises were placed at the entrance to a winter cut area. Again this is an operational decision to leave winter snow removal equipment where it will next be used unless it requires service at our garage.

With respect to used oil containers that were noted in one of the harvest areas, there is no excuse for this. We have been focussing our efforts on rectifying this problem and I think we have made some progress however there is obviously still room for improvement. Be assured we will keep stressing garbage cleanup to our employees.

Summary

In summary we believe we have been following the requirements of the Forest Management Plan, Annual Work Schedules, Area of Concern prescriptions package, and MNR policies and guidelines.

Although we are certainly not perfect, we are striving to reach that point through a process of continuous improvement. One of the key elements to continuous improvement is self-compliance monitoring. Through our monitoring system we are able to identify and rectify compliance issues in a timely fashion thereby avoiding environmental or aesthetic problems.

Although we were not able to visit all of the sites that the audit team looked at I hope that the cross section we were able to visit will allow the preparation of an audit report and executive summary based on the corrected facts presented. We are very interested in having the report and executive summary present accurate, objective information.

List of Acronyms

AOC = Area of Concern

AFA = Algonquin Forestry Authority

AWS = Annual Work Schedule

CFSA = *Crown Forest Sustainability Act*

EBR = *Environmental Bill of Rights*

FMP = Forest Management Plan

FRI = Forest Resource Inventory

GFW = Global Forest Watch

GPS = Global Positioning System

LCC = Local Citizens Committee

MNR = Ministry of Natural Resources

MOE = Ministry of the Environment (Ontario)

NRZ = No-Road Zones

PWQO = Provincial Water Quality Objectives (Ontario)

RTL = Remote Tourism Lakes

SLDF = Sierra Legal Defence Fund

WL = Wildlands League

For further information or additional copies of this report, please contact



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