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**A Review of the Current Forestry Audit
Programs in the Northeast**

**A Report to the Joint Standing Committee
on Agriculture, Conservation and Forestry;
Second Regular Session of the
118th Maine Legislature**

April 1998

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Conservation and Forestry;
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OVERVIEW

The purpose of this report is to provide information about forestry audit/certification programs that should help legislators in discussions about how these programs might fit into state forest policy in Maine. The report includes:

- An overview of the international context for forestry audits,
- A description of four current or developing audit programs in the Northeast, and
- A comparison the audit *systems* and *standards* used in these programs

The report concludes with a discussion of policy issues that may help guide future considerations of the role of forestry audits in state policy.

BACKGROUND

Forests are crucial to Maine's economy and ecology. Legislators, landowners, and the public are engaged in a vigorous discussion about how to promote sustainable forest practices in Maine. One tool that promotes good forestry practices while maintaining management flexibility is a third-party, independent evaluation of forest management. Using performance standards or management systems guidelines, independent auditors can assess whether the management being applied on a forest ownership is in accordance with defined sustainability standards. Forest products certification applies to a subset of forest management evaluation programs; the certificate allows landowners to communicate to consumers that practice excellent management, and may be used in the marketplace to command market share or possibly a price premium.

The overall goal of forestry audits/certification is to promote and improve the ecological, social, and economic sustainability of forest management. Audits provide assurance of good management to the stakeholder groups interested in forest sustainability. Different stakeholder groups may also have specific goals for pursuing or supporting forestry audits:

- **Landowner Goals** may include improved public image, improved management performance, adopting a proactive policy that anticipates regulatory legislation, attracting/maintaining market share, and gaining a price premium
- **Consumer/Citizen Group Goals** may include improved consumer choice, means for influencing forest management through the marketplace, and improvement of the environment
- **State government Goals** generally include ensuring and improving the well-being of Maine's forest ecosystems and forest economy.

Forestry audit programs are still in the beginning stages of development, but have been gaining interest in recent years. In Maine, one large ownership (one million acres) and over

12,000 acres of land managed by two forestry consulting firms are currently certified (Appendix A). Industrial forest landowners are participating in an industry-initiated sustainability program. Two important study groups, the Northern Forest Lands Council and the Maine Council on Sustainable Forest Management, have articulated support for forest certification:

“State forestry and economic development agencies should encourage and cooperate with emerging private green certification programs that recognize landowners who practice sustainable forest management.” (From *Finding Common Ground: Conserving the Northern Forest*, Northern Forest Lands Council, 1994)

“Increase the quality of all forest management operations beyond compliance with regulatory minimums by increasing participation of forest landowners and forest management personnel in certification programs. Financial incentives can assist in the achievement of this benchmark.” (Benchmark 2 of Criterion 7, from *Sustaining Maine’s Forests: Criteria, Goals, and Benchmarks for Sustainable Forest Management*, Maine Council on Sustainable Forest Management, 1996)

Forestry audits have been the subject of recent legislative discussions and proposed actions. Forestry audits were proposed in the Compact for Maine's Forests (voted on in two citizen referenda in 1996 and 1997) and LD 1766, An Act to Improve Management of Maine's Forests (amended version voted on by the 118th Legislature in March 1998). Both measures failed, but it is probable that this discussion will continue. To provide background information, an informational panel was assembled for a work session of the Joint Standing Committee on Agriculture, Conservation, and Forestry on February 26, 1998, to discuss the concepts and possible applications of forest audits (Appendix B lists the panel members). This report supplements the information gained in that work session.

INTERNATIONAL PRINCIPLES AND REGIONAL STANDARDS

The forest products trade is international. The United States is the largest importer of wood products in the world, and, after Canada, the US wood and paper industry is the second largest exporter of wood products in the world (Heiner 1995). Environmental impacts of forest practices also have global consequences.

Several international agreements emphasize sustainable forest management. The United Nations’ Conference on Environment and Development in 1992 (The Rio de Janeiro “Earth Summit”) produced *Agenda 21* for Sustainable Development and the non-legally binding *Forest Principles*. Another outcome of this conference was the Montreal Process, in which the “Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests” met. This group developed seven criteria for sustainable forest management, covering biodiversity conservation, ecosystem productivity, ecosystem health and vitality, soil and water conservation, global carbon cycles, multiple

socio-economic benefits, and legal/policy/institutional frameworks. The United States has expressed its commitment to maintain or accomplish sustainable management on all forests by the year 2000 in accordance with the Montreal Process (Heiner 1995). The Canadian Standards Association Sustainable Forest Management System Standard (discussed later in this paper) follows closely the criteria developed in the Montreal Process.

Two strong movements to develop international standards for sustainable forestry are the International Organization for Standardization (ISO) and the Forest Stewardship Council (FSC). The ISO emphasizes environmental management systems, whereas the FSC stresses performance and product certification. These organizations are discussed in the following sections.

Regional standards, compatible with broad international principles or guidelines, are also needed to address unique regional timber, ecological, and social conditions of forestry. Efforts to develop regional standards are underway in many areas.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from more than 110 countries, established in 1947 (Upton and Bass 1996). The ISO develops technical standards for many fields, including such well-known standards as SI, the universal measurement system. It has more recently developed management systems standards including the ISO 9000 series for quality management systems and the ISO 14000 series for environmental management systems.

The generic Environmental Management System Standard is the ISO 14001. The EMS Standard does not have specific performance requirements; rather, it seeks to improve environmental performance through management planning. The idea behind this process is that with a certified environmental management system, a company will have the institutional commitment in place to improve management of its forest resources. Third-party audits are optional; a company may self-declare its compliance with the ISO 14001 EMS standard. The ISO 14001 EMS process includes preparation, planning, implementation, measurement and assessment, and review and improvement. In 1995, an international working group was convened in New Zealand and developed a technical report that details how the ISO 14001 EMS standard can be applied to forest management. The report suggests principles, criteria, and indicators that may be used to assist forestry organizations in developing an environmental management system. This report was completed in late 1997 – the ISO technical committee is currently voting on its approval. If approved, it will be published later in 1998.

Under ISO 14001 standards, a forest operation's management system is certified, not on-the-ground results. It is not intended to be a product labeling system.

FOREST STEWARDSHIP COUNCIL

The Forest Stewardship Council (FSC) is an international, non-governmental organization founded in 1993. Its headquarters are in Oaxaca, Mexico. It promotes “environmentally appropriate, socially beneficial, and economically viable management of the world’s forests by evaluating and accrediting forest management certifiers and by strengthening certification and forest management capacity worldwide” (FSC Notes). Membership includes a wide array of stakeholder groups, including representatives from environmental groups, the timber trade, forestry professionals, indigenous people’s groups, community forestry groups, and forest products certification organizations.

The FSC has adopted ten Principles and Criteria (Table 1) that apply to forests worldwide. Certification organizations that seek FSC accreditation must have standards that comply with these Principles and Criteria. Currently, five certification organizations have been accredited by the FSC. These include the Rainforest Alliance’s SmartWood Program (USA), Scientific Certification Systems’ Forest Conservation Program (USA), SGS Forestry Qualifior Programme (United Kingdom), the Soil Association’s Responsible Forestry Programme (United Kingdom), and Skal (the Netherlands). The SmartWood and Scientific Certification Systems programs are active in the United States.

These programs emphasize performance-based audits of forest management and have high standards. The goal is to provide a market-based means of rewarding excellent forest stewardship through “green” labeling of forest products. Consumer demand for these products may reward certified owners with increased market share or a price premium. Since the focus is on the marketplace, these programs are strictly voluntary. As defined by Upton and Bass in *The Forest Certification Handbook* (1996), these types of forest certification systems:

- Work as a market incentive to improve forest management and improve market access and share for certified products
- Are market-based incentives and should be voluntary
- Use stakeholder-acceptable standards in audits
- Use independent, third party certification

Buyers’ groups are beginning to organize on the demand side of this new market. For example, a buyers’ group in the United Kingdom, whose members comprise 25% of U.K. timber and paper sales, is working toward a goal of purchasing 100% of their wood and paper supplies from certified sources by the year 2000 (Sustainable Forestry Working Group, 1997). In the United States, a new nonprofit group, the Certified Forest Products Council, more generally promotes buying certified wood products.

The FSC also promotes the development of regional standards.

Table 1. The Forest Stewardship Council's Principles. Each principle is linked to several criteria (not reproduced in this summary). Sources: Forest Stewardship Council 1995, Ervin 1996, FSC US Initiative Website).

Principle #1: Compliance with Laws and FSC Principles. Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

Principle #2: Tenure and Use Rights and Responsibilities. Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

Principle #3: Indigenous People's Rights. The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.

Principle #4: Community Relations and Worker's Rights. Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.

Principle #5: Benefits from the Forest. Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

Principle #6: Environmental Impact. Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

Principle #7: Management Plan. A management plan - appropriate to the scale and intensity of the operations - shall be written, implemented, and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated.

Principle #8: Monitoring and Assessment. Monitoring shall be conducted - appropriate to the scale and intensity of forest management - to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

Principle #9: Maintenance of Natural Forests. Primary forests, well-developed secondary forests, and sites of major environmental, social, or cultural significance shall be conserved. Such areas shall not be replaced by tree plantations or other land uses. (A modification of this Principle is currently under consideration)

Principle #10: Plantations. Plantations shall be planned and managed in accordance with Principles and Criteria 1-9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

Draft Principle #11: Non-timber Forest Products, is being developed.

REGIONAL STANDARDS

The Forest Stewardship Council supports efforts to develop regional standards, so that certification addresses unique local conditions. Once the FSC has endorsed a regional standard, certification organizations working in that region must conform to those standards. The Swedish FSC Working Group has developed a proposed standard for forest certification in Sweden. Its proposed standard follows the general FSC Principles, but also has categories that apply to regionally specific issues such as montane forests and reindeer husbandry.

The FSC US Initiative, based in Vermont, coordinates working groups in the Northeast, Central Appalachia, Southeast, Mississippi Alluvial Valley and Ozarks Interior, Southwest, Pacific Region, the Lake States. These working groups are developing FSC-based standards for those regions. The Northeast Working Group includes members from Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and New York. This group is currently working toward preparing a draft standard for review.

In Canada, regional working groups are developing FSC-based regional standards, and the Canadian Standards Association has developed a Sustainable Forest Management System Standard for Canada that is compatible with the international ISO 14000 standard for environmental management systems.

AUDIT PROGRAMS ACTIVE IN THE NORTHEAST: DESCRIPTION OF THE PROGRAMS

FSC-ACCREDITED CERTIFIERS ACTIVE IN THE UNITED STATES: SCIENTIFIC CERTIFICATION SYSTEMS' FOREST CONSERVATION PROGRAM AND THE RAINFOREST ALLIANCE'S SMARTWOOD PROGRAM

Scientific Certification System's Forest Conservation Program (SCS) and the Rainforest Alliance's SmartWood program have similar approaches to certification. Both are accredited by the FSC, and their standards comply with the FSC Principles and Criteria. These programs are driven by high performance standards and independent, third-party audits. The results of certification include product labeling, so consumers have a way to distinguish certified products in the marketplace. These organizations are wary of programs with a less strict performance basis, as product labeling requires a very high level of consumer trust and public accountability.

The audit *process* for the two systems is similar. A landowner (or more recently, a resource manager) first submits an application to the certifying organization. Next, a preliminary evaluation is done to assess whether the management plans and sufficient data are in place to proceed. Major obstacles to certification are also identified at this point. This preliminary evaluation should indicate whether an applicant is ready to proceed with certification, or point out improvements that need to be made before attempting certification. If certification appears possible, a full audit proceeds. A three to five member team comprising regional,

independent experts in forest ecology, wildlife biology, silviculture, and harvesting is assembled to review documentation and to visit field sites of their choice. The information gathered is confidential. After the field assessment, which takes several days, the team prepares a draft report, which is subsequently peer-reviewed by two or three other experts. Finally, a certification committee decides whether to certify the landowner, and if there are to be conditions attached to certification. If certification is granted, it is for five years, with a contract stating a timetable for meeting conditions of certification. Annual checkups ensure that the contract agreement is being kept. A summary of the assessment is disclosed to the public.

The assessment by the two organizations is similar. SmartWood uses a 1-5 grading system, with a score of 3 the certifiable minimum. SCS has a weighted grading of the various elements on a 100-point scale, with 80 points the certification threshold. SCS also gives examples of ideal and non-certifiable performance in its standards.

The detailed standards of these certifiers are listed in Appendix C. Major elements addressed by each include timber sustainability, ecosystem health, and community benefits/financial considerations (Table 2).

CANADIAN STANDARDS ASSOCIATION STANDARD FOR SUSTAINABLE FOREST MANAGEMENT SYSTEM

In 1994, the Canadian Sustainable Forestry Certification Coalition, a group of 22 industry organizations, asked the Canadian Standards Association (CSA) to develop a standard for sustainable forest management systems. The six criteria and 21 critical elements (Table 3) developed were closely adapted from the criteria stated in the Santiago Agreement of the Montreal Process. Through a public process, local forest managers will develop indicators and quantifiable performance objectives to measure these critical elements. Companies who wish to have a registered Sustainable Forest Management System with this program must go through an audit by an accredited, independent auditor. This program follows the ISO approach, so auditors focus on the management system. However, field inspections are a part of the audit, to ensure that progress toward the intended results of the system is being achieved.

The CSA approach falls somewhere in between a purely goal-oriented, systems approach and a strict performance standard approach. The focus is on developing an environmental management system, consistent with the ISO 14000 standard. However, public participation in developing locally relevant performance objectives is required, and audits are done by an independent third party. The audit does not require that objectives be accomplished, but does require that "progress toward achieving the objectives is being monitored and learning is being used for continual improvement of the SFM System." The goal of this process is continual improvement. The rate of improvement is not specified, but is defined by the company in its Sustainable Forest Management plan. Participation in the CSA program shows a commitment to progression toward internationally defined goals for sustainable forest management.

Table 2. Program elements of the SmartWood Certification Program *Northeast Regional Guidelines for the Assessment of Natural Forest Management* and Scientific Certification Systems' Forest Conservation Program Standards.

SmartWood	Scientific Certification Systems
1. General Information	A. Timber Resource Sustainability
2. Forest Security	<ul style="list-style-type: none"> • Harvest Regulation • Stocking and Growth Control • Pest and Pathogen Management Strategy • Forest Access • Harvest Efficiency and Product Utilization • Management Plan and Information Base
3. Management Planning	
4. Sustaining Forest Production and Resource Quality	
5. Forest Operations	B. Forest Ecosystem Maintenance
<ul style="list-style-type: none"> • General • Pre-harvest Activities • Tree Felling • Skidding, Yarding, and Hauling • Post-harvest Activities 	<ul style="list-style-type: none"> • Forest Community Structure and Composition • Long-Term Ecological Productivity • Wildlife Management Actions, Strategies, and Programs • Watercourse Management Policies and Programs • Pesticide Use: Practices and Policies • Ecosystem Reserve Policies
6. Environmental Impacts	C. Financial and Socio-Economic Considerations
<ul style="list-style-type: none"> • General • Measures to Conserve and Enhance Biodiversity • Reserves and Special Management Zones • Water and Soil Resource Protection • Control of Chemicals • Product Processing 	<ul style="list-style-type: none"> • Financial Stability • Community and Public Involvement • Public Use Management • Investment of Capital and Personnel • Employee and Contractor Relations
7. Social	
<ul style="list-style-type: none"> • Community Relations • Employee Relations 	
8. Economic Viability	
<ul style="list-style-type: none"> • Long Term Investment in Forest • Enhancing Resource Potential 	
9. Tracing and Tracking	

Table 3. CSA Criteria and Critical Elements for Sustainable Forest Management Systems

Criterion	Critical Elements
Conservation of biological diversity	<ul style="list-style-type: none"> • Ecosystem diversity • Species diversity • Genetic diversity
Maintenance and enhancement of forest ecosystem condition and productivity	<ul style="list-style-type: none"> • Disturbances and stress • Ecosystem resilience • Biomass
Conservation of soil and water resources	<ul style="list-style-type: none"> • Soil and water quality • Conservation practices
Forest ecosystem contributions to global ecological cycles	<ul style="list-style-type: none"> • Global carbon budget • Forest land conversion • Carbon dioxide storage • Policy factors • Hydrological factors
Multiple benefits to society	<ul style="list-style-type: none"> • Productive capacity • Competitiveness • Contribution to economy • Non-timber values
Accepting society's responsibility for sustainable development	<ul style="list-style-type: none"> • Aboriginal rights • Forest communities • Effective decision making • Informed decision making

AMERICAN FOREST AND PAPER ASSOCIATION'S SUSTAINABLE FORESTRY INITIATIVE

In contrast to the CSA Standard for Sustainable Forest Management and the FSC-accredited standards, the Sustainable Forestry Initiative guidelines were developed within the forest products industry. The American Forest and Paper Association adopted the Sustainable Forestry Initiative (SFI) in 1994. SFI responds to public demand that forestry move toward more comprehensive sustainable practices. Currently, SFI is not a certification system, but a third-party review system of company's individual implementation of SFI guidelines is in the development process. SFI is more wary than FSC-accredited certifiers about what aspects of sustainability are quantifiable, so current guidelines are broad. However, commitment to the SFI guidelines (Table 4) is a requirement for AF&PA membership, and some former members have left or been asked to leave because of this requirement.

Each member company develops an action plan to implement SFI guidelines. Continuous improvement is the goal. Third-party evaluations of actions are encouraged, but currently member companies self-report their progress to the AF&PA. An Expert Review Panel does evaluate the information submitted for accuracy before it is presented in the SFI annual progress report. SFI differs from the other auditing programs as it has adopted policy goals for all forest lands (Table 4), in recognition that much of a mill's wood supply is procured from outside a company's own lands.

Table 4. Action plan guidelines and SFI policy goals for sustainable forestry on all public and private land in the U.S. (*Sustainable Forestry for Tomorrow's World*, 2nd Annual Progress Report of the AF&PA's Sustainable Forestry Initiative, 1997).

Action Plan Guidelines	SFI Policy Goals for All Land in U.S.
<ul style="list-style-type: none"> • Broaden the practice of sustainable forestry • Ensure prompt reforestation • Protect water quality • Enhance wildlife habitat • Minimize the visual impact of harvesting • Protect special sites • Contribute to biodiversity • Continue to improve wood utilization • Continue the prudent use of forest chemicals to ensure forest health • Foster the practice of sustainable forestry on all forestlands • Publicly report progress • Provide opportunities for public outreach 	<ul style="list-style-type: none"> • Increase overall forest growth, quality, and productivity • Help to appropriately define and implement active ecosystem management on public lands to achieve sustainable forestry on these lands • Reduce the risk of and suppress wildfires • Promote and use integrated pest management to lessen reliance on chemicals • Encourage forest health and productivity research • Encourage continuing education • Recognize excellence in the practice of sustainable forestry • Protect the ability of all private landowners to manage their forestland on a sustainable basis

AUDIT PROGRAMS ACTIVE IN THE NORTHEAST: COMPARISON

COMPARISON OF THE AUDIT SYSTEMS

The four programs described in the previous section are actively conducting audits or developing an audit system in the Northeast. There are substantial differences among the programs' audit systems (Table 5). Scientific Certification System's Forest Conservation Program (SCS) and the Rainforest Alliance's SmartWood program work as independent, third-party certifiers of on-the-ground performance. Their goal is certification of excellent forest practices, allowing a "green" product label. The AF&PA's Sustainable Forestry

Initiative (SFI) currently has developed broad guidelines for sustainable forestry and relies on member companies to develop their own implementation plans for these guidelines and report on their progress. A third-party verification system is being developed. The main goals of SFI are to promote continuous improvement of forest management and increase public accountability and trust. The Canadian Standards Association Sustainable Forest Management System Standard (CSA) emphasizes the *process* of developing a sustainable forest management system. Its goal is to promote continuous improvement of forest practice through management planning that includes the public in the process.

SCS and SmartWood certify both large landowners and resource managers. Certifying resource managers is a fairly new option that allows small landowners to benefit from certification without having to invest in an audit on their own. In this type of certification, a resource manager submits a specific pool of land under his or her management for certification. Over time, the resource manager may add more lands to the certified pool. SFI is a forest industry program, although its principles extend to promoting sustainable forestry on all lands. The CSA program also focuses on industrial forest lands. A summary of what lands are currently certified by each program worldwide, in the United States, and in Maine is given in Appendix A.

Is there conflict or compatibility among these approaches? Performance-based programs, as seen in next section, have more specific standards than do SFI and CSA. However, developing a sustainable forest management system is certainly a prerequisite to meeting more specific performance standards. If SFI does initiate a third party review, all approaches would include a third party audit of some kind.

There are tensions among the programs, however. The FSC-accredited programs emphasize a credible product label, and systems-based programs offering certification (with potential marketing efforts by companies certified in this way) are seen as a threat to the credibility of “green” product labeling. Programs that emphasize management planning and continuous improvement, on the other hand, view performance-based programs as too prescriptive and politically driven by an environmental agenda. All programs are less than a decade old; it is unclear whether any one approach will predominate in the future.

Table 5. Comparison of the audit systems used by the four programs active in the Northeast.

	SCS, SmartWood	SFI	CSA Standard
What is certified	On-the-ground forest practice, allowing certification label on products	Not yet defined; currently self-reporting progress towards goals	Sustainable Forest Management System, with some review of progress toward goals defined in the management plan
Accreditation/ Validation of Auditor	Forest Stewardship Council	When verification program is ready, it will need approval of SFI Expert Review Panel	Canadian Standards Association, will be compatible with ISO
Performance or Process	Performance	Not yet defined; current focus on process	Process, with some evaluation of performance
Specificity of standards	Specified in certifier's standards for region	General; specific actions taken defined by individual landowner	General; quantifiable indicators developed by individual landowner through a public process

COMPARISON OF THE AUDIT *STANDARDS*

Comparing standards objectively is challenging. How a comparison is organized reflects the elements one considers most important in a certification system. In this review, it is assumed that the main goal of forest audits is to promote sustainable forestry. A good comparison would then emphasize agreed-upon components of sustainable forestry. The work of the Maine Council on Sustainable Forest Management (MCSFM) is recognized as an important statement of what the key criteria are for sustainable forest management in Maine, and has received recent attention from legislators (Council members met with the Joint Standing Committee on Agriculture, Conservation, and Forestry on February 12, 1998 to review the Council's work). Therefore, the seven broad criteria developed by the MCSFM are used here as a basis for comparing the four audit programs. A socio-economic category is added to this analysis, since socio-economic viability is an important part of all the audit programs. The MCSFM recognized that their report did not address this component of sustainability.

Presented below is a summary (Table 6) and discussion of this comparison. The full categorization, listing all the actual standards and guidelines, is presented in Appendix C. As mentioned above, SCS and SmartWood have more specific, performance-based standards than SFI and CSA. SFI and CSA guidelines are more general, but require that individual companies develop specific implementation plans.

Table 6. Summary of how the four audit program standards address the sustainability criteria developed by the Maine Council on Sustainable Forest Management. The number of standards relating to a given criterion is listed first (Not specifically addressed - 0; Few - 1 or 2; Moderate - 3 to 6; Several - more than 6), then whether those standards are specific or general.

MCSFM Criterion	SmartWood	Scientific Certification Systems	Sustainable Forestry Initiative¹	Canadian Standards Association²
1	Several, specific	Moderate, specific	Not specifically addressed	Few, general
2	Moderate, specific	Several, specific	Moderate, specific	Few, general
3	Several, specific	Several, specific	Moderate, some general and some specific	Few, general
4	Few, general	Not specifically addressed	Few, general	Not specifically addressed
5	Several, specific	Several, specific	Moderate, general	Several, general
6	Few, general	Moderate, specific	Not specifically addressed	Not specifically addressed
7	Several, specific	Several, specific	Several, some general and some specific	Several, some general and some specific
Socio-Economic	Several, specific	Several, specific	Few, general	Moderate, general

¹ Member companies need to develop specific implementation plans

² Quantifiable indicators are to be developed at the local forest level through a participatory process

MCSFM Criterion 1: Soil Productivity. Of the four programs, SmartWood has the greatest number of standards relating to maintenance of soil quality. The relevant SmartWood and SCS guidelines mainly address roads, landings, and skid trails, as well as erosion. CSA very generally addresses soil productivity; SFI guidelines do not specifically address this criterion.

MCSFM Criterion 2: Water Quality, Wetlands, and Riparian Zones. SmartWood, SCS, and SFI all have a moderate number of standards or guidelines that address water quality. SmartWood and SCS focus on roads, stream crossings, and riparian zone management. Only SmartWood makes any specific reference to wetlands. SFI guidelines emphasize meeting legal requirements and funding research. CSA very broadly addresses water quality and water resources.

MCSFM Criterion 3: Productive Capacity and Quality of the Timber Resource. SCS is very strong in this area; it has many standards relating to harvest vs. growth overall and by species group, timber rotation lengths, species type conversions, application of silviculture, wood quality, and residual stand damage after harvesting. SmartWood also addresses most of these aspects of timber productivity and quality. SFI guidelines address reforestation after harvest and efficient forest utilization. One of the CSA critical elements addresses harvest levels versus resource productivity.

MCSFM Criterion 4: Aesthetic Impacts of Timber Harvesting. SFI guidelines addresses aesthetics in terms of encouraging a diversity of forest cover types and planning harvests to blend into the terrain. SmartWood specifies that sites of aesthetic significance be given special attention. Aesthetic impacts are not specifically addressed by SCS or CSA standards.

MCSFM Criterion 5: Biological Diversity. SmartWood and SCS have many specific standards that address biological diversity. These standards relate to plantations and use of exotic species, forest fragmentation, stand and forest diversity, wildlife habitat, ecological reserves, and minimizing chemical use. SFI guidelines broadly address wildlife habitat, special areas management, and prudent use of chemicals. CSA has general guidelines on conversion of land to other uses, conservation of rare environments, ecosystem, species, and genetic diversity, and ecosystem health, resilience, productivity, and processes.

MCSFM Criterion 6: Opportunities for Traditional Recreation. Only SCS gives much attention to traditional recreation. Its standards address public recreational use access, and strategies to control resource damage from recreational use. SmartWood standards briefly mention recreational use by local communities. SFI and CSA do not specifically address traditional recreation.

MCSFM Criterion 7: Competence and Public Accountability of Forest Owners and Managers. The SFI program emphasizes efforts in this area. SFI has many guidelines that address getting others involved in forestry to progress toward sustainability goals, reporting progress toward sustainability to the public, and developing public outreach and input programs. The CSA approach focuses on the process of developing a sustainable forest

management plan. The management system itself is audited, with an emphasis on using an inclusive decision-making process. SCS and SmartWood, too, emphasize management planning and how plans are implemented in the field. In addition, SmartWood has standards relating to public education and input; SCS addresses employee participation in community, professional, and policy groups.

MCSFM Criterion 8: Additional Socio-Economic Criterion. SmartWood and SCS have detailed standards about financial stability and dedication to long-term management. They also address community and labor relations through standards relating to support of local businesses, employment of local people, employee wages and benefits, and worker safety. CSA has general criteria that address social values, balancing market and non-market goods and services, and Aboriginal rights. SFI guidelines mention protecting special historical sites.

In summary, SCS and SmartWood address MCSFM Criteria 3 and 5 (Productive Capacity and Quality of the Timber Resource and Biological Diversity, respectively) most thoroughly. SFI is very strong in Criterion 7 (Competence and Public Accountability of Forest Owners and Managers). The CSA Standard is also strong in Criterion 7 as it relates to management planning and ensuring a public process in developing a sustainable forest management system.

Some MCSFM criteria are addressed by many standards/guidelines, including Criteria 3 (Productive Capacity and Quality of the Timber Resource), 5 (Biological Diversity), and 7 (Competence and Public Accountability of Forest Owners and Managers). Others receive little attention from any of the audit programs, such as Criteria 4 (Aesthetic Impacts of Timber Harvesting) and 6 (Opportunities for Traditional Recreation). These criteria may be better addressed by policy tools other than forestry audits.

CONCLUSIONS: FORESTRY AUDITS AND STATE POLICY

Hopefully, this report provides a better understanding of the goals and standards of current forestry audit programs in the Northeast, and how these programs differ. Forestry audits appear to have the potential to raise management standards, increase commitment to sustainable forestry practices, and communicate this commitment to citizens. Audits have been considered in citizen referenda and through the legislative process, and so far, the majority has decided not to adopt forestry audits as state policy; legislators have determined that other means are more appropriate to promote the goal of forest sustainability. However, since there has been a persistent interest in forestry audits, both from state policymakers and from many interest groups, it is likely that they will be revisited in the future.

The questions below raise some issues about the role of forestry audits in state policy. These issues are generated from the basic question of whether forestry audits should be part of a state policy to improve and maintain the forest economy and forest ecosystems of Maine. At

this time, there is a policy answer, but if there are future discussions on this topic, these questions may be useful.

- In what ways could forestry audits improve forest sustainability? What are the possible ecological, economic, and social benefits?
- In what format could forestry audits balance private and public interests in management of private forest lands?
- How might forestry audits be applied to state-owned commercial forest land? Some states and municipalities are seeking independent certification of their own forests, including land in Pennsylvania, Minnesota, Massachusetts, and New York. Certification of public lands might serve as a model for other owners as well as increase confidence that public lands are being managed sustainably.
- If forestry audits are adopted as part of future policy, what criteria should be used to determine whether a particular forestry audit program meets the policy goals of Maine?
- If forestry audits are not formally implemented in state policy, are there other ways that Maine could promote third-party audits of forest management and/or certified forest products?

Audit programs are a relatively new approach to promoting forest sustainability. Because of market forces and public pressures, their prominence will likely increase in the future. Many landowners are developing their own policies regarding forestry audits in response to their increasing importance. Developments in the next few years may clarify the role of forestry audits in state policy.

RESOURCES

Books/Publications:

- American Forest & Paper Association. 1994. *Sustainable Forestry: Principles and Implementation Guidelines*.
- American Forest & Paper Association. 1997. *Sustainable Forestry for Tomorrow's World*. 2nd Annual Progress Report of the AF&PA's Sustainable Forestry Initiative.
- The Canadian Standards Association. 1996. CAN/CSA-Z809-96. *A Sustainable Forest Management System: Specifications Document*.
- Ervin, J. June 1996. FSC members ratify plantation principle. *FSC Notes* 1(3):1,11.
- Forest Stewardship Council. 1995. *Principles and Criteria for Natural Forest Management*. Oaxaca, Mexico.
- Heiner, H. 1995. Issues in international forestry: how they affect the United States. *Journal of Forestry* 93(10):6-11.
- Maine Council on Sustainable Forest Management. 1996. *Sustaining Maine's Forests: Criteria, Goals and Benchmarks for Sustainable Forest Management*. Dept. of Conservation (Maine).
- Maine Sustainable Forestry Initiative. 1996 Annual Report.
- National Wildlife Federation Northeast Natural Resource Center and The Rainforest Alliance's SmartWood Program. 1997. *SmartWood Certification Program: Northeast Regional Guidelines for the Assessment of Natural Forest Management*. Montpelier, VT.
- Northern Forest Lands Council. 1994. *Finding Common Ground: Conserving the Northern Forest*. Concord, NH.
- Scientific Certification Systems. 1995. *Forest Conservation Program Evaluation Procedures and Criteria*. California.
- The Sustainable Forestry Working Group. 1997. *Sustaining Profits and Forests: The Business of Sustainable Forestry*. John D. and Catherine T. MacArthur Foundation. 32p.
- Tyrrel, M. and D. Publicover. 1997. *Assessment of Recommendations and Guidelines for Sustainable Forestry in the Northern Forest Region*. Appalachian Trail Club Research Department.

Upton, C. and S. Bass. 1996. *The Forest Certification Handbook*. St. Lucie Press, FL. 218 p.

Viana, V., ed. 1996. *Certification of forest products: issues and perspectives*. Island Press, Washington, D.C. 261 p.

Journals/Newsletters:

FSC Notes. Oaxaca, Oaxaca, Mexico.

FSC U.S. Initiative Update. Waterbury, VT.

Internet Resources (the field of forest certification is evolving fast, so the Internet provides a good way to keep up):

American Forest & Paper Association – <http://www.afandpa.org>

Canadian Sustainable Forestry Certification Coalition - <http://www.sfms.com>

Certified Forest Products Council – <http://www.certifiedwood.org>

Forest Stewardship Council - <http://antequera.antequera.com/FSC>

Forest Stewardship Council U.S. Initiative – <http://homepages.togther.net/~fscus/>

Forest Stewardship Council Northeast Standards Working Group – <http://www.fscusne.org>

Scientific Certification Systems – <http://www.scs1.com/> (that is, [www.scs 'one'.com](http://www.scs-one.com))

SmartWood - <http://www.rainforest-alliance.org/swr3.html>

APPENDIX A. INTERNATIONAL, U.S., AND MAINE PARTICIPATION IN FORESTRY AUDIT PROGRAMS

	Worldwide	United States	Maine
Smart Wood	28 landowners or resource managers certified	Of these, 17 are in the United States	Some land managed by Two Trees Forestry (a resource manager) is certified by SmartWood
SCS	13 landowners or resource managers certified	Of these, 8 are in the United States	Pingree Associates' land and some land managed by Mid-Maine Forestry (resource manager) are certified by SCS
FSC in general	As of October 1997, 9.3 million acres of forest are certified in 17 countries	As of November 1997, over 3.4 million acres are certified (of 483 million acres commercial U.S. timberland)	See above
SFI	Not an international organization – a national effort by the American Forest & Paper Association (AF&PA)	There are 167 AF&PA member companies (90% of US industrial forestland); membership in AF&PA is contingent on commitment to the SFI principles and guidelines	The following Maine companies are AF&PA members: Champion International Eastern Fine Papers Fraser Papers, Inc. Georgia-Pacific Corp. Bowater Inc. Hancock Timber International Paper J.D. Irving, Ltd. Fort James Timber Corp. Madison Paper Industries Mead Paper Pingree Associates S.D. Warren Co.
CSA	Not an international organization, but should become linked with the ISO 14001 Env. Mgmt. System Standard	Not active in United States. In Canada, CSA standards are being implemented on 12 million hectares as of 1997 - expected to increase to 20 million hectares. No audits yet done.	Not active in Maine; however, Maine forest industries that also hold land in Canada may become involved with the CSA process.

**APPENDIX B. JOINT STANDING COMMITTEE ON AGRICULTURE,
CONSERVATION AND FORESTRY WORK SESSION ON FORESTRY AUDITS -
PANEL DISCUSSION MEMBERS**

The following people participated in a panel discussion about forestry audits on February 26, 1998:

Sidney Balch, Chair, Maine Sustainable Forestry Initiative Implementation Committee

Neil Sampson, Executive Secretary, National Sustainable Forestry Initiative Expert Review Panel

Steve Pelletier, Chief Forester, Woodlot Alternatives (Northeast representative for Scientific Certification Systems)

Mark Miller, President, Two Trees Forestry (SmartWood certified Resource Manager)

Robert Seymour, Curtis Hutchins Professor of Forest Resources, University of Maine, Orono (Dr. Seymour has served on Scientific Certification Systems' evaluation team)

John McNulty, Vice President, Seven Islands Land Co. (the land they manage is certified by Scientific Certification Systems)

Blake Brunson, Chief Forester, JD Irving Paper Company (Involved with SFI, SCS, and CSA)

APPENDIX C. COMPARISON OF AUDIT STANDARDS USED BY SMARTWOOD, SCIENTIFIC CERTIFICATION SYSTEMS, THE SUSTAINABLE FORESTRY INITIATIVE, AND THE CANADIAN STANDARDS ASSOCIATION

This analysis categorizes all the standards of the four programs under consideration according to how they relate to the criteria developed by the Maine Council on Sustainable Forest Management (MCSFM).

Each MCSFM criterion is stated, followed by the standards or guidelines from each of the four programs that address that criterion. All standards or guidelines from each program are listed. A few of the standards fit more than one MCSFM criterion; in these cases, the part of the standard that fits each criterion is listed. Standards relating to management planning are listed under Criterion 7 (Competence and Public Accountability of Forest Owners and Managers). Numbers noted after standards refer to the numbering used in the source. Sources of the standards and guidelines compared here include:

SmartWood. *SmartWood Certification Program: Northeast Regional Guidelines for the Assessment of Natural Forest Management.* 1997. National Wildlife Federation, Northeast Natural Resource Center, Montpelier, VT and The Rainforest Alliance's SmartWood Program, Richmond, VT.

Scientific Certification Systems (SCS). *Forest Conservation Program Evaluation Procedures and Criteria.* 1995. Scientific Certification Systems.

Sustainable Forestry Initiative (SFI). *Sustainable Forestry: Principles and Implementation Guidelines.* 1994. American Forest & Paper Association.

Canadian Standards Association (CSA). CAN/CSA-Z809-96. *A Sustainable Forest Management System: Specifications Document.* 1996. National Standard of Canada/Canadian Standards Association.

MCSFM Criterion 1: Soil Productivity

Goal: Maintain proper soil structure, texture, organic matter, and adequate nutrient levels for forest growth

SmartWood addresses soil productivity through some of its standards for Forest Operations and Environmental Impacts:

- The road, log landing and skidding systems are designated prior to harvest and are minimized, while providing transportation safety and hauling roads (5.2)
- Maps have been prepared before harvesting or road construction, which specify areas which are suitable only for dry-weather and/or frozen conditions and indicate locations of truck roads, landings, main skid trails, no-cut zones, and other conservation areas (5.3)
- Strategies for protecting highly erodible areas or designated buffer zones and wetlands are being followed during the harvest (5.9)
- Skid trail placement is acceptable for site conditions and minimized (5.11)
- Skidder operators work with sufficient care to . . . minimize impacts. . . to soil resources (5.12)
- Log landing and hauling activities are appropriate for the scale of the operation (5.13)
- Appropriate timber sale area closure actions are taken in areas that are no longer in use: active erosion control measures (mulching, silt fence) are implemented as needed in accordance with state BMPs (5.15)
- Management practices address structural heterogeneity, potential for soil improvement and nutrient enrichment on the forest floor by maintaining or restoring the presence of coarse woody debris (CWD) (6.5)
- Operation has a policy for steep slope harvesting. Policy is written and implemented. (6.14)

SCS addresses soil productivity by evaluating the following indicators that relate to Forest Access (A.4) and Long-Term Ecological Productivity (B.2):

- Road right-of-way widths
- Conditions of landings and log decks
- Management efforts designed to maintain the nutrient capital of managed areas
- Extent of soil damage and changes in water drainage during harvesting operations - e.g., compaction, rutting, erosion, mass soil movements on steep sites
- Extent and appropriateness of whole tree logging
- Excessive exposure of soils to harsh micro-climatic stress

SFI guidelines do not specifically address soil productivity

CSA addresses soil productivity through a Critical Element relating to Conservation of Soil and Water Resources (Criterion 3):

- Soil resources are conserved if the ability of soils to sustain forest productivity is maintained within characteristic ranges of variation
- Quantifiable indicators to be defined by a public process for a local forest area

MCSFM Criterion 2: Water Quality, Wetlands, and Riparian Zones

Goal: Conserve water quality and quantity and the functions and values of wetlands and riparian zones.

SmartWood addresses water quality, wetlands, and riparian zones through some of its standards for Forest Operations and Environmental Impacts:

- Roads, stream crossings and log landings are designed to meet or exceed state Best Management Practices (5.4)
- Strategies for protecting highly erodible areas or designated buffer zones and wetlands are being followed during the harvest (5.9)
- Skidder operators work with sufficient care to minimize impacts to water resources (5.12)
- Appropriate timber sale area closure actions are taken in areas that are no longer in use: temporary stream crossing structures removed and stream banks restored; landings reshaped to secure adequate surface drainage and reseeded, preferably with non-exotic species; functional cross drains constructed on roads where appropriate (5.15)
- Operation has a policy for soil and watershed management, addressing riparian buffer zones and watershed protection. At minimum, the policy complies with state BMPs to maintain or improve water quality and aquatic health, and to minimize on-site and downstream damages caused by harvesting operations (6.13)

SCS addresses water quality, wetlands, and riparian zones by evaluating the following indicators that relate to Forest Access (A.4.) and Watercourse Management Policies and Programs (B.4.):

- Condition of culverts, water bars, and roadway surfaces
- Road bank vegetative management (e.g., seeding)
- Runoff drainage patterns during storms
- Effectiveness of design and execution of watercourse buffer policies (e.g., width, canopy retention policies, frequency of entry)
- Extent and effectiveness of stream restoration projects
- Frequency and nature of violations of environmental and conservation regulations
- Effectiveness of design and maintenance of stream crossings
- Frequency of stream crossings within harvest areas
- Location and layout of roadways near watercourses
- Road bank vegetative management in areas near watercourses
- Extent of observable roadway rainfall runoff into watercourses

SFI addresses water quality, wetlands, and riparian zones through the following objective and performance measures:

- ◊ Protect the water quality in streams, lakes, and other waterbodies by establishing riparian protection measures based on soil type, terrain, vegetation, and other applicable factors, and by using EPA-approved Best Management Practices in all forest management operations (Objective 3):
 - Meet or exceed all established Best Management Practices (BMPs) approved by EPA, all applicable state water quality laws and regulations, and the requirements of the Clean Water Act for forestland
 - Establish and implement riparian protection measures for all perennial streams and lakes and involve a panel of experts at the state level to help identify goals and objectives for riparian protection

- Individually, through cooperative efforts, or through AF&PA, provide funding for water quality research

CSA addresses water quality, wetlands, and riparian zones through a Critical Element relating to the Conservation of Soil and Water Resources (Criterion 3):

- Water resources are conserved if water quality and quantity is maintained
- Quantifiable indicators to be defined by a public process for a local forest area

MCSEFM Criterion 3: Productive Capacity and Quality of the Timber Resource

Goal: Improve the productive capacity of the forest and the quality of the timber resource to sustain a stable or, if possible, increasing harvest of quality forest products and support a diversified forest products industry

SmartWood addresses the productive capacity and quality of the timber resource through some of its standards for Sustaining Forest Production and Resource Quality Forest Operations:

- An allowable cut has been derived based on well-documented estimates of growth and yield to provide a non-declining sustained yield of forest products and this target is being followed in harvest planning (4.1)
- Boundaries of harvest areas are respected and controlled between cutting cycles so as to prevent disturbance to regeneration (4.2)
- Management strategies prevent over harvesting of individual tree species (4.3)
- Management strategies emphasize improving long term stand quality (4.4)
- Management addresses the restoration of degraded or low quality forest stands (4.5)
- A pre-harvest inventory and sale area reconnaissance is implemented (5.5)
- Trees are marked or clearly designated prior to harvest (5.6)
- An operating/harvesting plan is written, available, and used in the field that includes: silvicultural objectives, volume and basal area targets, residual species composition, and transportation and access issues (5.7)
- Pre-harvest silvicultural activities are undertaken, as appropriate to the operation's needs, scale and intensity (5.8)
- Felling techniques minimize damage to residual forest (5.10)
- Skidder operators work with sufficient care to avoid residual stand damage (5.12)
- Post-harvest silvicultural activities are implemented where planned with reliability and success (5.14)

SCS addresses the productive capacity and quality of the timber resource by evaluating the following indicators that relate to Harvest Regulation (A.1.), Stocking and Growth Control (A.2.), Pest and Pathogen Management Strategy (A.3), Forest Access (A.4.), and Harvest Efficiency and Product Utilization (A.5.):

- Actual yields per acre as compared to predicted yields
- Current and projected merchantable inventory volumes per acre, particularly in stands that will be scheduled for harvest over the next 30 years
- Target age of crop trees under selection management
- Rotation lengths, relative to stand ages approaching maximum mean annual increment
- The extent to which current harvest levels are justified by allowable cut effects (i.e., taking credit now for projected future growth levels)
- Actual annual harvest levels as compared to planned levels

- Species composition, by volume, of the annual harvests compared to planned levels
- Annual softwood harvest volume as a percent of total annual harvest as compared to softwood inventory volume as a percent of total inventory volume
- Size class distribution of stands, stratified by broad species classes
- Historical rates of stand type conversion (as determined from stand maps typed from aerial photographic interpretation), particularly from the high valued to mid- and low-valued types
- Average annual harvest levels compared to growth levels
- Design and execution of stand treatments and consistency with projected yields
- Harvesting priorities at the stand and individual tree level
- Stocking levels and species composition of young stands
- Extent to which field foresters possess and are applying current silvicultural knowledge
- Extent to which prescriptions are tailored to individual stand conditions and markets
- Extent to which expedient prescriptions such as diameter-limit harvesting are routinely applied
- Extent and effectiveness of pre-commercial and commercial stand release treatments, particularly measures taken to control hardwood occupancy on sites historically occupied by softwoods
- Damage to residual stand during partial harvest entries
- Adequacy of residual stocking after partial harvests
- Pre- and post-harvest species composition, particularly the extent to which high risk species and stand conditions are being systematically reduced through the setting of harvesting priorities and plantation composition
- Explicit efforts to manage for natural pest predators such as bird species, and modification of prescriptions to increase structural diversity that provides favorable habitat for natural predators
- Tendency of foresters to rely on future insecticide spraying as the principal strategy for surviving future epidemics
- Average miles of haul roads per acre, roughly estimated
- Average area accessed per mile of new spur road
- Observed circumstances where lack of access has limited desired management prescriptions
- Incidence of sound logs not being trucked out of the woods
- Frequency of excessive falling damage to harvested trees
- Extent of "skinned" residual trees or trees with tops broken during harvesting operations
- Appropriateness, from a maximum value realization standpoint, of the end uses (and sale prices) of harvested logs
- Harvesting decisions driven by short-term low-value product realization at the expense of long-term productivity

SFI addresses the productive capacity and quality of the timber resource through performance measures relating to the following objectives and performance measures:

- ◊ Promptly reforest harvested areas to ensure long-term forest productivity and conservation of forest resources (Objective 2):
 - Reforest after final harvest by planting or direct seeding within two years, or by planned natural regeneration methods within five years
 - Promote state-level reporting of the overall rate of reforestation success
- ◊ Continue to improve forest utilization to help ensure the most efficient use of forest resources (Objective 8):
 - Employ appropriate technology, processes, and practices to minimize waste and ensure efficient utilization of trees harvested

CSA addresses the productive capacity and quality of the timber resource through a Critical Element relating to Multiple Benefits to Society (Criterion 5):

- Extraction rates are within the long-term productive capacity of the resource base
- Quantifiable indicators to be defined by a public process for a local forest area

MCSFM Criterion 4: Aesthetic Impacts of Timber Harvesting

Goal: Manage the visual impacts of timber harvesting to convey a strong stewardship ethic

SmartWood addresses aesthetic impacts of timber harvesting through one of its Social standards:

- . . . Sites of . . . aesthetic significance are included in special management zones or protected during harvest operations (7.6)

SCS does not specifically address aesthetic impacts of timber harvesting.

SFI addresses aesthetic impacts of timber harvesting through performance measures relating to the objective and performance measure:

Minimize the visual impact by designing harvests to blend into the terrain, by restricting clearcut size and/or by using harvest methods, age classes, and judicious placement of harvest units to promote diversity in forest cover (Objective 5):

- Each company needs to define its own policies, programs, and plans to implement this guideline

CSA does not specifically addresses aesthetic impacts of timber harvesting

MCSFM Criterion 5: Biological Diversity

Goal: Maintain healthy, well-distributed populations of native flora and fauna and a complete and balanced array of different types of ecosystems

SmartWood addresses biological diversity through some of its standards for Sustaining Forest Production and Resource Quality and Environmental Impacts:

- Planting incorporates ecological factors or is utilized as a silvicultural tool to restore high-graded stands to natural species mix and forest cover (4.6)
- Planting, where it occurs, utilizes mixed species of native stock, rather than exotics (4.7)
- Silvicultural prescriptions have a primary objective of perpetuating a sustainable forest ecosystem. Silviculture is practiced with the goal of conserving and restoring ecological diversity and ecosystem function (6.1)
- Management activities maintain continuity of forest cover at the watershed level and minimize forest fragmentation (6.2)
- Management addresses the diversity, composition, and structure of the forest at the stand, watershed, and landscape levels (6.3)

- Gap sizes and canopy openings are appropriate to the local ecology and sufficient to regenerate the stand while minimizing fragmentation of the structure and diversity of the forest at the watershed level (6.4)
- Management practices address the retention of cavity, den and/or snag trees for wildlife habitat (6.6)
- Management practices actively address the management and/or enhancement of existing wildlife habitat elements (6.7)
- Management activities reduce risks from invasion or expansion of exotic species in the forest (6.8)
- Conservation of threatened, rare, endangered, and unusual plant and animal species, natural communities, and critical habitats are explicitly incorporated into management and harvesting plans (6.9)
- Based on the identification of fragile, endangered, unique, or uncommon natural communities, appropriate areas, considered within a landscape ecosystem context, are designated as "Reserves or Special Management Zones" on maps and in the field (6.10)
- River and stream corridors, steep slopes, fragile soils, wetlands, vernal pools, lake and pond shorelines, and other hydrologically sensitive areas are automatically designated as special management zones (6.11)
- Design and layout of reserves or special management zones is considered at the watershed and landscape level. Connectivity of forested areas should be considered in planning of reserves or special management zones (6.12)
- If chemicals are used, operation has a written policy addressing the ecological rationale(s) for their use, including the types used and methods of application. Operation implements the policy (6.15)
- A constant effort is made to: minimize the use of chemicals, use targeted application methods, use the least toxic chemicals possible, and phase in non-chemical alternatives (6.16)
- Employees are trained in proper handling, storage, and disposal of chemicals, apply chemicals according to label direction, and protective equipment is available and used (6.17)
- Waste (e.g., sawmill residues, chipping, debarking, waste oil, and landing debris) is being properly disposed (6.18)

SCS addresses biological diversity by evaluating the following indicators that relate to Stocking and Growth Control (A.2.), Forest Community Structure and Composition (B.1.), Long-Term Ecological Productivity (B.2.), Wildlife Management Actions, Strategies, and Programs (B.3.), Pesticide Use: Practices and Policies (B.5.), and Ecosystem Reserve Policies (B.6.):

- Extent to which the original diversity of natural forests in both species and structure is maintained through the silvicultural prescriptions that are applied, including the use of tree planting
- Seral stage distribution across watersheds or other geographic units larger than a single stand but smaller than an entire management district (i.e., landscape-level diversity)
- Age, size, and species diversity of trees within a stand
- Presence/absence and diversity of indigenous shrub, ground cover, herbaceous, and non-commercial tree species
- Degree/extent of "green retention" after harvesting operations
- Vertical diversity; i.e., number of canopy layers
- Use of exotic species and genetically engineered organisms
- Length of managed rotations relative to ecological rotations
- Regular involvement of wildlife biology expertise, preferable a certified wildlife biologist, in the forest management program, either as consultants or as regular employees

- Extent of acquisition, analysis, and utilization of data concerning wildlife populations, habitat conditions, and species requirements
- Degree of integration of wildlife concerns into management prescriptions (e.g., habitat connectivity concerns)
- Degree of retention of desirable habitat features such as vegetation suitable as wildlife food, hard and soft mast, standing trees suitable for cavity nesting, large downed logs for shelter, and horizontally and vertically diverse cover vegetation
- Status of working relationships with government wildlife officials
- Extent and condition of wildlife-oriented special management areas, especially those associated with threatened or endangered species
- Frequency of pesticide use and stated reasons for their use
- Extent to which silvicultural methods minimize the need for pesticides (e.g., avoidance of clearcutting and other measures designed to limit hardwood incursion)
- Effectiveness of (pesticide) use - i.e., vocational accuracy of application, appropriateness of timing, efficacy of vegetative results
- Use of targeted versus broadcast aerial insecticide spraying
- Policies and procedures for proper use of hazardous materials
- Extent (e.g., total number, acreage, and distribution) to which areas of ecological significance are afforded protection, either as retained protected reserves (no extraction of forest products) or through transfer to other ownerships dedicated to preserving those areas
- Permanence of retained set-aside areas and susceptibility to inadvertent damage or future change in commitment
- Observed circumstances in which ecologically important areas were substantially altered through timber harvesting
- The degree to which ecological monitoring and management learning occurs on site

SFI addresses biological diversity through the following objectives and performance measures:

- ◇ Enhance the quality of wildlife habitat by developing and implementing measures that promote habitat diversity and the conservation of plant and animal populations found in forest communities (Objective 4)
 - Each company will define its own policies, programs, and plans to promote habitat diversity
 - Individually, through cooperative efforts, or through AF&PA, provide funding for wildlife research
- ◇ Manage company lands of ecologic, geologic. . . significance in a manner that accounts for their special qualities (Objective 6)
 - Identify special sites and manage them in a manner appropriate to their unique features. AF&PA members may involve organizations with expertise in protecting special places to suggest how these lands can best be managed to maintain their unique character
- ◇ Continue the prudent use of forest chemicals to improve forest health and growth while protecting employees, neighbors, the public, and sensitive areas, including streamcourses and adjacent lands (Objective 9)
 - Meet or exceed all applicable label requirements, laws, and regulations concerning the use of fertilizers, herbicides, and other forest chemicals needed to protect forest health and increase growth

CSA addresses biological diversity through Critical Elements relating to Conservation of Soil and Water Resources (Criterion 3), Conservation of Biological Diversity (Criterion 1), Maintenance and Enhancement of Forest Ecosystem Condition and Productivity (Criterion 2), and Forest Ecosystem Contributions to Global Ecological Cycle (Criterion 4):

- Physical environments are conserved if the permanent loss of forest area to other uses or factors is minimized, and if rare physical environments are protected
- Ecosystem diversity is conserved if the variety and landscape-level patterns of communities and ecosystems that naturally occur on the DFA (defined forest area) are maintained through time.
- Species diversity is conserved if all native species found on the DFA prosper through time.
- Genetic diversity is conserved if the variation of genes within species is maintained.
- Forest health is conserved if biotic (including anthropogenic) and abiotic disturbances and stresses maintain both ecosystem processes and ecosystem conditions within a range of natural variability.
- Ecosystem resilience is conserved if ecosystem processes and the range of ecosystem conditions allow ecosystems to persist, absorb change, and recover from disturbances.
- Ecosystem productivity is conserved if ecosystem conditions are capable of supporting all naturally occurring species.
- The processes that are responsible for recycling water, carbon, nitrogen, and other life-sustaining elements are maintained.
- Utilization and rejuvenation are balanced and sustained.
- Forest lands are protected from sustained deforestation or conversion to other uses.
- Quantifiable indicators to be defined by a public process for a local forest area

MCSEFM Criterion 6: Opportunities for Traditional Recreation

Goal: Public policies that encourage private landowners to continue to provide traditional forest recreation opportunities

SmartWood addresses opportunities for traditional recreation through one of its Social standards:

- Local communities and businesses are considered for. . . recreation. . . related to forest management activities (7.3)

SCS addresses opportunities for traditional recreation by evaluating the following indicators that relate to Public Use Management (C.3.):

- Policies guiding the extent to which the general public has access to company lands for recreational purposes
- Barriers and inducements to public recreational use
- Management of public use to control resource damage
- In selecting sites for developed recreation or other special uses, efforts taken to minimize avoidable opportunity costs in terms of foregone timber production capability

SFI does not specifically address opportunities for traditional recreation

CSA does not specifically address opportunities for traditional recreation

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MCSFM Criterion 7: Competence and Public Accountability of Forest Owners and Managers

Goal: To broaden the practice of sustainable forestry through education of all members of the forest products chain and to demand a certain level of competence and professional responsibility in all forest operations

SmartWood addresses competence and public accountability of forest owners and managers through some of its standards for Management Planning, Forest Operations, Social, and Tracing and Tracking:

- Sufficient information exists on which to base forest management plan (3.1)
- Long-term monitoring is implemented to enable adjustment of management plans and strategies (3.2)
- Forest management objectives and prescriptions are documented and based on site history, owner's objectives, forest condition, ecology, management needs, and other relevant factors. Silvicultural prescriptions are substantiated using current research, silvicultural guides and applicable growth and yield models (3.3)
- A forest management plan is written and available that includes: multi-year planning; clear landowner and management objectives; analysis of cruise and inventory data relating to target species including regeneration; description of specific silvicultural prescriptions to achieve desired future condition; description of access issues and constraints; protection measures identified for special management areas; forest insect and disease conditions that may affect long term forest health condition; forest management practices for soil conservation, water quality protection, sensitive sites, unique natural communities, aesthetics, chemical use and handling; monitoring and update schedule (3.4)
- Forest management plan is implemented in the field as written: necessary modifications and/or revisions are appended to the plan (3.5)
- Maps are produced at an adequate detail, scale, and provide operational guidance for management activities and facilitate on-site monitoring (3.6)
- Non-timber forest products have been considered and their management is incorporated into the planning process where appropriate: where applicable this may include ginseng, mushrooms, maple syrup production or provision of recreational opportunities (3.7)
- Forest management operations exceed or comply with current Federal, state and municipal laws and regulations including Best Management Practices (5.1)
- Where appropriate, forests are used as a training and/or educational resource for local people in conjunction with schools, community colleges, and/or other providers of training and education and/or forest managers contribute in some way to public education about forestry practices, sustainable forestry and the values of forest ecosystems (7.1)
- Summaries of forest management policies are available to local communities upon request (7.2)
- Forest management considers community goals for forest and natural resource use and protection as articulated in current and approved community plans and is consistent with community zoning laws (7.4)
- Documentation of management activities on all forest blocks should be available to facilitate monitoring and certification audits (9.1)
- Certified forest products should be clearly identifiable through marks, labels, tags, or separately documented loads, in order to facilitate chain of custody processing at mills (9.2)

SCS addresses competence and public accountability of forest owners and managers by evaluating the following indicators that relate to Management Plan and Information Base (A.6.), and Community and Public Involvement (C.2.):

- Breadth, depth, and currency of forest plan
- Written guidelines for the avoidance or minimization of environmental impacts (e.g., soil erosion) of management activities such as road building and harvesting
- Extent to which the forest plan is used by field foresters
- Extent to which aggregate harvesting activities are reconciled to the forest plan
- Extent and accuracy of field data; sources, frequency of updates, quality and utility of type maps; appropriateness and adequacy of typing system; extent to which data acquisition provides knowledge of potential environmental impacts of management activities
- Monitoring procedures for acquiring information on plan attainment and resource conditions
- Adequacy of planning response to natural catastrophes (i.e., fires) both in terms of developing incident-specific resource stabilization and recovery plans and in terms of adjusting the forest management plan to reflect the effects of these stochastic events
- Adequacy of the log marking system for assuring clear and accurate tracking of all logs coming from fee lands as opposed to non-fee lands
- Company policies designed to encourage employee participation in community programs
- Employee participation in local, state, and regional professional and natural resource organizations
- Employee participation in ad hoc and standing public/private committees dealing with land management and forestry issues

SFI addresses competence and public accountability of forest owners and managers through the following objectives and performance measures:

- ◇ Broaden the practice of sustainable forestry by employing an array of scientifically, environmentally, and economically sound practices in the growth, harvest, and use of forests (Objective 1)
 - Each company will define its own policies, programs, and plans to implement and achieve the AF&PA Sustainable Forestry Principles and Guidelines
 - Individually, through cooperative efforts, or through AF&PA, provide funding for forest research to improve the health, productivity, and management of all forests
- ◇ Broaden the practice of sustainable forestry by further involving nonindustrial landowners, loggers, consulting foresters, and company employees who are active in wood procurement and landowner assistance programs (Objective 10)
 - Encourage landowners who sell timber to reforest following harvest and to use Best Management Practices by providing these landowners with information on the environmental and economic advantages of these practices
 - Work closely with logging and state forestry associations, appropriate agencies and others in the forestry community to further improve the professionalism of loggers by establishing state groups (where none exist) and by cooperating with existing state groups to promote the training and education of loggers in: awareness of AF&PA Sustainable Forestry Principles; Best Management Practices - including road construction and retirement, site preparation, streamside management, etc.; regeneration and forest resource conservation; awareness of responsibilities under the Endangered Species Act and other wildlife considerations; logging safety; OSHA and wage and hour rules; transportation; and business management - including employee training, public relations, etc. State groups encouraged to sponsor training and education programs for loggers, employees involved in procurement and landowner assistance, contractors, and suppliers by January 1, 1996.

- AF&PA will collect information from its members, state groups, and other sources in order to annually report: number of landowners who receive information about forest regeneration from contractors, company employees, and others; how many of these landowners made an informed decision to apply BMPs and to regenerate the forest after harvest; the number of loggers who completed each year's training and education programs; and the percentage of wood delivered by loggers who have completed logger training and education programs
- Ensure commitment to the Sustainable Forestry Principles is communicated throughout all levels of their companies - particularly to mill and woodland manager, wood procurement operations, and field foresters
- Support and promote efforts by consulting foresters, state and federal agencies, state groups, and programs like the American Tree Farm System, to educate and assist nonindustrial landowners and to encourage them to apply principles of sustainable forest management on their lands
- Each company will clearly define and implement its own policies, programs, and plans to ensure that mill inventories and procurement practices do not compromise its adherence to the Principles of Sustainable Forestry
- ◊ Publicly report AF&PA members' progress in fulfilling their commitment to sustainable forestry (Objective 11)
 - Report annually to AF&PA on their compliance with AF&PA Sustainable Forestry Principles and Implementation Guidelines
 - AF&PA will issue an annual report to the public on its membership's performance regarding compliance with and progress on sustainable forestry, including a listing of all companies complying with the AF&PA Sustainable Forestry Principles and Implementation Guidelines
 - An advisory group of independent experts will assist in the preparation of the annual report, including validation of conclusions and the assessment of reported progress
- ◊ Provide opportunities for the public and the forestry community to participate in the AF&PA membership's commitment to sustainable forestry (Objective 12)
 - Support and promote appropriate mechanisms for public outreach, education, and involvement related to forest management, such as: 800 numbers; environmental education; and/or private and public sector technical assistance programs
 - Establish an appropriate procedure at the state level to address concerns raised by loggers, consulting foresters, employees, or AF&PA members regarding practices that appear to be inconsistent with the AF&PA Principles and Implementation Guidelines
 - Establish a national forum of loggers, landowners, and senior industry representative, including CEO representation, that will meet at least twice annually to review progress toward the AF&PA Forestry Principles and Implementation Guidelines. The results of each meeting will be reported to the Forest Resources Board of Directors.

CSA addresses competence and public accountability of forest owners and managers in the following ways:

- ◊ Developing a sustainable forest management system is the key to the CSA approach. Much emphasis is on the *process* of developing the plan. When auditing a system, the following factors are evaluated:
 - Commitment: detailed policy statements, clear designation of a defined forest area, and defining areas of responsibility
 - Public Participation: interested parties are informed and included, and a clear public process
 - Content: objectives, monitoring systems, and evaluation processes are developed in the Sustainable Forest Management System, and feedback on continuous improvement toward quantified objectives is communicated to interested parties
 - Communication: communication with public, addressing cultural and linguistic needs

- ◇ The Sustainable Forest Management System Components include:
 - The defined forest area (DFA)
 - Values
 - Goals
 - Indicators (developed by public process - need to address each of the critical elements)
 - Objectives (measurable)
 - Inventory of Indicators
- ◇ Critical elements relating to Accepting Society's Responsibility for Sustainable Development (Criterion 6)
 - The decision-making process is developed with input from directly affected and local interested parties
 - Decisions are made as a result of informed, inclusive, and fair consultation with people who have an interest in forest management or are affected by forest management decisions
 - Collective understanding of forest ecosystems, values, and management is increased and used in the decision-making process

<p><u>Additional Socio-Economic Criterion: Financial Stability and Community/Labor Relations</u></p>

SmartWood addresses financial stability and community/labor relations through some of its standards for Forest Security, Social, and Economic Viability:

- Land title is clear and legally secure, boundaries are identified on the ground and timber harvesting is legally permitted (2.1)
- Land is dedicated by owners to long-term forest management (2.2)
- Local communities are considered for employment. . . and benefits related to forest management activities (7.3)
- Taxes on forest land and timber are paid in a timely manner in accordance with state and local tax laws (7.5)
- Known archeological sites, and sites of cultural, historical, (or) community . . . significance are included in special management zones or protected during harvest operations (7.6)
- Wages, facilities, and other benefits (health, retirement, worker's compensation, housing, food) are fair and consistent with (not lower than) prevailing local standards. More successful operations should provide better benefits (7.7)
- Worker safety and training is an explicit element of all aspects of forest operations (7.8)
- Stumpage rates being paid to landowners are fair and representative given logging conditions, timber quality, volume, and local experience with log markets (8.1)
- Revenue received is sufficient to financially support long-term forest management, e.g., planning, inventory, resource protection and post-harvest management activities such as silvicultural treatments, road maintenance, growth and yield monitoring, and other actions to ensure long-term forest health (8.2)
- Financial benefits of forest management are reinvested into long-term management (8.3)
- Financial situation, investment objectives, and debt load do not place undue pressure on the operation to sacrifice management for short term high output harvesting production (8.4)
- Under-utilized timber species are being evaluated for harvest and commercial opportunities (8.5)
- Forest operation encourages, where appropriate, the utilization of non-timber forest products and recreation to enhance forest potential (8.6)

- Merchantable log loss and waste in the forest is minimized (8.7)
- Logs and lumber are handled so as to minimize potential loss in value from degrade, exposure, and parasites (8.8)
- Forestry operation seeks the highest and best uses for individual tree and timber species and products (8.9)

SCS addresses financial stability and community/labor relations by evaluating the following indicators that relate to Financial Stability (C.1.), Community and Public Involvement (C.2.), Investment of Capital and Personnel (C.4.), and Employee and Contractor Relations (C.5):

- Ownership structure and vertical integration, if any, where excessive or specialized log requirements of a mill owned by the company might dictate land management decisions
- Stability of ownership structure
- Cash flow demands of the company, related to factors such as servicing of debt or capital demands of individual owners/stockholders
- Accounts payable performance or other financial performance data such as might be available through sources such as Dun & Bradstreet reports (e.g., current assets to liabilities ratio, long-term liabilities, working capital)
- Review of company's annual financial statements which provide information such as the amount and sources of revenues, levels of reported profits, and stability of profits
- Evidence that financial considerations dictate or drive land management decisions
- Management philosophy of corporate board and officers as revealed through interview and/or written statements
- Vulnerability to market downturns
- Long-term record of commitment to management
- Corporate contributions to charitable causes
- Efforts to hire from within the local and regional workforce
- Efforts to support local business when making decisions about the sale of wood products or in purchasing decisions
- Procedures for identifying and protecting areas of special cultural, economic, or religious significance
- Average annual expenditures on pre-commercial silvicultural prescriptions such as planting, vegetation control, and timber stand improvement
- Expenditures on or commitment to ongoing employee training and education
- Financial support or investment in improved harvesting machinery
- Areas managed and volumes harvested relative to the number of professional and technician positions, compared to regional norms for similar operations
- Employee wages and benefits as compared to industry norms in the region
- Average tenure of workforce
- Employee work attitudes and general morale
- Opportunities for employee participation in (and/or organizational structure to get employee input on) management decisions and policy formulation
- Contract harvest/hauling rates compared to regional norms
- Average daily compensation of woods crews relative to regional industry norms and to pre-service contract era
- Contractor attitudes about the company, based upon past experiences
- Stability of relationships with woods contractors
- Safety records of employees and contract woods crews

SFI addresses financial stability and community/labor relations through the following objective and performance measure:

◇ Manage company lands of . . . historic significance in a manner that accounts for their special qualities

- Identify special sites and manage them in a manner appropriate to their unique features. AF&PA members may involve organizations with expertise in protecting special places to suggest how these lands can best be managed to maintain their unique character.

CSA addresses financial stability and community/labor relations through Critical Elements relating to Multiple Benefits to Society (Criterion 5) and Accepting Society's Responsibility for Sustainable Development (Criterion 6):

- Resource businesses exist within a fair and competitive investment and operating climate
- Forests provide a mix of market and non-market goods and services
- Forests are managed in ways that reflect social values, and management is responsive to changes in those values
- Duly established Aboriginal and treaty rights are respected
- The special and unique needs of Aboriginal peoples are respected and accommodated in forest management decisions
- Quantifiable indicators to be defined by a public process for a local forest area