

Confidential



SmartWood Certification Assessment Report
for:

St. John's Abbey, Order of St. Benedict
Collegeville, Minnesota, USA

Date Report Finalized: April 9, 2002
Date of Field Visit: June 2001

Certification Team:

Mark A. White, Forest Ecologist, Team Leader
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ACRONYMS

AAC	Annual Allowable Cut
ALP	Annual Logging Plan
CITES	Convention on Trade in Endangered Species
DBH	Diameter at Breast Height
DOC	Department of Conservation
FMO	Forest Management Organization
FSC	Forest Stewardship Council
HCVF	High Conservation Value Forest
ILO	International Labor Organization
OSB	Order of Saint Benedict
OSHA	Occupation Safety and Health Administration
P&C	Principles and Criteria of the FSC
RMA	Resource Management Act
SFM	Sustainable Forest Management
SFMP	Sustainable Forest Management Plan
SJA	St. John's Abbey, OSB

INTRODUCTION

This report presents the findings of an independent certification assessment conducted by a team of specialists representing the SmartWood Program of the Rainforest Alliance. The purpose of the assessment was to evaluate the ecological, economic and social sustainability of St. John's Abbey's forest management.

This report contains five sections of information and findings. Sections one through three will become public information about the forest management operation that may be distributed by SmartWood or the Forest Stewardship Council (FSC) to interested parties. Sections four, five, and the appendices are confidential, to be reviewed only by authorized SmartWood and FSC staff and reviewers bound by confidentiality agreements.

The purpose of the SmartWood program is to recognize conscientious land stewardship through independent evaluation and certification of forestry practices. Forestry operations that attain SmartWood certification may use the SmartWood label for public marketing and advertising.

1. GENERAL SUMMARY

1.1. Name and Contact Information

Source Name: St. John's Abbey, Order of St. Benedict
Contact Person: Br. Benedict Leuthner, OSB
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Collegeville, MN 56321
Tel: (320) 363-3167
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1.2. General Background

A. Type of operation

St. John's Abbey, Order of Saint Benedict (SJA), a private non-industrial landowner owns approximately 2445 acres in Stearns County Minnesota, the site of St. John's University. St. John's OSB is a Benedictine monastery whose goals are to live their lives based on the teachings of St. Benedict. The Benedictine heritage is one of active land management, however throughout their history they have shown an understanding of the importance of sustainable land use. St. John's OSB owns and oversees St. John's University and is responsible for management of forested lands. Through the history of St. John's OSB, the land has provided fuelwood, lumber, pasture, agricultural products, natural beauty and educational opportunities. Over the last 150 years, the forest has provided wood products for the St. John's OSB and St. John's University woodworking and construction projects. At present, milled lumber is processed in the St. John's Abbey wood shop.

St. John's OSB also owns a small parcel in Beltrami County and a small parcel in Crow Wing County. These properties were not included in the assessment as they are basically lakeshore lots used for dispersed recreation. The Stearns County ownership is subdivided into two categories for management purposes: outer campus and inner campus.

B. Years in operation

The Order of St. Benedict Inc (OSB) at Collegeville was legally established in 1857 for "scientific, educational, and ecclesiastical ends." The land had been claimed the previous year (1856) by Father Bruno Riss, OSB et al., for its woods, pasture, and water values. Forest harvest for fuel and lumber has been occurring since the inception of St. John's OSB.

C. Date first certified

To be determined.

D. Latitude and longitude of certified operation

45.35N, 94.23W

1.3. Forest and Management System

A. Forest type and land use history

The St. John's Abbey forest presents a fine example of Minnesota's temperate deciduous forest comprised primarily of Northern red oak. White oak and sugar maple are also abundant. There are a few older conifer plantations scattered about. Refer to Section 1.4 for more detailed ecological description of vegetation and environment of this region.

There is little documentation of land management from the first 100 years of St. John's Abbey OSB (1854-1954). Although the Benedictine land stewardship ethic has been a recurrent theme here, management in the early years was driven by practical needs of shelter, food and fuel. Beginning in the 1970s an ethic based more on conservation, restoration and environmental protection began to influence land management planning. The current emphasis on ecological and economic sustainability likely stems from both the historic Benedictine emphasis on land stewardship and current models of sustainability based on ecological principles.

From their beginning, most of the wood cut from these lands has been used on campus for buildings, furniture, fuel and maple sugaring. Land was also cleared for buildings, crops and pastureland. Cattle were also grazed in the woods. The first sawmill was established in 1868 on a dammed portion of the Watab River. The last sawmill was dismantled in 1949. Timber was a major source of fuel until 1949 when a coal fired power plant became operational. Estimates of volumes cut before 1989 are not available. Conifer plantations were first established after the 1894 tornado as a method of reforesting some of the destroyed areas. Conifer plantations total 146 acres; early plantings included Scotch pine and Norway spruce. Planting from the 1920s and later were primarily white pine and red pine. Plantations were established in the 1920s and 1930s in order to reforest land that had been cleared for agriculture.

For the eleven-year period from 1989 to 1999 the annual harvest averaged 57 MBF/year of sawtimber and 36 cords/year of firewood. Eighty percent of the sawtimber was oak (primarily red oak) and the fuelwood was comprised of aspen, oak and maple. The woodworking shop at St. John's Abbey used an average of 46 MBF/year (primarily red oak) for campus furniture and construction.

B. Size of management unit and area in production forest, conservation, and/or restoration

The following table summarizes the vegetation on the 2445 acres of St. John's Abbey in Sterns County Minnesota, including two natural areas of 149 & 143 acres. Natural areas, which are comprised primarily of forest lands, are not included in the commercial forest land base, however would be subject to timber harvest or other silvicultural management activities in response to natural disaster such as wind damage or insect infestation, or to avert potential damage from a pending threat.

Forestland	<u>Acres</u>
Oak	699
Upland hardwoods	447

Lowland hardwoods	143
Conifer	146
Aspen	<u>49</u>
Total	1484 acres
Non-forestland	
Upland grass/shrub	204
Restored prairie	56
Restored oak savannah	11
Marsh	200
Shrub marsh	15
Water	169*
Inner campus	287
Hard surface road	<u>19</u>
Total	962 acres

*Does not include Lake Sagatagan

C. Annual allowable cut and/or annual harvest covered by management plan

SJA has not developed an annual growth calculation for their property to include all commercial acreages and all species. SJA is currently operating on an area control rather than a volume control in regulating their annual timber harvesting activities. Consequently, the volumes described below as estimated yields are calculated by multiplying the anticipated harvest acreage by an estimated yield, which is derived from average standing volume data taken from the 1997 inventory. Consequently, estimated yields do not account for growth and mortality that occurs subsequent to the 1997 inventory. Comparatively, FIA data for fully stocked stands of sawtimber, 75 to 140 years old, for red oak types in the MN hardwood region with site indexes of 60 – 80 (50 year), suggest a mean annual growth of 149 bd.ft./acre. Most of SJA’s red oak stands are in the range of 60 to 65 for site index calculated on 50 years.

The following table represents a ten-year harvest plan for the period of 2001 - 2010:

Timber Type	Acres	Vol/Acre (MBF)	Total Vol (MBF)	Planned Harvest Acreage	Planned Harvest Regime	Estimated Yield (MBF)
Oak	699	8.3	5802	100	Shelterwood	830
Upland Hardwood	418	4.0	1672	30	Single tree & group selection	120
Lowland Hardwood	143	3.4	486	20	Shelterwood	68
Aspen	49	12.0	588	6	Clearcut	72
Sugarbush	29			0		
Conifer	146			0		

TOTAL	1484		8548	156		1090
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This plan indicates an average annual allowable cut of 109 MBF/ year. However, it is important to note that this estimate of annual harvest volume is actually the result of assigning *estimated* yield figures to the ten-year harvest areas identified for each timber type, with a total ten-year harvest area of 156 acres. Also of note is that for each acre, only a single regeneration harvest is accounted for when calculating harvest volumes in area control regulation (i.e. all of the standing volume would be considered removed in one, single entry for each acre during each rotation period). Consequently, intermediate thinnings are not accounted for in the calculation, nor are all entries of multiple entry regeneration harvests. For example, a shelterwood harvest is considered as a single, final harvest even though the shelterwood regeneration may actually include several harvest entries and occurring over a period of up to 30 years. SJA also views their harvest planning on a ten-year cycle, so that the area harvested in any given year may vary, however the total area harvested during the ten-year period would be 156 acres.

SJA volumes are reported using both Scribner and International scale rules. SJA’s inventory volumes were calculated using the Scribner rule, however yield volumes taken from regional yield tables are reported in International scale. Finally, harvest volumes are reported in Scribner in accordance with Minnesota state law. Conversions between International and Scribner scales are not applied.

The information in the land management plan indicates that;

From 1989-1999 harvest was 626 MBF.

The spring of 2000 harvest was 157 MBF.

The spring of 2001 harvest was 298 MBF

1081 MBF divided by the past 13 years = 83 MBF/year.

The harvest volumes listed above do not include cordwood volumes. An additional 396 cords of mostly fuel wood were harvested between 1989 and 1999; cordwood removal volumes for 2000 and 2001 are not known. There has been considerable variation in annual harvest levels during this period of time. Between 1989 and 1999, the average of 62.6MBF would be about 57% of the calculated AAC. Harvest levels in 2000 and 2001 exceeded the annual allowable cut by 144% and 273% respectively. The average annual harvest at St. John’s OSB between 1989 and the present has been well within the estimated allowable cut of 109 MBF especially when considering that more than 25% of the recorded harvest volume is comprised of firewood gathered from the logging slash.

D. General description of details and objectives of the management plan/system

The first formal inventory and plan, Management Plan for the St. John’s University Forest, was conducted in 1949 by Otis Hall of the School of Forestry, University of Minnesota. Mr. Hall inventoried the timber resource on the forested area of St. John’s and provided specific recommendations for its management. These recommendations included a harvest rate of 55,000 board feet per year, along with improvement cutting leading to a single tree selection system. The individual tree selection system was considered good forest management of red oak types at that time. Defective and

overmature trees were to be cut leaving the best trees until after their period of rapid growth. This type of timber management was in place until 1991. Additionally, the establishment of permanent inventory plots was recommended as soon as possible.

The next forest planning effort resulted in the Forest Management Plan of 1976 by the Minnesota Department of Natural Resources; a two-page plan and map with additional standard pages for Minnesota forests. The plan recommended thinning immature stands less than 70 years old. Some stands “approaching maturity” at 70 to 100 years old, were to be regenerated by clearcutting or shelterwood. Those with adequate stocking of advanced oak regeneration could be clearcut in stands of 2 1/2 to 20 acres. Stands lacking adequate advanced regeneration were to be regenerated using the shelterwood system leaving 60 to 70 square feet of basal area per acre followed by clearcutting when oak regeneration became established. Aspen was to be clear cut and conifer stands thinned.

In 1979 a Land Use Task Force Committee Report was produced by a committee headed by Daniel J. Ward, O.S.B. This report set forth principles for managing St. John’s land, listed proposed policies for recreation use & non-recreational woodland use, proposed a “Biological Reserve,” addressed agricultural uses, land acquisition and adjustment policies.

In 1985 Paul Schwietz, OSB completed A Management Plan for the Conifer Plantations at St. John’s. This comprehensive plan inventoried all conifer plantations and gave detailed, specific activities for their management. The inventory included species, year planted, acres, stocking, size, site index and volumes.

Currently there is a Saint John’s Arboretum Strategic Plan 2000-2004 that has been adopted to guide the management of the arboretum. It addresses vision, mission, and goals for the arboretum with 14 Appendices. Topics such as history, education, public relations fundraising, restoration projects, principles, and development are detailed.

The most recent, unsigned, Land Management Plan is dated 1/12/2000. The following overall vision and goals have been taken from the St. John’s OSB Land Management Plan:

“Goals of Saint John’s Land Management Plan

Vision

To prepare and use a state of the art land management plan for St. John’s exclusive of the inner campus. The plan is to be comprehensive including the forest, wetlands, savannah, prairie, plantations, special areas, roadsides, trailsides, lakeside and any other identified areas. A complete acre count will be made for the whole property. The plan will be based on current science along with the social needs of the institutions. It will be sustainable, maintain or improve the diversity of native plants and animals, and be practical for implementation. The plan should be flexible enough to allow for adaptive management.

Goals

1. *To provide a sustainable harvest of forest products. An extended rotation will be employed for better diversity and natural beauty. Harvest to produce a normal balance of age classes. (Currently the forest is about 110-130 years of age.)*
2. *Maintain, and when possible improve, the natural diversity of native plants and animals in healthy, sustainable ecosystems.*
3. *Attain green certification for harvesting to validate Benedictine stewardship values.*
4. *Locate and map a natural area of significant size to be left in a "natural" state with little management except possible use of fire.*
5. *Demonstrate good land management practices to highlight educational opportunities. Incorporate educational objectives: i.e. deer exclosures, internships, and other studies.*
6. *Continue to employ the shelterwood system in regeneration of oak stands. Consider group selection and clearcutting if and where applicable.*
7. *Maintain or improve natural, scenic beauty by recognizing important areas zones, prescribe cutting, no cutting or cultural work which will improve areas for this purpose. This includes areas around the inner campus, interstate and highway roadsides, trailsides, around Lake Sagatagan and other identified areas.*
8. *Identify impacts the inner campus has on the greater campus, and manage the deer herd and other wildlife to the extent allowable and practical so as to protect diversity and enhance other values.*
9. *Manage the deer herd and other wildlife to the extent allowable and practical so as to protect diversity and enhance other values.*
10. *Evaluate and implement if it is desirable to locate and measure permanent plots for monitoring species, volumes, growth, mortality, habitat changes and other objectives. Coordinate with state forest inventory survey methods.*
11. *Have a land management crew capable of harvesting wood, trail maintenance, controlled burns, planting, etc.*
12. *Maintain and improve the prairie, savannah, and wetland areas in a natural state for healthy habitats, natural beauty, wildlife and education (Habitat Restoration Project).*
13. *Provide special recognition and management for any rare, endangered, unusual, plants, animals, geological, anthropological or other features encountered.*
14. *Locate and mark all survey corners and property lines. Maintain as needed*
15. *Preserve the rural character of St. John's surroundings both on Abby lands and by cooperation with adjoining and contiguous landowners.*
16. *Set up a record keeping system for monitoring plan progress and as a basis for an annual report.*
17. *Be prepared to respond to natural disasters such as insect infestation-gypsy moth, diseases-oak wilt, fire and windstorms."*

The organizational structure that has been designed to implement this plan includes the land manager/arboretum director and approximately nine full/part time/student employees, totaling five full-time equivalents.

In addition to the various efforts at forest management planning described above, St. John's Abbey has completed three timber inventories (1949, 1987, 1997), as well as the Stearns County biological survey inventory conducted in 1997. The 1949 inventory indicated a total standing volume of 3525 MBF, while the 1997 inventory showed a total standing volume of 9460 MBF.

All silviculture systems used and recorded are based on currently accepted forest management practices. Harvesting operations are conducted predominately in the winter by employees of St. John's Abbey with equipment owned by St. John's OSB. The logging equipment consists of chainsaws, a grapple skidder and a flat bed truck. The wood that will not be used by St. John's Abbey is sold mostly in log form at the woods landing to interested buyers, although some excess wood is also sold as lumber.

The road system used to harvest timber is comprised of one primary all season road with temporary secondary roads accessing the cutting units.

1.4. Environmental and Socioeconomic Context

The St. John's OSB lands are located in the Hardwood Hills Subsection of the Eastern Broadleaf Forest Province. The Hardwood Hills Subsection ranges from central to northwestern Minnesota. The Eastern Broadleaf Forest Province ranges from northwestern Minnesota and the southern forested portions of Minnesota, Wisconsin and Michigan to Missouri, northern Alabama, Tennessee, Kentucky, Ohio, and east into western New York (Keys and Carpenter 1995). This area is a complex of morainal landforms and outwash plains. The St. John's OSB property occurs on moraines, till, and outwash plains. The soil parent material is primarily non-calcareous till (St. Croix moraine) and coarse-textured outwash sediments. Annual precipitation ranges from 24 to 27 inches, with growing season normals varying from 10 to 12 inches.

Upland soils on the property vary from well-drained to moderately well-drained sands and sandy loams with medium to low productivity potential. Lowland soils in wetlands and depressions have high organic matter content and include peat and muck soils.

Bearing tree data and previous mapping work (Marshner 1974) indicate that this area was a mosaic of prairie, oak openings and savanna, brush, and forest at the time of Euro-American settlement. Red oak, bur oak, aspen, sugar maple, white oak, American elm, and basswood were the most common tree species recorded by land surveyors during the original General Land Office (GLO) surveys (~1850-1890). Fire was the primary disturbance factor in this area, which is located along the prairie forest border. The presence of oak savanna, prairie, and brush are strong indicators of fire. The GLO bearing tree database shows numerous burned section corners in the immediate area. To the east of the Hardwood Hills Subsection, the natural vegetation

is dominated by mixed conifer and deciduous forests, while to the west, prairie and savanna are the dominant natural vegetation formations.

The current forest vegetation is dominated by mature red oak forest (47%) and mixed upland hardwoods (red oak, sugar maple, white oak, bigtooth aspen). Some conifer plantations and pure stands of bigtooth aspen also occur. Numerous water bodies and wetlands occur on the property. Lake Sagatagan, a natural lake, covers 218 acres. Numerous smaller impoundments also occur. Dams were constructed to create fish ponds and to set up a waterwheel to serve the sawmill and gristmill. The Watab River was first dammed in 1868 for the saw mill. Damming for the fish ponds occurred in 1917.

The forest has been an important resource for the SJA since the founding of the monastery approximately 140 years ago. At first, wood was used for building, cooking, and heat. Timber was cut for fuelwood for the Abbey and University until 1947 when a new coal fired powerplant came on line. At present, local residents are allowed to cut firewood from timber harvest slash through a permit system. Until 1949, when the sawmill was dismantled, much of the timber was processed onsite. Since 1949, local sawmills process all the wood from SJA lands. Currently, most of the higher-grade sawlogs are used to produce lumber for St. John's University and SJA woodworking projects. Much of the furniture and woodwork in campus buildings comes from timber harvested on SJA lands and is produced in the St. John's OSB woodshop. The forest resource here also is important to the surrounding community as local mills process much of the wood.

The forest and associated areas (lakes, wetlands, prairie, savanna) are an important resource as natural land within an agricultural matrix. The St. John's OSB forest is significant for regional biodiversity because it is a large island of contiguous, mature upland hardwood forest located in the prairie-forest transition zone. This land is used for nature, enjoyment and education by the monks, St. John's University & Prep School staff and students, 1500 elementary school Arboretum visitors, and the public at large. There are traditional uses such as maple sugaring and firewood collection. Maple syrup from the sugaring operation is used by St. John's University and SJA. 400 gallons of syrup are produced in a good year.

1.5. Products Produced and Chain of custody

A. Species and volumes covered by the certificate

The following table summarizes harvest production by species and volume for the ten-year period between 1989 and 1999 as reported in the management plan dated 1/12/2000. The total average harvest volume of 57 MBF as reported below is substantially below SJA's estimated annual allowable harvest of 109 MBF (refer to Criterion 4.7.1.d.).

Table 1: Average Annual Timber Harvest (1989 – 1999)

Species	Scientific name	Volume (MBF per yr)	Product
Red oak	<i>Quercus borealis</i>	44 MBF	Sawlogs
White oak	<i>Quercus alba</i>	1 MBF	Sawlogs
Basswood	<i>Tilia americana</i>	3 MBF	Sawlogs
Ash	<i>Fraxinus pennsylvanica</i>	4 MBF	Sawlogs
Maple	<i>Acer saccharum</i>	1 MBF	Sawlogs
Aspen	<i>Populus grandidentata</i>	1 MBF	Palletwood
Birch	<i>Betula papyrifera</i>	1 MBF	Palletwood
White pine	<i>Pinus strobus</i>	2 MBF	Sawlogs

B. Description of current and planned processing capacity

The St. John's Abbey woodworking shop uses an average of 46 MBF/year. Most of this volume is represented by red oak lumber that is then used to build campus furniture. Other tree species (sugar maple, white oak) are used in small amounts. The chain of custody certification SJA wood shop is not included in this assessment.

2. CERTIFICATION ASSESSMENT PROCESS

2.1. Assessment Dates

May 15, 2001	Stakeholder public notices distribution starts (email, FAX, newspaper and mail)
June 13	Initial team planning
June 15	Public stakeholder meeting at St. John's University
June 14, 15	Field assessment at St. John's Abbey
June 16	Begin report write-up and continue stakeholder interactions (emails and interviews)
Oct. 23	Draft report to St. John's Abbey for initial review & fact-checking/comment
Oct. 2001	Comments received from St. John's Abbey
Nov. 2001	Draft report to peer reviewers and SmartWood headquarters
Nov. 2001	Comments back from peer reviewers
Dec. 2001	Final draft submitted to SW Certification Committee Certification Contract signed and received by SmartWood

2.2. Assessment Team and Peer Reviewers

Mark A. White, Team Leader, Forest Ecologist. BA Environmental Studies, Antioch College, MS Botany, Miami University. Experience: Research Fellow in forest ecology, Natural Resources Research Institute, University of Minnesota, Duluth, 1989-1994, 1996 to present, Forest Ecologist, Pacific Forest Trust, Santa Rosa CA, 1995-1996, Plant Community Ecologist, The Nature Conservancy, Midwest Regional Office, Minneapolis, MN 1988-1989, Instructor, Botany Department, Miami University, Oxford, OH, 1987, Graduate teaching assistant, Botany Department, Miami University, Oxford, OH, 1983-1986.

Duane Hanson, Forester. B.S. in Forest Resource Management from the University of Minnesota College of Natural Resources. Retired in 1998 from the US Forest Service after 30+ years of service, primarily working on the Chippewa and Superior National Forests in Minnesota (brief assignments in Idaho and Vermont) in various aspects of Timber Management, such as inventory, reforestation, silviculture and sales. Retired as the Superior National Forest Natural Resources Team Leader responsible for timber management, forest planning, GIS, biology, minerals, soils, water, engineering, and boundary management. Since retirement, worked for the Minnesota Department of Natural Resources job sharing the "Coordinator" position at the Minnesota Interagency Fire Center and also taught a variety of Fire courses for the MN-DNR.

Peer Reviewers:

Dr. Christopher A. Nowak, Forester/Silviculturist. Ph.D., M.S., and B.S. in Forest Resources Management from SUNY College of Environmental Science and Forestry-Syracuse, A.A.S. in Forest Technology from SUNY College of Environmental Science and Forestry-Wanakana. Experience: Associate Professor of Forestry at SUNY College of Environmental Science and Forestry (2 years, current); 5 years as a

Research Forester at U.S. Forest Service’s Forestry Sciences Laboratory in Irvine, PA; 6 years as a Research Scientist with Research Foundation at SUNY, Syracuse, NY.

Jerry Kemperman, Forester/Silviculturist. M.S. and B.S. in Forestry from University of Michigan. Experience: Chief, State Forest Bureau, Iowa Department of Natural Resources, (present); 12 years as Forestry Supervisor at Ames, Iowa, Iowa Department of Natural Resources; 11 years as District Forester at Elkader, Iowa, Iowa Department of Natural Resources; 3 years as Research Scientist at Thunder Bay, Ontario, Ontario Ministry of Natural Resources; 2 years as Forester, U.S. Forest Service, Juneau, Alaska; 3 years as Forester in Peace Corps, Turrialba, Costa Rica.

2.3. Assessment Process

During the field phase of the assessment process, the team conducted the following steps as part of the normal SmartWood certification process:

Pre-Assessment Analysis – Requested and reviewed maps and planning documents from client.

Selection of Sites – Developed site stratification. In the late afternoon of June 13, the team took a brief tour of the SJA lands with John Geissler, Arboretum Manager. The team also met before the site visit to determine site representation for field review and to discuss SmartWood policies and procedures.

Field Interviews and Site Reviews, Assessment Report Development – Field work was done over a 2.5-day period, June 13 through June 15. The assessment report was developed over three month period after the fieldwork was completed. Throughout this write-up period, the assessors continued to conduct stakeholder interviews and other research.

Peer and Candidate Operation Review of the Report – The final draft report was reviewed by St. John’s Abbey OSB and two independent peer reviewers.

Certification Decision – The certification decision was taken by SmartWood after review of comments made on the draft report by operation and peer reviewers.

Table 2. Summary of forest sites visited by SmartWood assessors (site # indicates location on map of sites, exhibit A). The sites shown here indicate intensive evaluation areas. A much greater number of acres were observed walking and driving to these sites. All major upland and lowland vegetation types were viewed during the assessment.

Site #	Forest/Block Name	Hectares	Acres	Assessment Site
1	Sugar bush, compartment 2, stand 15.	12	29	X
2	Red oak shelterwood treatment, 1996, with prescribed fire and exclosure. Compartment 3, stand 1.	15	37	X

3	Red oak shelterwood treatment, logged winter 98-99, Compartment 3, stand 11.	17	41	X
4	Red oak shelterwood treatment Logged winter 99-00. Compartment 4, stand 14.	20	50	X
5	1935 white pine planted. Compartment 4, stand 8.	10	24	X
6	Old yellow birch. Mesic hardwood site near sugarbush. Compartment 2, stand 4.	14	35	X
7	1928-32 white pine/scots pine, Compartment 2, stands 1 and 2	12	29	X
8	70-yr-old white pine, red pine plantation. Compartment 6, stand 19.	9	23	X
9	White spruce planted. Compartment 1, stand 25	5	13	X
10	Upland hardwood natural area. Compartment 6, stand 30.	25	61	X
11	White oak natural area. Compartment 5, stand 15.	7	18	X
12	Dump site, grass opening. Compartment 5, stand 9.	0.4	1	X
13	Oak savanna. Compartment 6, stand 10.	4.5	11	X
14	Prairie restoration area. Compartment 6, stand 2.	23	56	X
15	Recent aspen clearcut, compartment 3, stand 15	2.4	6	X
16	Lowland hardwoods. Compartment 3, stand 2	2	5	X
17	Emergent wetland restoration	19	46	X
18	Mesic sugar maple, red oak underplanted. Compartment 1, stand 27.	3.6	9	X
19	Red oak/sugar maple stand	18.6	46	X
	TOTALS	218	538	17

2.4. Guidelines

The St. John's Abbey, OSB certification assessment was conducted using the SmartWood certification process and employed standards as described in the FSC Draft Regional Forest Stewardship Standards for the Lake States and Central Hardwood Region, Version 4.60. These criteria and guidelines are based upon the Forest Stewardship Council's Principles and Criteria and have not yet been formally approved by the FSC.

2.5. Stakeholder consultation process and results

The purpose of the stakeholder consultation strategy for this assessment was threefold:

- 1) to ensure that the public is aware of and informed about the assessment process and its objectives;
- 2) to assist the field assessment team in identifying potential issues; and,
- 3) to provide diverse opportunities for the public to discuss and act upon the findings of the assessment.

The stakeholder consultation process includes an initial stakeholder notification, as well as detailed and meaningful stakeholder interaction. The process of stakeholder interaction begins prior to the field visits, occurs throughout the field evaluations including post assessment interviews, and can continue after a certification decision is made. SmartWood welcomes comments on certified operations at any time, and such comments often provide a basis for field auditing.

In the case of The St. John’s Abbey, OSB, a public consultation stakeholder document was developed and distributed by email and was posted on the SmartWood website prior to the actual assessment process. Through input from SmartWood, FSC, and St. John's Abbey, OSB, an initial list of stakeholders was developed, and public announcements were distributed to them. This list also provided a basis for the assessment team to select people for interviews (in person, by telephone, or through email). A list of stakeholders that were interviewed is available at the end of this public summary. A public meeting also was held on the St. John's University Campus. Three stakeholders attended the meeting, in addition to St. John's OSB land-management staff.

Issues Identified Through Stakeholder Comments and Public Meetings

The stakeholder consultation activities were organized to give participants the opportunity to provide comments according to general categories of interest based upon the assessment criteria. The table below summarizes the issues identified by the assessment team with a brief discussion of each based upon specific interview and/or public meeting comments.

Table 3. Stakeholder comments.

FSC Principle	Stakeholder Comments	SmartWood Response
P1: FSC Commitment/ Legal Compliance	Environmental organization: The St. John’s OSB forest and arboretum program is very compatible with FSC principles.	We concur. Our evaluation of the program indicates a strong commitment to FSC principles. St. John’s OSB has a vision for the forest that recognizes the importance of integrating ecological, economic and social factors in their long-term planning for the forest.
P2: Tenure & Use Rights & Responsibilities	Sawmill Operator: St. John’s OSB has made a good effort in fostering good community relations through working with	St. John’s OSB officials put a strong emphasis on relations with surrounding communities. Local mills are employed to process wood

	local mill operators.	products, neighbors are given preference for fall deer hunting permits.
P3: Indigenous Peoples' Rights	No comments	Not necessary
P4: Community Relations & Workers' Rights	St. John's Forestry employee: Concern over how certification might affect St. John's employees that worked on forest operations. Will there be changes in forestry operations; (e.g. Less harvesting, different forestry practices).	We do not foresee changes that will significantly affect workers here. Changes in the forest management operation could make it more efficient and sustainable in the long term. Certification should help provide security for forest workers.
P5: Benefits from the Forest	Sawmill Operator: Deer don't like to browse Red Oak - they feed on adjacent farms. Red Oak needs summer logging and associated mechanical scarification to produce regeneration St. John's Abbey. Needs to stress "sawing for yield and grade" to produce wood for their use.	The assessment team observed browsed red oak seedlings in oak regeneration areas. The 0.50 acres exclosure showed greater extension growth in oak seedlings when compared to areas outside the exclosure. Summer logging is an option that should be considered. Current practices are producing adequate wood products for St. John's use.
P6: Environmental Impact	Visiting Forest Scientist: What kinds of data are involved in the assessment (i.e. quantitative vs qualitative). There was no concern about the integrity of the process, just interest in the information that is used in assessments. Minnesota County Biological Survey: Noted that some areas had degraded understory vegetation due to past cattle grazing, non-native earthworms and deer browsing. Local Forest Resource Manager: The Abbey is one of the longest standing well managed forests in our state. St. John's University College professor: Although a land stewardship ethic has been a recurring theme here, land	Noted that both qualitative data (site inspection) and quantitative data (forest inventory, product summaries) were used. Our observations concur with county biological survey findings. We observed a number of upland sites that had extremely low species diversity and cover in the herb/shrub layers. Consultation with other ecologists indicates likely effect from cattle grazing, deer browsings, and non-native earthworms. We agree that the forest is well managed regarding environmental impacts. There were minimal impacts on soil and water resources attributable to forest management activities. The current philosophy focuses on sustainable use of the land with preservation and restoration as important components. Wood

	<p>management has changed through the history of St. John's OSB. In the early years, management was driven by practical needs; fuel, shelter, food. In the past, clearcutting, grazing, agriculture, and fuel wood harvest were important land uses. The preservation/restoration ethic has become more prominent in the last 25 years St. John's OSB.</p>	<p>products are viewed as one of many important land values. There is also recognition of the great potential for education and research.</p>
<p>P7: Management Plan</p>	<p>Local Forest Resource Manager: Expressed strong support for the forest management activities currently being conducted and planned.</p> <p>Sawmill Operator: There are a lot of words in the plan. St. John's Abbey needs better on the ground management. Tom Kroll will provide this.</p> <p>Minnesota County Biological Survey: Forest should be managed for conservation, recreation and education values as well as forest products.</p>	<p>Our review of the plan indicates that it is a good starting point for long-term management planning.</p> <p>The plan provides a good basis for long term management planning. They have used existing inventory and silvicultural information to develop a long-term strategic plan for sustaining the forest resource.</p> <p>Conservation and recreation are recognized by managers as important values.</p>
<p>P8: Monitoring & Assessment</p>	<p>St. John's University College professor: In the past, the lack of detailed and readily available records on forest management operations made it difficult to set up research projects with students interested in various ecological aspects of forest management. Tom Kroll will institute professional management including detailed record keeping, monitoring, and a GIS system.</p>	<p>Information on past management activities is sporadic. Planned improvements in record keeping and systematic inventory and monitoring system will allow for greater use of the forest for research and education.</p>
<p>P9: Maintenance of High Conservation Value Forest</p>	<p>Minnesota County Biological Survey: Noted that St. John's OSB forest is significant as a large tract of forest in the prairie-forest border region.</p>	<p>We agree that the forest has significant high conservation values. This is a large tract of mature, contiguous upland hardwood forest surrounded by agriculture or developed land in the prairie forest border region. This forest has important habitat value in terms of connectivity and forest interior. It is also important because of the mature oak forest and its significance to St.</p>

		John's OSB for both wood products and aesthetic and spiritual values.
P10: Plantations	Sawmill Operator: Conifer plantations are ok but, high quality hardwoods are much better for saw logs.	Conifer plantations are a small proportion of the St. John's OSB forest. There are no plans to increase plantation acreage.

3. RESULTS, CONCLUSIONS AND RECOMMENDATIONS

3.1. General Discussion of Findings

Table 4: Findings by FSC Principle

Principle/Subject Area	Strengths	Weaknesses
P1: FSC Commitment and Legal Compliance	<p>Principles and management philosophy as stated in the management plan parallel FSC principles, although there is no direct reference to FSC. We observed a strong commitment to protect soil and water resources during forestry operations.</p> <p>St. John’s OSB is tax exempt but they pay some real estate taxes plus contribute to local government projects.</p>	<p>There are no formal guidelines and specifications for protecting soil and water resources during forestry operations.</p>
P2: Tenure & Use Rights & Responsibilities	<p>St. John’s OSB holds legal title to all lands that would be subject to certification. Property boundaries have been recently re-surveyed. Firewood collecting permits are issued to neighbors.</p>	<p>Firewood collecting may be leading to unacceptably low levels of coarse woody debris on recently harvested sites. However, this slash reduction effort is intended to reduce fuel loads to manageable levels prior to prescribed burning activities needed to regenerate red oak effectively. CWD levels are adequate in areas not opened up to firewood collection.</p>
P3 – Indigenous Peoples’ Rights	<p>The St. John’s OSB lands are not covered by any current or historic land claims.</p>	<p>St. John’s OSB has made no efforts to discover what native American history may have taken place on their lands.</p>
P4: Community Relations & Workers’ Rights	<p>St. John’s OSB works hard to maintain good community relations. They allow recreational use of the property including fishing in lakes and hiking. Fall deer hunts are open to local citizens. Local K-12 education programs utilize the arboretum and forest. Workers at St. John’s OSB have excellent benefits and an established grievance procedure.</p>	<p>There is no formal forestry education for the local community.</p> <p>There is a lack of documentation on worker safety issues including equipment and training.</p>
P5: Benefits from the Forest	<p>Wood from the forest is primarily utilized by St. John’s OSB. Materials not used by the Abbey go to local mills and woodworkers. Other benefits include maple sugar, recreation, and natural science education.</p>	<p>The presence and uses of existing and potential non-timber forest products are not well documented.</p> <p>St. John’s OSB is dependent on the red oak resource. The mature condition of red oak, and the lack of regeneration will potentially lead to a wood shortage in the future.</p>
P6: Environmental Impact	<p>Forest management operations at St. John’s OSB are planned to have low impact. Recent work by the Minnesota County Biological Survey showed no RTE species on the land. Prairie, savanna, and wetland</p>	<p>The management plan lacks detailed information on historic vegetation conditions. A formal site based ecological classification system does not exist for St. John’s OSB lands. There are no official BMP guidelines</p>

	<p>restoration projects are in progress. Forest management focuses on red oak regeneration and will create greater age class diversity. There are two upland hardwood complexes that have been designated as unmanaged natural areas. There is minimal pesticide/herbicide use. Lake Sagatagan is one of the cleanest lakes in the region.</p>	<p>relating to soil, water, wetland and other resources. There are no written prescriptions and guidelines for pesticide and herbicide use.</p> <p>Current planning for oak wilt and gypsy moth is cursory. These organisms could be significant threats to the health and viability of the forest resource here.</p>
P7: Management Plan	<p>The management plan is, for the most part, both comprehensive and well written.</p> <p>The current management plan outlines policies and procedures for minimizing environmental impacts. Inventories on forest conditions and biological resources are current. There is strong awareness of the surrounding landscape and how changes might impact St. John’s OSB lands.</p> <p>The management plan contains general specifications for inventory and monitoring of forest and biological resources.</p>	<p>Landscape level considerations are not directly addressed in the current management plan, although forest management staff are aware of these considerations.</p> <p>Specifics of the inventory/monitoring plan have not yet been developed or implemented.</p>
P8: Monitoring & Assessment	<p>Current monitoring is focused on red oak regeneration treatments including shelterwood and prescribed fire. This sampling measures seedling density and understory composition. Recent results suggest that shelterwood in combination with prescribed fire leads to greatly increased red oak establishment. Based on these results, land managers are considering increased use of prescribed fire.</p> <p>An inventory/vegetation monitoring system of permanent plots will be instituted within the next few years. This will be compatible with major public land inventory systems (FIA, MN-DNR Phase 2).</p> <p>There are other ongoing biotic surveys in the forest and arboretum including breeding birds, reptiles/amphibians, butterflies and plant taxa.</p>	<p>The frequency and timetable for monitoring forest management operations is not yet laid out. Monitoring of site disturbing activities is not included in the monitoring plan.</p> <p>Although it is important to be compatible with public land inventories, these systems lack important ecological information such as snag density, coarse woody debris, and detailed herb and shrub layer composition.</p> <p>There is no formal mechanism for incorporating results of other monitoring and surveys into forest management planning.</p>
P9: Maintenance of High Conservation Value Forest	<p>In our estimation, the St. John’s Abbey OSB forest does meet some of the criteria for HCVF. This forest is a remnant island on the prairie-forest border surrounded by developed and agricultural lands. The forest also has important habitat value as it is a relatively large area of contiguous mature upland forest. In addition, the prairie and savanna restorations restore</p>	<p>Although much of the proposed management would serve to maintain and enhance HCVF attributes, HCVF attributes are not defined in the management plan. Monitoring, inventory and research may have to be modified to accommodate HCVF attributes. At present, the success of red oak regeneration efforts is unknown.</p>

	<p>what are now rare elements on the landscape.</p> <p>Much of the proposed management would serve to maintain and enhance HCVF attributes. This includes red oak regeneration, prairie/savanna restoration, and upland forest natural area designation.</p>	
P10 - Plantations	<p>Approximately 5% of the area is in plantation. Introduced species constitute less than 10 acres out of 146 acres in plantations. Introduced species are not spreading or interbreeding with other species. Plantations will be managed for timber supply and aesthetics. Pine plantations hold special historical significance for St. John's OSB monks.</p>	<p>Scots Pine and Norway Spruce are not native species. The management plan recommends use of pesticides for gopher control and herbicide for controlling competition, and application of sewage sludge as fertilizer. The management plan does not describe what species will be regenerated on these sites after final harvest.</p>

3.2. Certification Decision

Based on a thorough field review, analysis, and compilation of findings by this SmartWood assessment team, St. John's Abbey, OSB is recommended to receive joint FSC/SmartWood Forest Management and Chain of Custody (FM/COC) Certification with the stipulated conditions.

In order to maintain certification, St. John's Abbey, OSB will be audited annually on-site and required to remain in compliance with the FSC principles and criteria as further defined by regional guidelines developed by SmartWood or the FSC. St. John's Abbey, OSB also will be required to fulfill the conditions as described below. SmartWood will review continued forest management performance and compliance with the conditions described in this report, annually during scheduled and random audits.

3.3. Conditions and Recommendations

Conditions:

Conditions are verifiable actions that will form part of the certification agreement that St. John's Abbey will be expected to fulfill at the time of the first audit or as required in the condition. Each condition has an explicit time period for completion. Non-compliance with conditions will lead to de-certification.

Effective Immediately Upon Certification

1. **Condition:** Effective immediately upon certification, St. John's OSB must include a written endorsement of the FSC principles and criteria in their forest management plan. (Criterion 4.1.6)
2. **Condition:** Immediately upon certification, St. John's OSB must provide a summary of the primary elements of their management plan to interested members of the public for a reasonable fee. (Criterion 4.7.4)

3. **Condition:** Immediately upon certification, and prior to conducting harvesting operations, SJA must develop and implement a load ticketing system (or suitable alternative) for log deliveries bound for manufacturing facilities under contract to custom process SJA logs into lumber, and for hauling processed lumber from said sawmills to the SJA lumber yard. This identification system must include the clear description of FSC-certified forest products and the St. John's OSB FSC code number (issued upon certification). Additionally, SJA logs destined to be custom sawn on behalf of SJA must be marked on at least one end prior to leaving the SJA woods landing. Bundles of SJA lumber must be banded and identified with markings applied directly on the side of the bundle immediately upon exiting the sawing and grading processes at the sawmill. Bundles of lumber stored in the SJA lumber yard subsequent to certification must be clearly identified as FSC certified lumber, and must be stored separately from non-certified lumber. SJA must retain records for the transport, processing, inventory and sale of logs, lumber and other forest products, and must produce these records during SmartWood annual audits. (Criterion 4.8.3)
4. **Condition:** Immediately upon certification, and prior to delivering sawlogs for custom sawing, SJA must develop a standard agreement to be executed by both SJA and each participating sawmill to secure full agreement on chain of custody procedures to be employed while performing custom sawing services. This agreement must explicitly describe the processes and procedures to be employed by the sawmill to ensure the complete isolation and clear identification of SJA logs and lumber during storage, handling, processing, grading and delivery, including the maintenance of accurate records. (Criterion 4.8.3)
5. **Condition:** Effective immediately upon certification, all advertisements, contracts, and other log purchase agreements for external sales or deliveries must identify the logs or timber being sold or delivered as FSC-certified and must include the St. John's OSB FSC code number. All FSC-certified forest products must be identified. (Criterion 4.8.3)

Within One Year of Certification

6. **Condition:** Within one year of certification, St. John's OSB must develop a system for documenting forest management worker compliance with the safety program. This must include documentation of all training programs attended and accident records for each employee. (Criterion 4.4.2)
7. **Condition:** Within one year of certification, revise the management plan to reflect an accurate representation of acres included in the commercial forest base, excluding natural areas and other non-commercial areas. The ten-year harvest schedule must be revised accordingly to reflect an accurate representation of harvestable acres and corresponding projected harvest volumes. (Criterion 4.5.6)
8. **Condition:** Within one year of certification, St. John's OSB must establish a written protocol for identifying and documenting occurrences RTE species on their lands. This protocol must also include the development of management prescriptions to protect critical habitat, and notification of appropriate state or federal agencies of an occurrence. (Criterion 4.6.2)

9. **Condition:** Within one year of certification, St. John's OSB must develop a written policy for the management of snags, den trees and coarse woody debris. In general, this policy must encourage the retention of more, larger standing dead trees as snags and future coarse woody debris. Unless there are conflicts with prescribed burning prescriptions for red oak regeneration, ensure that firewood collectors leave large-diameter wood (> 12") on site. Refer to the Minnesota Voluntary Site Level Guidelines (MNDNR 1998) for information on CWD, snags and green tree retention. (Criterion 4.6.3)
10. **Condition:** Within one year of certification, adopt the Minnesota Voluntary Site Level Guidelines (Minnesota Forest Resources Council, 1999) as minimum standards for St. John's OSB forest management practices. Include section in the management plan with general BMP specifications derived from Minnesota Voluntary Site Level Guidelines. Develop a postharvest checklist for BMP compliance and monitoring. (Criterion 4.6.5)
11. **Condition:** Within one year of certification, the management plan must be validated by the signatures of appropriate representatives from St. John's Abbey including responsible parties from both administrative and forest management staff. (Criterion 4.7.1)

Within Two Years of Certification

12. **Condition:** Within two years of certification or prior to initiating harvest activities in any given stand, whichever comes first, St. John's OSB must develop written prescriptions for each harvest unit that describe management methods and restrictions. These prescriptions must include marking specifications (basal area, leave trees, wetland/riparian buffer zones etc.) and operating restrictions (e.g. slope limitations, saturated soil constraints). (Criterion 4.7.1)
13. **Condition:** Within two years of certification, the management plan must clearly describe protocol for reviews and updates of operational components of the plan. (Criterion 4.7.2)

Within Three Years of Certification

14. **Condition:** Within three years of certification, develop and implement a strategy to identify and protect sites of cultural and historic significance. Site identification techniques and protection measures must be developed in consultation with local or regional tribal groups and experts. Sites of cultural and historic significance that are identified must be communicated to the State Archaeologist and/or appropriate tribal officials. Document any occurrences and include appropriate measure for protection of cultural and historic resources in the management plan. (Criterion 4.3.3)
15. **Condition:** Within three years of certification, St. John's OSB must add a section to their management plan that identifies all potential NTFPs and includes management policies for NTFPs relating to harvesting or protection. (Criterion 4.5.2)
16. **Condition:** Within three years of certification, St. John's OSB must develop written strategies, prescriptions, and guidelines for common pesticide and herbicide applications. Ensure that records are kept of use and worker exposure. (Criterion 4.6.6)

17. **Condition:** Within three years of certification, St. John's OSB must develop an in-depth plan to deal with gypsy moth and oak wilt. This plan should include processes for monitoring gypsy moth infestation and oak wilt infection and management strategies to deal with these threats. (Criterion 4.6.6)
18. **Condition:** Within three years of certification, St. John's OSB must develop written plans and strategies to monitor and control buckthorn, honeysuckle, and other aggressive, exotic invasive species. (Criterion 4.6.9)
19. **Condition:** Within three years of certification, develop a stand level inventory and monitoring system that includes information on timber by species, grade or product, and size including sub-merchantable trees and regeneration; however, additional ecological information such as data on snags and coarse woody debris, soil conditions, insect and disease damage, and herb and shrub layer composition must be included in the inventory database. Soil and herb/shrub layer data will be very useful for site-based ecological classification. Include in the monitoring plan specifications for monitoring site-disturbing activities as described in the Minnesota Voluntary Site Level Guidelines. This could take the form of a post-harvest checklist to assess conditions. (See attached Exhibit D, Post harvest BMP Checklist). (Criteria 4.7.1, 4.8.1 & 4.8.2)
20. **Condition:** Within three years of certification, St. John's OSB must determine the extent of HCVF land on the property. This inventory must be conducted in consultation with the Minnesota County Biological Survey, Natural Heritage program staff, or experts from conservation groups such as the Nature Conservancy. These areas will be identified in the management plan and described in terms of attributes that are consistent with HCVFs. Specific measures & strategies will be included in the plan and implemented on the ground that maintain or enhance the attributes consistent with HCVF. Modify the monitoring and inventory plan to ensure HCVF attributes are monitored at an appropriate frequency. Changes in HCVF forest conditions must be noted with corresponding adaptations made to management activities in order to retain or enhance HCVF attributes. (Criteria 4.9.1, 4.9.3 & 4.9.4)

Within Four Years of Certification

21. **Condition:** Within four years of certification, revise the harvest schedule to accurately account for intermediate thinnings, crop tree releases, multiple entry shelterwood harvests, single tree selection harvests and other harvest that are not considered single entry regeneration harvests, and therefore not accounted for in the current area control regulation and harvest schedule. (Criterion 4.5.6)

Within Five Years of Certification

22. **Condition:** Within five years of certification, the management plan must be expanded to incorporate landscape level considerations within St. John's OSB and adjacent lands. The incorporation of landscape level considerations should include knowledge of land management by adjacent and nearby landowners and consideration of the St. John's OSB forest in the regional landscape context (Ecological classification hierarchy, province, section, subsection, land type association). (Criterion 4.7.1)

Recommendations:

The assessment team identified the following non-binding recommendations for improvements to the St. John's Abbey forest management operation.

1. **Recommendation:** Set up a regular schedule for monitoring the property boundaries in order to minimize future problems. (Criterion 4.1.5)
2. **Recommendation:** Contact regional tribal groups to determine the historical tribal uses that may have taken place on St. John's OSB lands. (Criterion 4.3.3)
3. **Recommendation:** Contact tribal groups to become aware of traditional knowledge on the use of forest species and forest management practices. (Criterion 4.3.4)
4. **Recommendation:** Consider hiring professional logging crews to conduct all logging operations on SJA lands. In the absence of professional logging crews, consider enrolling each member of the current logging crew in the Game of Logging and other rigorous logger training programs. (Criterion 4.4.2)
5. **Recommendation:** Develop a program to educate interested members of the public about the goals, and methods of the St. John's OSB forest management program. (Criterion 4.4.4)
6. **Recommendation:** Examine how other tree species might be used for St. John's OSB wood product needs in the future, when red oak may be less available. (Criterion 4.5.4)
7. **Recommendation:** As deer are one of the major barriers to successful red oak regeneration for future stands, seek opportunities to lower the deer population by expanding the deer hunt. Build more exclosures and investigate other protection measures to facilitate the successful regeneration of red oak and other desirable regeneration. Consider fencing of individual stems. Consider leaving more structure (coarse woody debris, tops, snags) to impede deer. Protection by undesirable or dense vegetation has been shown to protect white pine (Saunders and Puettman 1999, Anderson et al. 2000) and eastern hemlock (Borgmann et al. 1999) from browsing damage. (Criteria 4.5.6 & 4.6.3)
8. **Recommendation:** Convert from an area regulation to a volume regulation in management planning to provide for a more consistent harvest volume and to more accurately account for intermediate harvests, variable growth rates, differences in management regimes and multiple entry prescriptions. (Criterion 4.5.6)
9. **Recommendation:** Incorporate into the management plan historical information on vegetation conditions and natural and human related disturbance within and in the area surrounding OSB lands in Stearns Co. At a minimum, the four townships surrounding the SJA lands should be sufficient to assess historical conditions. The GLO (General Land Office) survey notes contain valuable information on vegetation conditions and disturbance at the time of settlement. The Minnesota Bearing Tree Database is derived from the GLO survey notes and is available as geo-referenced digital data from the Minnesota DNR Data Deli Web site. This database contains the species and diameter for each bearing tree and the vegetation description for each section or quarter corner (e.g. F = forest, O = oak opening, P = prairie, U = burned, etc.) See Almendinger (1994) for information on the use and

interpretation of these data. More detailed descriptions of vegetation conditions can be obtained from the surveyor line notes; these must be transcribed from microfiche or from copies of manuscripts. In addition, a review of relevant ecological literature regarding the ecosystem types in this area also should be included (see Chapman et al. 1993, Grimm 1984 for more information). (Criterion 4.6.1)

10. **Recommendation:** Staff should undertake training in identifying RTE species or communities likely to occur on St. John's OSB lands. For example, the Minnesota DNR's Non-Game Heritage can provide information on identification and habitat characteristics of RTE species. (Criterion 4.6.2)
11. **Recommendation:** Acquire a site license for the Natural Heritage Program digital database that includes up to date MN County Biological Survey data on RTE species, communities and important natural features (e.g. unique rock formations or hydrologic conditions). (Criterion 4.6.2)
12. **Recommendation:** Begin development of a more detailed ECS for SJA forestlands. Coordinate with existing ECS projects (Almendinger and Hansen, MN DNR, Kotar, University of Wisconsin). Classifications appropriate for SJA lands likely will be available within the next few years. Collecting understory data tied to the existing stand inventory would allow for an easy transition to an ECS system. (Criterion 4.6.3)
13. **Recommendation:** Increase species diversity in mesic upland hardwood stands by using methods such as group selection to create large gaps to favor species such as white oak, red oak, basswood or ash when present. (Criterion 4.6.3)
14. **Recommendation:** Continue to expand the prescribed fire and vegetation monitoring program in shelterwood treatments. Examine management goals and determine if sampling protocol provides the required data. Evaluate the sampling methods in regards to sample size, number and data collected. (Criterion 4.6.3)
15. **Recommendation:** Consider vegetation composition and structure as influenced by fire and other disturbance factors when considering desired future conditions for forest composition and age structure. In addition use information on natural disturbance frequency and size of disturbance patches to address size, shape, frequency, structure and distribution of harvest units. (Criterion 4.6.3)
16. **Recommendation:** Develop strategy for monitoring non-native earthworm presence and effects on soil and understory vegetation and incorporate into management planning. At this point in time little is known about managing sites that have been damaged by European earthworms, however, an understanding of the distribution and effects on plant species and soil characteristics will be valuable for future management. (Criterion 4.6.3)
17. **Recommendation:** Easements, deed restrictions, and leasing arrangements should be listed and described in the forest management plan. (Criterion 4.7.1)
18. **Recommendation:** SJA should consider developing a relevant GIS database showing the forest's characteristics, such as: relevant landscape-level factors; property boundaries; roads; timber production areas; forest types by age class; topography; soils; riparian zones; springs

and wetlands; archaeological sites; cultural and customary use areas; locations of sensitive, rare, threatened, and endangered species and their habitats; and designated High Conservation Value Forests. (Criterion 4.7.1)

19. **Recommendation:** Incorporate inventory and monitoring information into a digital database format for easy retrieval, entry, and analysis. Maintain paper as well as digital records. (Criterion 4.8.2)
20. **Recommendation:** Through the Minnesota County Biological Survey and NGOs such as the Nature Conservancy, identify other similar HCVF lands in the region. Contact land managers of these sites and exchange information on management practices and goals and objectives. This would also be an opportunity to collaborate on landscape level goals and objectives. (Criterion 4.9.3)
21. **Recommendation:** Consider restoration of some conifer plantings to native forest cover when plantings reach a mature state and can be harvested and restored. (Criterion 4.10.5)
22. **Recommendation:** Develop alternatives to pesticide/herbicide and sludge application on these plantations. (Criterion 4.10.7)

4.0 CERTIFICATION CRITERIA, SCORES AND FINDINGS:

Based on the content and analysis of each criterion, a score has been assigned for the criterion using Table X as a guide. The entire assessment team does scoring of all criteria through a consensus process. The following definitions apply, and are the basis for all certification assessments:

- Pre-conditions -** these are requirements that candidate operations must agree to and address before certification by SmartWood can take place.
- Condition -** these are requirements that candidate operations must agree to, and which must be addressed, during the five-year period of the certification.
- Recommendation -** these are voluntary actions suggested by the assessment team, but are not mandated or required.

Table 5. A guide to scoring, performance level, and compliance

Score	PERFORMANCE General Description	COMPLIANCE Pre-conditions, Conditions and Recommendations
N/A	Not an applicable criteria.	Not applicable, thus no pre-conditions, conditions or recommendations; criteria not used for score averaging
1	Extremely weak performance; strongly unfavorable or data lacking.	Pre-conditions required
2	Weak performance; significant improvement is still needed.	Pre-conditions optional; conditions required
3	Satisfactory performance	Conditions optional
4	Favorable performance	Recommendations; no conditions
5	Clearly outstanding performance	Recommendations possible, but not typical

For each criterion discussed below, the assessment team’s findings are presented and where applicable, pre-conditions, conditions, and recommendations are presented.

4.1.0 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.

4.1.1. Forest management shall respect all national and local laws and administrative requirements.

4.1.1.a. Forest management plans and operations comply with applicable Federal, state, county, tribal, and municipal laws, rules, and regulations.

4.1.1.b. Forest management operations comply with state Best Management Practices (BMPs) and other forest management guidelines that apply to forestlands, whether voluntary or regulatory (see also criterion 6.5).

4.1.1.c. Forest management operations meet or exceed all applicable laws and administrative requirements with respect to public information sharing, open records laws, and public participation procedures.

Findings: St. Johns Abbey OSB was not found to be in violation of any laws or regulations. We did not find any violations of Minnesota best management practices as defined by the MNDNR Voluntary Site Level Guidelines (MNDNR 1998) in the areas of water quality/ wetlands, forest roads, harvesting, site prep, pesticide use, and prescribed fire. Water, soil, and habitat quality are integral components in the current draft land management plan. As a private landowner, St. John's OSB is not subject to laws or administrative regulations regarding public consultation, however the SJA forestry staff does solicit input on forestry activities from staff, neighbors, faculty and students.

Score: 5

4.1.2. All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid

4.1.2.a. Taxes on forest land and timber and other fees related to forest management are paid in a timely manner and in accordance with state and local laws.

Findings: St. John's Abby is exempt from real estate taxes under Minnesota Statute 272.02 because it is a University and church property, however they only exercise their exemption on the original "homesteaded" lands in Stearns County. They do pay taxes on all additional parcels in Stearns County, plus the parcels in Beltrami and Crow Wing Counties. In addition, they have made contributions to various local townships for sizeable projects (roads etc.). Minnesota State Sales Tax is paid on any products sold to wood producers.

Score: 5

4.1.3. In signatory countries, the provisions of all binding international agreements such as CITIES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.

4.1.3.a. Forest management operations comply with all binding treaties or other agreements to which the U.S. is a party, including treaties with American Indian tribes.

Findings: St. John's OSB lands are not part of ceded territories of the 1837 treaty and are not subject to any other federal treaties. Timber management activities comply with all relevant treaties and agreements.

Score: 4

4.1.4. Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and by the involved or affected parties.

4.1.4.a. These standards do not abridge or compromise the legal rights of landowners in any way, beyond the voluntarily accepted constraints that are explicitly stated herein.

4.1.4.b. Where laws or regulations result in non-compliance with FSC P&C, compliance with those laws may result in denial of award or retention of a certificate.

Findings: There are no apparent conflicts between St Johns Abbey’s obedience of laws and regulations, and their adherence to the FSC Principles and Criteria. Environmental and workers’ protections are not affected by compliance with laws.

Score: 4

4.1.5. Forest management areas should be protected from illegal harvesting, settlement, and other unauthorized activities.

4.1.5.a. Forest owners or managers implement measures to prevent illegal and unauthorized activities in the forest.

Findings: In the recent past there has been one case of illegal harvest by an adjacent landowner. St. John’s Abbey has since re-marked its entire property boundary and has had no further trespass problems. “Hiker friendly” gates are utilized on logging roads to restrict vehicular traffic while allowing for pedestrian traffic.

Score: 4

Recommendation: Set up a regular schedule for monitoring the property boundaries in order to minimize future problems.

4.1.6. Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria.

4.1.6.a. Where opportunities afford, FSC Principles and Criteria are explicitly supported in the public arena.

4.1.6.b. Forest owners or managers notify certifiers of changes in ownership and/or management planning

Findings: Although there is no direct reference to the FSC Principles and Criteria, the goals documented in the St. John’s Abbey Land Management Plan include the attainment of “green certification for harvesting to validate Benedictine stewardship values”.

Many additional goals as noted in general summary Section 1.3.D. “General Description of Details and Objectives of the Management Plan/System” are also consistent with FSC Principles and Criteria.

Score: 3

Condition: Effective immediately upon certification, St. John’s OSB must include a written endorsement of the FSC principles and criteria in their forest management plan.

4.2.0 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.

4.2.1. Clear evidence of long-term forest use rights to the land (e.g. land title, customary rights, or lease agreements) shall be demonstrated.

4.2.1.a. Forest owners or managers document the legal and customary rights associated with the forest. These rights include both those held by the party seeking certification and those held by other parties.

4.2.1.b. Affected land boundaries are clearly identified on the ground by the forest owner or manager prior to commencement of management activities.

Findings: Documents (Stearns County Tax Assessor Statement of Real Estate Ownership, Beltrami County Property Tax Statement) indicate that the Order of St. Benedict holds legal title to all properties that would be subject to FSC certification (See exhibit B). Property boundaries have been recently resurveyed with new signs and boundary markers. Harvest boundaries are marked by the St. John’s OSB forestry crew prior to the initiation of “on the ground” management activities. There are no customary use rights claimed by other groups or individuals.

Score: 4

4.2.2. Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.

Applicability note: For the planning and management of publicly owned forests, the local community is defined as all residents and property owners of the relevant jurisdiction.

4.2.2.a. The forest owner or manager allows legal and customary rights to the extent that they are consistent with the conservation of the forest resource and the objectives as stated in the management plan.

Findings: St. John’s OSB allows recreational use of the property including fishing in lakes and hiking. Fall deer hunts are open to citizens. Limited firewood collecting is administered through a permit system. There are no easements or other legal instruments that convey specific rights to others.

Score: 5

Note: The rights of indigenous people are described in Principle 3.

4.2.3. Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial

magnitude involving a significant number of interests will normally disqualify an operation from being certified.

4.2.3.a. The forest owner or manager maintains relations with community stakeholders to identify disputes in their early stages. If disputes arise, the forest owner or manager initially attempts to resolve them through open communication, negotiation, and/or mediation. If negotiation fails, existing local, state, federal and tribal laws are employed to resolve land tenure claims.

4.2.3.b. The forest owner or manager provides information regarding unresolved and ongoing disputes over tenure and use rights to the certifying body

Findings: The only dispute noted involved illegal harvest on St. John's OSB lands. This dispute was resolved by the recent re-survey and marking of property boundaries. It is clear that the SJA has a strong commitment to maintaining good relations with community stakeholders. There are no current disputes over tenure and use rights, and there have been no disputes involving use rights.

Score: 4

4.2.4. Property rights of private landowners shall be respected.

4.2.4.a. The landowner and forest manager of privately owned land retain their private property rights, while honouring the rights of adjacent landowners.

Findings: St. John's OSB and its land managers are very aware of their own private property rights and are dedicated to retaining their own rights while honoring those of their neighbors. For example, neighbors are given priority on fall deer hunts aimed at reducing high deer populations that have resulted in severe damage to tree regeneration on SJA lands. Neighbors are also given priority for firewood collecting permits.

Score: 5

4.3.0 PRINCIPLE 3: INDIGENOUS PEOPLES' RIGHTS

The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.

Applicability Note: The terms "tribes", "tribal" or "American Indian groups" in indicators under Principle 3 include all indigenous people in the US, who may be organized in tribes, bands, nations, native corporations, or other native groups.

4.3.1. Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.

4.3.1.a. Forest management planning on tribal lands includes a process for input by tribal members in accordance with their laws and customs.

4.3.1.b. Tribal forest management is delegated or implemented by an authorized tribal governing body.

Findings: St. John's OSB has legal title to all the lands they administer. St. Johns OSB lands are not part of the 1854 treaty, and there are no outstanding claims to their ownership.

Score: 5

4.3.2. Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.

4.3.2.a. Forest owners or managers of large and mid-sized forests identify and contact American Indian groups that have legal or customary use-rights to the management area, and invite their participation in forest planning processes that affect their resources. (See also 4.4.c.)

Findings: Documents related to the history of St. John's OSB indicate that there is no record of legal or customary use-rights to the management area. Tribal groups have not been contacted by SJA regarding customary use-rights.

Score: 3

4.3.3. Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.

4.3.3.a. Forest owners or managers make systematic efforts to identify areas of cultural, historical or religious significance. They invite participation of tribal representatives in identification of sites of current or traditional significance within the property proposed for certification.

4.3.3.b. Forest owners and managers consult with tribal leaders to develop mechanisms to ensure that forest management operations that do not damage or interfere with areas described in 3.3.a., and incorporate these special places into forest management and operational plans.

4.3.3.c. Confidentiality of disclosures is maintained in keeping with applicable laws and the requirements of tribal representatives.

Findings: The office of the State Archaeologist of Minnesota was consulted to determine if there were any know cultural or archaeological features on the property. No sites significant to indigenous peoples have been identified to date. No specific surveys have been conducted for cultural or archaeological features. Tribal groups have not been consulted.

Score: 3

Condition: Within three years of certification, develop and implement a strategy to identify and protect sites of cultural and historic significance. Site identification techniques and protection measures must be developed in consultation with local or regional tribal groups and experts. Sites of cultural and historic significance that are identified must be communicated to the State

Archaeologist and/or appropriate tribal officials. Document any occurrences and include appropriate measure for protection of cultural and historic resources in the management plan.

Recommendation: Contact regional tribal groups to determine the historical tribal uses that may have taken place on St. John's OSB lands.

4.3.4. Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.

4.3.4.a. Forest owners or managers respect the confidentiality of tribal knowledge and assist in the protection of tribal intellectual property rights.

4.3.4.b. Where indigenous intellectual property rights and forest products based on intellectual property rights are commercially exploited, a written agreement with individuals and/or tribes is reached prior to commercialization.

Findings: St. John's OSB does not employ traditional knowledge in the use of forest species or in forest management operations.

Score: 4

Recommendation: Contact tribal groups to become aware of traditional knowledge on the use of forest species and forest management practices.

4.4.0 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.

4.4.1. The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.

4.4.1.a. Equal employment, contracting, purchasing, processing, and training opportunities are offered to local communities and service providers.

4.4.1.b. Forest owners or managers contribute in some way to public education about forestry practices.

4.4.1.c. Forest owners or managers participate in local economic development and civic activities.

4.4.1.d. Total remuneration packages, including wages and other benefits, meet or exceed prevailing local standards for work requiring similar education, skills, and experience.

Findings: All five of the listed firewood permittees live within 10 miles and seven of the eleven log purchasers are located within 50 miles of St John's Abbey. Their scale of management favors smaller companies. Two employees we interviewed own properties adjacent to St John's Abby.

Annually, approximately 1600 local school kids participate in various environmental education and fine arts programs. All employees/associates exhibited a strong passion for their job along with the goals of the management plan at St. John's Abbey. Two SJA employees interviewed during the assessment stated that they were very satisfied with wages and benefits.

Score: 4

4.4.2. Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.

4.4.2.a. The forest owner or manager and their contractors develop and implement safety programs and procedures that include:

- *Well-maintained and safe machinery and equipment*
- *Use of safety equipment appropriate to each task*
- *Documentation and posting of safety procedures in the workplace*
- *Educational efforts (such as Forest Industry Safety Training Alliance and Game of Logging)*
- *Contracts with safety requirements*
- *Safety records, training reports, and certificates*

Findings: Logging operations at SJA are conducted with a three person crew consisting their on-staff Forestry Technician and grounds crew foreman along with a semi-retired professional logger that is hired seasonally to operate the skidder and market logs not used internally by SJA. The grounds crew foreman, who is the tree faller on the crew, has some logging in his background. There is no record of serious injury in the forest management program. However, as SJA currently conducts their logging operations with mostly non-professional loggers, the potential for safety mishaps to occur during harvesting operations may be greater than necessary when contrasted with the option of employing professional loggers.

St. John's Abbey views "the personal safety and health of each employee of primary importance." (Exhibit C, Order of St. Benedict Safety Policy). Its safety program emphasizes three areas: training, personal protective equipment, and monitoring. The safety program emphasizes the following: 1) provide reasonable safeguards to ensure safe working conditions, 2) regular health and safety inspections, 3) training in good safety practices, 4) provide necessary safety equipment, 5) employee cooperation in health and safety as a condition for employment, 6) investigating workplace accidents to find and correct causes. Employees have participated in various educational programs, but some may have lacked documentation. Occasional tailgate safety meetings are held in the woods with the logging crew, and although none of the members of the SJA logging crew have participated in in-depth logger training such as the Game of Logging or SFI Logger Certification.

Score: 3

Condition: Within one year of certification, St. John's OSB must develop a system for documenting forest management worker compliance with the safety program. This must include documentation of all training programs attended and accident records for each employee.

Recommendation: Consider hiring professional logging crews to conduct all logging operations on SJA lands. In the absence of professional logging crews, consider enrolling each member of the current logging crew in the Game of Logging and other rigorous logger training programs.

4.4.3. The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labour Organization (ILO).

4.4.3.a. U.S., state, local, and tribal labor laws and regulations are adhered to (see also Criterion 1.1).

4.4.3.b. Forest owners or managers and their contractors develop effective and culturally sensitive mechanisms to resolve disputes between workers and management.

Findings: Although employees at St. John’s Abbey are not formally organized into an ILO, they are all represented in one of three distinct groups, hourly, administrative and faculty. Employees are not prevented from organizing. Negotiations, grievances, and other procedures are discussed in detail in the employee handbook. The grievance procedure follows three main steps: 1) Open discussion, grievant discusses problem with parties involved for a period of ten working days, if a mutually agreeable resolution is not reached, proceed to step 2) Informal grievance process, the grievance is reviewed by committee and human resource personnel, grievance committee will attempt to resolve dispute, step 3) Formal grievance, grievant files as formal statement of grievance and the Formal Grievance committee attempts to resolve the dispute.

Score: 4

4.4.4. Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups directly affected by management operations.

4.4.4.a. On lands with multiple owners, a process is provided that assures the opportunity for a fair and reasonable input from the landowners and/or shareholders.

4.4.4.b. Significant sites of archeological, cultural, historical or community importance are designated as special management zones or otherwise protected during operations.

4.4.4.c. People and groups directly affected by forest management operations are apprised of proposed forestry activities (e.g., logging, burning, spraying, and traffic) and associated environmental and aesthetic effects.

4.4.4.d. Forest owners and managers limit and/or reduce negative impacts on visual quality caused by forest management operations.

4.4.4.e. Forest managers of large and mid-sized forests operations provide opportunities for people of the local community to provide input into management planning.

4.4.4.f. Additional indicators that apply only to assessments of public forests

Findings: Neighbors, interested public, organized groups, and public employees participate in discussing proposed forestry activities such as: deer hunting, logging, and burning. Because there was a concern about the effects of recent shelterwood treatments, forestry staff have taken

concerned individuals out to view harvest and discuss oak regeneration problems. Proposals have been modified in the past based on neighbors concerns.

Sites significant to the history and culture of St. John's OSB are protected during management operations. The first objective listed in the management plan section regarding "Management of Vegetation" is "maintain a healthy, diverse, and aesthetically pleasing forest."

Score: 4

Recommendation: Develop a program to educate interested members of the public about the goals, and methods of the St. John's OSB forest management program.

4.4.5. Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.

4.4.5.a. The forest owner or manager attempts to resolve grievances and mitigate damage resulting from forest management activities through open communication and negotiation prior to legal action.

4.4.5.b. Forest owners or managers and their contractors have adequate liability insurance.

Findings: St. John's OSB manages lands on which it holds title, thus there is little opportunity for loss or damage. However, in the event of loss or damage, St. John's OSB carries liability insurance in the amount of \$1,000,000/\$3,000,000 to provide compensation to the affected parties. St. John's OSB carries liability insurance and workers compensation for forestry operations. Nearly all management operations on St. John's OSB lands are conducted by St. John's OSB employees.

Score: 4

4.5.0 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.

4.5.1. Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.

4.5.1.a. The forest owner or manager is willing and able to support long-term (i.e., decades rather than quarter-years or years) forest management, e.g., planning, inventory, resource protection and post-harvest management activities.

4.5.1.b. Responses (for example, increases in harvests or debt load) to short-term financial factors, such as market fluctuations, sawmill supply requirements, and other short-term financial factors, are limited to levels that enable fulfillment of the management plan.

4.5.1.c. Investments and reinvestment in forest management are sufficient to fulfil management objectives and maintain and/or restore forest health and productivity.

Findings: Income from forest products is a consideration but it is not the driving force for St. John's OSB in the management of their forested properties. Sustainable ecosystems are much more important to the SJA. The current draft Land Management Plan describes a long term (50 year) planning horizon for red oak management. As they use most of the high quality wood products themselves, they are not significantly impacted by short-term financial factors such as marked fluctuations. The SJA land management plan is based on current science along with their social needs. The fact that SJA has managed this area for the past 140 years and that the land still supports healthy, valuable, diverse forests is testimony that they have made the commitment and ensuing investments necessary to maintain the economic and ecological viability of their forest lands.

Score: 4

4.5.2. Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.

4.5.2.a. When non-timber products are harvested, the management and use of those products is incorporated into the management plan.

4.5.2.b. New markets are explored for products from common but underutilized forest species.

4.5.2.c. The technical and financial specifications of some sales of forest products are scaled to allow successful competition by small businesses.

Findings: By grading and sorting logs into a number of product groups at the log landing, SJA is better able to fully utilize the forest products harvested from their properties. For example, in the past, red maple would have been left at the landing for firewood. Now it can be sold to a mill for use in the manufacturing of oriented strand board. Markets continually change and will affect future utilization.

Maple sugaring, deer hunting, birding, recreation, and serenity continue to be important non-timber forest products derived from SJA lands and are addressed in their forest management plan.

Score: 4

Condition: Within three years of certification, St. John's OSB must add a section to their management plan that identifies all potential NTFPs and includes management policies for NTFPs relating to harvesting or protection.

4.5.3. Forest management should minimize waste associated with harvesting and onsite processing operations and avoid damage to other forest resources.

4.5.3.a. The loss and /or waste of merchantable forest products is minimized.

4.5.3.b. *Adequate quantities and a diversity of size classes of woody debris are left on the forest floor to maintain ecosystem functions, wildlife habitats, and future forest productivity.*

4.5.3.c. *Harvest practices (e.g., low impact logging techniques) are employed to minimize residual stand damage.*

Findings: Minimal waste of products was observed. As a matter of fact, approved firewood gatherers had a tendency to clean up logging sites too well. Coarse woody debris levels appeared to be low on a number of recently harvested sites that we visited. The lack of CWD on these sites is a result of deliberate management strategies designed to reduce fuel loads in preparation for prescribed burning activities intended to regenerate red oak. Further away from the road, greater volumes of CWD were present.

There was no soil compaction or erosion observed and we rarely saw any skidding damage to residual trees. The timing of the harvest (normally winter), the use of their equipment (rubber-tired skidder), plus an efficient, careful operator all contributed to an overall minimum impact to trees, soils or other forest resources.

Score: 4

4.5.4. Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.

4.5.4.a. *Forest management diversifies forest uses and products, while maintaining forest composition, structures, and functions.*

Findings: The forest produces a multitude of products including veneer logs, sawlogs, pallet wood, firewood, pulpwood, and maple syrup. Red oak, which accounts for 47% of the acreage, and 53% of the standing volume, is the primary species for saw and veneer logs for St. John's OSB use and represents 76% of the projected harvest volume for the upcoming ten year period. White oak and sugar maple together comprise approximately 25% of volume. Given SJA's current over-dependence on red oak in relation to its relative abundance and availability in the SJA forest, this imbalance will likely be exacerbated when considering the difficulty experienced by SJA (and others in the north central hardwood region) in successfully regenerating red oak with consistency. However, even if red oak regeneration efforts are reasonably successful, the future forest will likely shift away from red oak dominance. In addition, SJA may have to consider other tree species, given the likely shortfall in red oak availability due to the current age distribution that is skewed towards the older, mature age classes.

St. John's OSB also offers opportunities for recreation, education, eco-tourism, hunting, and fishing on their forested properties.

Score: 4

Recommendation: Examine how other tree species might be used for St. John's OSB wood product needs in the future, when red oak may be less available.

4.5.5. Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.

Findings: The land management plan and St. John’s Arboretum strategic plan both recognize the importance of wetlands and include plans to develop specific plans for these to maintain and enhance them. To date, SJA has restored 94 acres of wetland known as Wimmer Pond. The restoration work includes exotic species control and water level control.

Fisheries are not specifically addressed in the land management plan, but fish populations are not expected to be adversely affected because St. John’s OSB continues to comply with the water quality BMP’s. There are restrictions on riparian zone harvesting, shoreline timber harvest, and management in and around all other wetland areas. Pesticide and herbicide use are minimal. Outboard motor use is prohibited. Lake Sagatagan is used for fishing, swimming, boating, ice-skating, and landscape viewing, and is know to be one of the cleanest lakes in the region.

Score: 3

4.5.6. The rate of harvest of forest products shall not exceed levels that can be permanently sustained.

4.5.6.a. The sustainability of harvest levels is based on growth and regeneration data, site index models, and soils classification. The required level of documentation is determined by the scale and intensity of the operation.

4.5.6.b. On mid-sized and large forests, after the age class distribution commensurate with long-term harvest sustainability is achieved, harvest and growth records show that the volume of growth meets or exceeds the volume of harvest over a period of no more than 10 years, unless justified by objectives in the management plan.

4.5.6.c. The rate of harvest may be temporarily accelerated in certain cases to compensate for unacceptable mortality in short-lived tree species, or in cases of salvage operations. [The rate of future harvest should be adjusted accordingly (see also 6.3.c.4).]

Findings: St. John’s Abbey is currently operating on an area control rather than a volume control in regulating their annual timber harvesting activities. Consequently, references to volumes in regard to AAC figures are coarse estimates derived from area-based calculations. Also of note, as previously described in Section 1.3.C., is that for each acre, only a single regeneration harvest is accounted for when calculating harvest volumes in area control regulation (i.e. all of the standing volume would be considered removed in one, single entry for each acre during each rotation period). Consequently, intermediate thinnings are not accounted for in the calculation, nor are all entries of multiple entry regeneration harvests. Additionally, the acreage figure of 1484 currently used by SJA in their harvest scheduling represents the total forest acreage, including two natural areas that will be excluded from intensive timber based forest management. These two natural areas represent 292 acres, or twenty percent of the total forest acreage. Most of the area is located in the natural areas in found in upland hardwood stands, though some of the oak and lowland hardwood stands are also included. Without removing these acres form the harvest schedule, SJA’s harvest projections are clearly overstated.

Throughout their history, St. John’s Abbey has valued red oak for its lumber. However, there is a significant amount of uncertainty tied to the regeneration of oak because of a number of factors including deer browsing, oak wilt, gypsy moth, blowdown and the mature state of red oak. The lack of red oak regeneration is a major concern. Prior to the late 1980s, single-tree selection methods were employed for red oak management. This method resulted in good visual effects

and may have been useful for enhancing growth of neighboring crop trees, however it does little to create oak regeneration. The current inventory (Bundy 1997) shows that most of the red oak is 100 years or older, with little regeneration present. The current plan is to apply shelterwood treatments (60 sq.ft of residual basal area) and the use of fire with the goal of treating 100 acres in a 10-year period and 600 acres over a 60-year period. This could lead to a more balanced or regulated age structure and could lead towards achieving a more sustainable harvest over the longer term. However, very little acreage in the red oak type is currently in a seedling/sapling age class. Consequently, even assuming consistent success in regenerating red oak, which has thus far proven to be most difficult in northern forests, by the time SJA has completed regenerating all of their existing oak stands in 60 to 65 years, the oldest oak stands will be 60 to 65 years old. The result gap of 40 years in age classes, assuming the 100-year rotation age given for red oak in the SJA management plan, will result in a reduction in available harvest volume in the red oak type and a corresponding reduction in the size of logs harvested for 20 to 40 years.

It is possible that 60 years may be an unrealistic time window for regenerating the red oak stands given the age of the mature red oak and all of the potential problems associated with achieving successful regeneration. SJA's intent is to carry the oak stands as long as possible in order to minimize the aesthetic impact of regeneration program, and to begin to regulate the harvest schedule toward a more even flow over the entire rotation. SJA's forest manager has stated that SJA will be carefully monitoring the condition of the red oak stands and will adapt their harvest schedule accordingly. Also, it is noted that SJA's ten-year harvest schedule for red oak accounts for only 600 of the 699 acres identified as red oak stands in the management plan. Some of the acres of red oak stands were not included in the harvest projection to account for natural areas and previously harvested stands.

Estimates from 1989-1999 indicate that average annual harvest levels of red oak (44 MBF) are well within estimated annual net growth of 104 MBF, calculated by multiplying the FIA mean yield estimate of 149 BF/ac/yr by 699 acres in red oak stands. Recent spikes in annual harvest levels in 2000 and 2001 were due to increased demand for oak from the woodshop. Even accounting for the total average annual harvest volume for all species (excluding pulp and firewood) of 83 MBF between 1989 and 2001, SJA has been harvesting below their potential yield as measured by net growth on red oak stands alone, which would equate to 104 MBF per year (149 BF/ac/yr multiplied by 699 acres of red oak stands). SJA's projected harvest on all timber types for the ten year period beginning in 2001, based on area control calculations, is 109 MBF per year (refer to Section 1.3.C.)

Results from recent shelterwood treatments are promising, showing approximately 1000 red oak seedlings/acre in unburned stands and 2000 red oak seedlings/acre when fire was used. The current problem is that all these seedlings are less than 1 foot tall and exhibit signs of heavy browsing. The only red oak regeneration over 1 foot tall was observed in a deer enclosure. It appears that the deer are a major barrier to successful red oak regeneration for future stands. Currently, the only known solutions are to lower the deer population or build more enclosures. Without adequate oak regeneration SJA will not be able to attain its goal of a sustainable oak forest.

To date, the vast majority of SJA's harvesting has concentrated in the red oak stands. Outside of occasional salvage operations, very little harvesting has taken place in the Upland and lowland hardwoods. Under the direction of their current forest management plan, SJA intends to begin applying active forest management in the upland hardwood stands. The mesic upland hardwood stands, which are dominated by sugar maple and mixed hardwood species, will be managed as

uneven-aged stands on a 10 to 15 year entry cycle primarily using single tree selection and group selection harvesting regimes. Aspen stands are evaluated for their potential to develop into higher valued hardwood stands and also for their benefit to wildlife species such as white tailed deer and ruffed grouse. Aspen stands are regenerated by clearcut harvests with stand rotation age of a fifty-years. Lowland hardwood stands are not expected to receive much active management with the possible exception of pockets of well-drained soils that may support commercially viable and productive timber stands. The management recommendation for lowland hardwoods is even-aged management on good sites (shelterwood; 80 year rotation) and no management on poor sites.

Score: 3

Condition: Within one year of certification, revise the management plan to reflect an accurate representation of acres included in the commercial forest base, excluding natural areas and other non-commercial areas. The ten-year harvest schedule must be revised accordingly to reflect an accurate representation of harvestable acres and corresponding projected harvest volumes.

Condition: Within four years of certification, revise the harvest schedule to accurately account for intermediate thinnings, crop tree releases, multiple entry shelterwood harvests, single tree selection harvests and other harvest that are not considered single entry regeneration harvests, and therefore not accounted for in the current area control regulation and harvest schedule.

Recommendation: Convert from an area regulation to a volume regulation in management planning to provide for a more consistent harvest volume and to more accurately account for intermediate harvests, variable growth rates, differences in management regimes and multiple entry prescriptions.

Recommendation: As deer are one of the major barriers to successful red oak regeneration for future stands, seek opportunities to lower the deer population by expanding the deer hunt. Build more exclosures and investigate other protection measures to facilitate the successful regeneration of red oak and other desirable regeneration. Consider fencing of individual stems. Consider leaving more structure (coarse woody debris, tops, snags) to impede deer. Protection by undesirable or dense vegetation has been shown to protect white pine (Saunders and Puettman 1999, Anderson et al. 2000) and eastern hemlock (Borgmann et al. 1999) from browsing damage.

4.6.0 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.

4.6.1. Assessments of environmental impacts shall be completed—appropriate to the scale, intensity of forest management and the uniqueness of the affected resources—and adequately integrated into management systems. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.

Applicability Note: Small landowners that practice low intensity forestry may meet this requirement with brief, informal assessments. More extensive and detailed assessments (e.g., formal assessments by scientists) are expected by large landowners and/or those who practice more intensive forestry management.

4.6.1.a. Using available science and local expertise, an assessment of current and historic conditions is completed, which includes: (1) ecological processes, such as disturbance regimes; (2) unique, vulnerable, rare, and threatened communities and habitats; (3) common plants, animals, and their habitats; (4) sensitive, rare, threatened, and endangered species and their habitats; (5) water resources; and (6) soil resources.

4.6.1.b. Prior to commencement of management activities, potential short-term and cumulative site specific environmental impacts, forest level impacts, and landscape level impacts of the forest management activity are evaluated (see also 7.1.b.1.).

4.6.1.c. Using information derived from environmental assessments, options are developed for maintaining and/or restoring the long-term ecological functions of the forest.

Findings: The current draft management plan (Exhibit C, Peterson 2000) contains a general assessment of current and historic conditions including: unique, vulnerable, rare and threatened communities and habitats, common plants and animals and associated habitats and soil and water resources. Substantial data on common plants, animals, and their habitats also has been collected on SJA properties and is incorporated into the management plan. Water and soil resources are adequately documented in the current management plan (Peterson 2000). The characteristics of soil types are described (texture, drainage, fertility). Aquatic habitats are also described in terms of acreage and water quality

The plan lacks a detailed description of how historic vegetation conditions (pre-Euro-American settlement) may have been influenced by natural disturbances (fire, wind etc.) In addition, there is no detailed discussion on origin of the current red oak-dominated forest. There is some information in the plan relating describing the role of fire and early cattle grazing in the origin of the current red oak dominated forest. More in depth information on these topics may be useful for planned oak regeneration efforts. Information on historic vegetation conditions and the role of disturbance factors such as fire and wind have proven to be useful tools for ecologically based management and restoration of native ecosystems (Pavlovic and White 1989, Chapman et al. 1993, Morgan et al. 1994, Landres et al. 1999).

Forest management operations observed on the SJA lands were planned to have minimal site- and forest-level impacts. All harvesting operations are conducted during the winter in frozen ground conditions to minimize soil impacts. The primary silvicultural system observed involved shelterwood treatments with and without prescribed fire, with the goal of developing red oak regeneration. These operations, if successful, will help maintain oak in the future on SJA lands and also will have a positive contribution to the regional forest landscape, as red oak likely will decline in the region. Prairie, savanna and wetland restoration projects occurring on SJA lands were designed to restore missing components of the landscape.

St. John's OSB land managers determined from observations and current and older inventory data that there was minimal regeneration in the red oak forest, in which most of the stands are 100-120 years old. SJA land managers began in 1991 to focus on strategies to develop red oak

regeneration in order to maintain and sustain a significant component of oak forest. A monitoring program was begun after recent shelterwood treatments that included prescribed fire for some treatments and a 0.50-acre deer enclosure. The results of the monitoring program will be used to help guide red oak management planning.

Score: 3

Recommendation: Incorporate into the management plan historical information on vegetation conditions and natural and human related disturbance within and in the area surrounding SJA lands in Stearns Co. The four townships surrounding the SJA lands should be sufficient to assess historical conditions. At a minimum, the GLO (General Land Office) survey notes contain valuable information on vegetation conditions and disturbance at the time of settlement. The Minnesota Bearing Tree Database is derived from the GLO survey notes and is available as geo-referenced digital data from the Minnesota DNR Data Deli Web site. This database contains the species and diameter for each bearing tree and the vegetation description for each section or quarter corner (e.g. F = forest, O = oak opening, P = prairie, U = burned, etc.) See Almendinger (1994) for information on the use and interpretation of these data. More detailed descriptions of vegetation conditions can be obtained from the surveyor line notes; these must be transcribed from microfiche or from copies of manuscripts. In addition, a review of relevant ecological literature regarding the ecosystem types in this area also should be included (see Chapman et al. 1993, Grimm 1984 for more information).

4.6.2. Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.

- 4.6.2.a. A documented effort is made to identify rare, threatened, and endangered species and their habitats. Specific locations of RTE populations remain confidential. On public forests and large private forests, general locations are made available to the public.*
- 4.6.2.b. If scientific data indicate the likely presence of RTE populations, either new surveys are also carried out before field management activities, or the forest manager assumes their presence, and make appropriate modifications in their management (see 6.2.a. for confidentiality requirements).*
- 4.6.2.c. Publicly owned forests and larger private forests use, participate in, or carry out on-the-ground assessments for the occurrence of RTEs. At a minimum, an updated and systematic county-level or natural community-level survey of RTE populations is needed to meet this requirement.*
- 4.6.2.d. Where they have been identified, RTE species and their habitats are maintained and/or restored. Multiple use management activities are acceptable in RTE habitat areas to the extent that they are compatible with maintenance and restoration of the RTE species.*
- 4.6.2.e. If a sensitive, rare, threatened, or endangered species is determined to be present, its location is reported to the manager of the species database.*

Findings: The Minnesota DNR County Biological Survey assessed the SJA property as part of the Stearns County survey in 1997. This survey assessed unique, rare, and threatened communities and habitats, and sensitive, rare, threatened, and endangered species and their habitats. Because SJA lands contain a large, contiguous area of mature red oak and mesic hardwood forest, the SJA lands were surveyed in detail. Most areas in Minnesota are not covered by a detailed survey. No threatened or endangered species were identified as currently present on the property, however the rams head lady slipper (state threatened) previously been collected on the property. Bird and plant species of special concern do occur on St. John's OSB lands: red shouldered hawk, cerulean warbler and American ginseng (state special concern). These species and their habitat characteristics are described in the plan, but no specific management guidelines are given.

Score: 3

Condition: Within one year of certification, St. John's OSB must establish a written protocol for identifying and documenting occurrences RTE species on their lands. This protocol must also include the development of management prescriptions to protect critical habitat, and notification of appropriate state or federal agencies of an occurrence.

Recommendation: Staff should undertake training in identifying RTE species or communities likely to occur on St. John's OSB lands. For example, the Minnesota DNR's Non-Game Heritage can provide information on identification and habitat characteristics of RTE species.

Recommendation: Acquire a site license for the Natural Heritage Program digital database that includes up to date MN County Biological Survey data on RTE species, communities and important natural features (e.g. unique rock formations or hydrologic conditions).

4.6.3. Ecological functions and values shall be maintained intact, enhanced, or restored, including:

a) Forest regeneration and succession.

4.6.3.a.1. Forest owners and managers utilize best available science (e.g., site classification) and information on landscape patterns (e.g., land use/land cover, non-forest uses, habitat types); ecological characteristics of adjacent forested stands (e.g., age, productivity, health); species' requirements; and frequency, distribution, and intensity of natural disturbances to make management decisions.

***Applicability Note:** This indicator may have limited applicability for managers of small and mid-sized forest properties because of their limited ability to coordinate their activities with other owners within the landscape, or to significantly maintain and/or improve landscape-scale vegetative patterns.*

4.6.3.a.2. Silvicultural practices encourage regeneration that moves the forest toward a desired future condition (as described in the long-term written management plan).

***Note:** Development of a forest that is capable of natural regeneration, based on desired future conditions, should be encouraged.*

4.6.3.a.3. Measures are taken to ensure the retention of difficult to regenerate species.

4.6.3.a.4. *Across the forest, or the landscape in which it is located, management actions lead to a distribution of seral stages, age classes, and community types, appropriate to the scale, intensity of the operation, and ownership goals.*

4.6.3.a.5. *When even-aged management is employed, live trees and native vegetation are retained within the harvest unit in a proportion and configuration that is consistent with the characteristic natural disturbance regime in each community type, unless retention at a lower level is necessary for restoration or rehabilitation purposes, or to maintain community types that exist on the site (e.g., oak-hickory, jack pine).*

b) Genetic, species, and ecosystem diversity.

4.6.3.b.1. *Forest management conserves native plant and animal communities and species.*

4.6.3.b.2. *The forest owner or manager cooperates with local, state, and federal agencies on the protection and management of native plant and animal communities and species.*

4.6.3.b.3. *There is a consistent scientific method for selecting trees for planting, harvest and retention that preserves broad genetic diversity.*

4.6.3.b.4. *Forest owners and managers minimize fragmentation of the forest at the landscape (e.g., ECS subsection or land type association) level.*

c) Natural cycles that affect the productivity of the forest ecosystem.

4.6.3.c.1. *Biological legacies of the forest community are retained at the forest and stand levels.*

4.6.3.c.2. *Soil fertility and organic matter, especially the A horizon, are maintained; and soil erosion and soil compaction are minimized by forest management practices. If soil quality degradation occurs, as indicated by declining fertility or forest health, forest owners or managers modify soil management techniques.*

4.6.3.c.3. *Forest management maintains or restores aquatic ecosystems, wetlands (including peatlands, bogs and vernal pools) and forested riparian areas (see also 6.5).*

4.6.3.c.4. *Responses to catastrophic events such as salvage after wildfire, blowdown and epidemics are justified, and are informed by ecological considerations.*

APPLICABILITY TO OLD GROWTH:

Due to the scarcity of old-growth forests in the Lake States/Central Hardwoods region, they are normally designated as High Conservation Value Forests (see Principle 9).

Certified old-growth forests not designated as High Conservation Value Forest are managed to maintain or recruit: (1) the existing abundance of old-growth trees, and (2) the landscape and stand-level structures of old-growth forests, consistent with the composition and structures produced by natural processes. Limited timber harvest is permissible provided these characteristics are retained or enhanced.

Old growth indicators:

1. *Because few examples of primary old growth (not previously harvested) forests exist in the Lake States-Central Hardwoods region, timber cutting is not permitted in stands identified as primary old growth stands.*

2. *All old growth forests are subjected to a detailed scientific investigation and a stakeholder input process to determine if they contain HCV attributes, and if they should be as designated HCVF.*
3. *Non-HCVF forests that demonstrate old growth characteristics, but which have been previously harvested, may be harvested under special harvest plans that take into account the specific ecological values of the site that need to be maintained.*
4. *Where forest managers create old growth conditions, timber harvest is allowed to the extent that old growth characteristics are maintained.*
5. *Forest management maintains a mix of sub-climax and climax old growth conditions in the landscape.*

Findings: At present, SJA land managers utilize current inventory data, stand mapping, and soil survey data for management planning. A detailed site-based ecological classification system based on soils, ground flora, and tree species productivity is not currently available for SJA lands. Soil series and site class information are included in the management plan. Our observations indicate that while most of the upland forest on SJA lands is in the dry-mesic category, there is enough variability in site conditions to warrant the use of an ecological classification system for management planning. This is particularly relevant to the red oak regeneration problem and prioritizing sites for management treatments.

Silvicultural practices here are focused primarily on regenerating native species. One of the main objectives is to maintain a significant proportion of red oak on SJA lands. Prior to 1991, no significant efforts were underway to regenerate red oak. At present, there is little oak regeneration, and most oaks are in the 100- to 130-year age range. Red oak was an important species here at the time of settlement (Minnesota Bearing Tree Database) and has provided a steady source of wood products for use by the Abbey and St. Johns University for furniture and other woodworking needs.

Prior to 1991, red oak and other trees were harvested using single-tree selection methods. Current management practices use shelterwood systems designed to regenerate red oak (Johnson 1994). Prescribed fire has been applied to some units and has produced a doubling of red oak seedlings when compared to unburned shelterwood treatments.

Our observations and data collected by Don Peterson, consulting forester, indicate that deer browsing may at present be the greatest impediment to successful oak regeneration on SJA lands. Although deer hunts have been instituted over the last few years, evidence of severe browsing levels on understory trees and shrubs was evident in most sites we visited. A 0.50-acre enclosure on a burned shelterwood treatment indicated that oak regeneration protected from browsing was competing well in the understory with significant extension growth when compared with its unprotected counterparts.

The SJA forestlands are currently in a mature condition, with the red oak and upland hardwoods dominating the canopy. Mature red oak makes up about 47% of the forested area, while upland hardwoods cover 30%. Upland hardwood-dominated stands are generally in all-aged or multi-aged condition; oak stands generally have sugar maple in the sapling and subcanopy layers. The SJA lands are a relatively large island of unfragmented, mature forest; patches within the forest are large, leading to high connectivity and habitat interior (Mladenoff et al. 1993).

SJA's primary forest management goals are to regenerate red oak on appropriate sites, including those sites currently identified as red oak stands, and potentially upland hardwood or aspen stands that are judged to have good potential for conversion to red oak. Sites will be evaluated based on productivity and regeneration potential. This process will create greater age class diversity and greater representation of younger age classes. Shelterwood treatments retain ~50-60% of basal area, are small in area (10-40 acres, and likely have minimal effects on habitat fragmentation. Natural disturbances in this region such as wind and fire likely would create a variety of patch sizes and shapes. Small shelterwood treatments may not recreate fire distribution patterns. Work by Grimm (1984) in this region showed that the pre-settlement fire pattern was strongly influenced by water, wetland, and topographic features that inhibited the spread of fire. Estimates of fire distribution patterns could be derived by examining water bodies, wetlands and topographic features that influence fire distribution.

We observed two clearcuts of big tooth aspen on the property. These harvests were generally consistent with regional guidelines (Minnesota Forest Resources Council 1999). Clearcutting has been and will continue to be a minor component of forest management on SJA lands. The primary management we observed—shelterwood treatments for red oak regeneration likely have little impact on other native elements of biological diversity. Shelterwood treatments remove most of the competing overstory and understory vegetation. However, the harvest units are small (10-20 acres), and trees and shrub species can sprout or seed in from the periphery. Stand-level diversity should not be negatively affected. Understory species composition will shift in these stands to a more early seral mix, likely increasing species diversity in the trees, shrubs, and forbs, as well as increasing habitat diversity across the ownership. Shelterwood treatments coupled with prescribed fire will favor fire adapted species as well as aiding red oak regeneration. Harvesting is done during the winter and has little effect on soil and ground flora.

Few snags were present in the stands we observed. Firewood is collected on a permit basis from recently harvested sites. Some areas appeared to have low amounts of coarse woody debris in the larger size classes (> 12" diameter); this was more obvious closer to the roads.

Shelterwood treatments could create some edge effects that could harm some animal species such as ground-nesting birds (Fenske et al. 1997). Predators may be more common in areas with high amounts of edge. Given the amount of contiguous, intact forest, shelterwood treatments should not be a significant problem.

There are no plans to convert forestland to other uses. Shelterwood treatments should have little effect on forest connectivity and habitat interior.

Management plans emphasize natural regeneration methods. We can see no evidence that SJA management would negatively impact genetic diversity. After oak regeneration has successfully been established, most overstory trees will be harvested for wood products and to release oak regeneration. Management plans do recommend retention of large, old trees as biological legacies. Coarse woody debris specifications are not specifically addressed in the plan. Given the likelihood that fire was an important factor in the pre-European settlement landscape (Grim 1984, Chapman et al 1993), younger age classes and fire-maintained seral stages are underrepresented. The prairie and savanna restoration represent some elements of the historic landscape. The prairie and savanna restoration project is part of a larger habitat restoration project at St. John's OSB which also includes restoration of drained wetlands. The purpose of

this project is to restore elements of the landscape that were destroyed through agriculture. Wetlands were drained, prairie areas plowed, while fire suppression and grazing dramatically altered savanna vegetation composition and structure. Restoration work began in 1988 and is still in progress. The savanna, prairie and wetland areas will cover approximately 50 acres each.

We also observed that some areas have degraded understory (herb and shrub) layers, likely due to the presence of non-native earthworm species, past grazing, and deer browsing. These areas were primarily mesic upland hardwoods, probably on more loamy soils. Herb and shrub diversity and cover were extremely low on these sites. In some sites, the only abundant species were Jack in the pulpit, Pennsylvania sedge (more open canopy), and leatherwood, all species, which are known to be resistant to European earthworm damage. Consultation with Minnesota County Biological Survey staff (Mike Lee) and University of Minnesota earthworm researcher Cynthia Hale indicated that these sites very likely have been affected by European earthworms. Loamy, upland hardwood sites often sustain the greatest damage, while plants growing in coarser-textured soils have less damage. The presence of earthworms on specific sites could affect management decisions and could play a role in prioritizing sites for oak regeneration. See the following Web site for more information: <http://www.nrri.umn.edu/worms/>. At this point in time little is known about managing sites that have been damaged by European earthworms.

As all or most of the land here has been subject to commercial forest management at some point in time, there are no old growth stands on SJA lands per se, however the SJA property does exhibit some of the characteristics of HCV forests as described in Criterion 4.9.1.

Score: 3

Condition: Within one year of certification, St. John's OSB must develop a written policy for the management of snags, den trees and coarse woody debris. In general, this policy must encourage the retention of more, larger standing dead trees as snags and future coarse woody debris. Unless there are conflicts with prescribed burning prescriptions for red oak regeneration, ensure that firewood collectors leave large-diameter wood (> 12") on site. Refer to the Minnesota Voluntary Site Level Guidelines (MNDNR 1998) for information on CWD, snags and green tree retention.

Recommendation: Refer to Criterion 4.5.6.

Recommendation: Begin development of a more detailed ECS for SJA forestlands. Coordinate with existing ECS projects (Almendinger and Hansen, MN DNR, Kotar, University of Wisconsin). Classifications appropriate for SJA lands likely will be available within the next few years. Collecting understory data tied to the existing stand inventory would allow for an easy transition to an ECS system.

Recommendation: Increase species diversity in mesic upland hardwood stands by using methods such as group selection to create large gaps to favor species such as white oak, red oak, basswood or ash when present.

Recommendation: Continue to expand the prescribed fire and vegetation monitoring program in shelterwood treatments. Examine management goals and determine if sampling protocol provides the required data. Evaluate the sampling methods in regards to sample size, number and data collected.

Recommendation: Consider vegetation composition and structure as influenced by fire and other disturbance factors when considering desired future conditions for forest composition and age structure. In addition use information on natural disturbance frequency and size of disturbance patches to address size, shape, frequency, structure and distribution of harvest units.

Recommendation: Develop strategy for monitoring non-native earthworm presence and effects on soil and understory vegetation and incorporate into management planning. At this point in time little is known about managing sites that have been damaged by European earthworms, however, an understanding of the distribution and effects on plant species and soil characteristics will be valuable for future management.

4.6.4. Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.

4.6.4.a. Where existing protected areas within the landscape are not of a size and configuration to serve the above purposes, forest owners and managers, whose properties are conducive to the establishment of such areas, designate ecologically viable areas that serve one or more of the three purposes above. The size, extent, and arrangement of on-site and off-site (i.e., on and off the certified forest) representative sample areas are designated, documented, and justified.

4.6.4.b. In light of their size, location, or statutory mandates, public forests and large private forests may bear a special obligation to provide for a system of representative samples of native ecosystems. The size and extent of representative samples on public lands are determined through public planning processes, and should correspond to the size of the forest.

4.6.4.c. The process and rationale used to determine the size and extent of representative samples are explicitly described in the public summary.

Findings: Red oak regeneration will provide for red oak habitat on a regional level and will also provide underrepresented seral stages on St. John’s OSB lands. In this region, much of the red oak stands are in mature and late-seral stages and like will be replaced by more shade tolerant species or regenerate to other cover types. Two areas will be designated as “natural areas” and will be managed only as necessary to assure forest health, scientific testing or aesthetic issues. Due to the large parcel size required to conduct effective scientific evaluation, the St. John’s natural areas are managed primarily for aesthetic purposes and only partially for scientific purposes. For instance, if a windstorm or insect outbreak damages a significant portion of a natural area, SJA may choose to undertake salvage activities or other actions to reduce the impact of the damage. The objective of these areas is to provide for research, nature study, and habitat for birds and other wildlife species requiring mature forest. The sites designated as natural areas contain both oak dominated areas and mixed upland hardwoods (sugar maple, basswood, ash) as well as interspersed wetlands. The natural area near inner campus (see Table 2, site# 10) covers about 149 acres and is composed of both sugar maple and red oak dominated patches. Lowland forests and herbaceous wetlands also occur in this area. The other designated area is south of Lake Sagatagan (see Table 2, site# 11) covers 143 acres. This area includes sugar maple, and red and white oak dominated stands. White oak is relatively rare on St. John’s SJA lands. This also includes forested, herbaceous and emergent wetlands. These natural areas were selected based on both location and size. One area is located near the Inner Campus and is easily accessible. The

other area south of Lake Sagatagan is less accessible to both forest management and recreational uses. The areas were also selected so as to be of sufficient size to encompass and upland-lowland mosaic of ecosystem types. The prairie, savanna and wetland restoration projects were implemented to restore components of the natural landscape that were lost or degraded due to agriculture (see 4.6.3, Table 2, sites#13,14,17).

Score: 4

4.6.5. Written guidelines shall be prepared and implemented to control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and to protect water resources.

4.6.5.a. A set of forestry best management practices (BMPs) guidelines addressing water quality, soil erosion approved by the state forestry agency or other wise appropriate jurisdiction (eg. BIA) is adhered to. These guidelines include provisions on riparian management zones (RMZs), skidding, access roads, site preparation, log landings, stream crossings, sensitive site disturbance, and wetlands.

4.6.5.b. Forest Management Operations complies with applicable state and local Best Management Practices as necessary to protect water resources, control erosion and minimize forest damage. (See 4.1.1.b)

Findings: St. John's OSB is in full compliance with Minnesota BMP guidelines relating to erosion, soil compaction and water quality. We observed a minimum of damage to residual trees in harvest units. At present, all harvesting is done during frozen ground condition. We observed minimal soil impacts. Coarse textured soils that occur on most of the uplands are less susceptible to compaction than heavier soils. SJA forest management is low intensity and has low impact on soil and water resources. However, there are no official written guidelines. BMPs are addressed in a cursory fashion in the management plan.

Score: 3

Condition: Within one year of certification, adopt the Minnesota Voluntary Site Level Guidelines (Minnesota Forest Resources Council, 1999) as minimum standards for St. John's OSB forest management practices. Include section in the management plan with general BMP specifications derived from Minnesota Voluntary Site Level Guidelines. Develop a post harvest checklist for BMP compliance and monitoring.

4.6.6. Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.

4.6.6.a. Forest owners and managers implements integrated pest management, and relies on methods that result in the least adverse environmental impact within a context of economic viability and social acceptability.

- 4.6.6.b. *Silvicultural systems are used to lower natural susceptibility and vulnerability of stands to insect and disease outbreaks.*
- 4.6.6.c. *Pesticides are applied as a management tool only in limited circumstances and under controlled conditions.*
- 4.6.6.d. *Forest owners or managers develop written pest control strategies as a component of the management plan (see criterion 7.1).*
- 4.6.6.e. *A written prescription, which includes a discussion of precautions and potential environmental effects, is prepared for each pesticide that is used. Records are kept of pest occurrences, control measures, and incidences of worker exposure to chemicals.*

Findings: There has been minimal use of herbicides or pesticides in forest management. The management plan recommends minimal use of chemicals within the framework of integrated pest management. Problems are considered in a broad environmental context, non-pesticide options are considered first. Herbicides have been used to control noxious weeds during savanna restoration work. Stinger - (Clopyralid) has been used on a limited basis. Overall use of chemicals by SJA land managers is very limited and occurs only when necessary to achieve management objectives.

The current forest is in a mature, mid-successional stage. Current red oak regeneration strategy should increase age class diversity and make the forest less vulnerable to insect and disease outbreaks (e.g. gypsy moth, oak wilt). Where oak regeneration is not successful, maple, basswood, ironwood and other species will occupy stands. Mesic and unmanaged sites are moving to sugar maple dominance. Intense deer browsing is inhibiting regeneration on many sites and may affect species diversity.

At present, pest control is used on a very limited basis (such as to control invasive weeds during savanna restoration). The management plan contains general guidelines on pest control strategies, and written prescriptions do not exist. Records are kept of use and worker exposure. Material Safety Data Sheets are kept for hazardous substances. Dan Vogel, SJA's Forestry Technician, is a licensed applicator for forest pesticides.

Insect pests and plant diseases such as gypsy moth and oak wilt may become problems for SJA land managers in the future. Recent work (French and Juzwik 1999) indicates that oak wilt may be increasing in Stearns County. Gypsy moth has been present in Minnesota for over 30 years and is likely to increase in the future (Ascerno and Wawrzynski 1994). Present plans include increasing age class diversity across the forest, as young, vigorous trees should be more resistant to gypsy moth. Application of *Bacillus thuringiensis* may be necessary in the future. However, high densities of red oak from shelterwood regeneration may increase oak wilt infection rates. Oak wilt spreads through root grafts by adjacent trees and by insects spreading spores from infected trees to fresh wounds on nearby trees.

Score: 3

Condition: Within three years of certification, St. John's OSB must develop written strategies, prescriptions, and guidelines for common pesticide and herbicide applications. Ensure that records are kept of use and worker exposure.

Condition: Within three years of certification, St. John's OSB must develop an in-depth plan to deal with gypsy moth and oak wilt. This plan should include processes for monitoring gypsy moth infestation and oak wilt infection and management strategies to deal with these threats.

4.6.7. Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.

4.6.7.a. In the event of a spill of hazardous material, forest owners and managers immediately contain the material, report the spill as required by applicable regulations, and engage qualified personnel to perform the appropriate removal and remediation.

4.6.7.b. Waste lubricants, anti-freeze, containers and related trash are stored in a leakproof container until they are transported to an approved off-site disposal site.

4.6.7.c. Broken or leaking equipment and parts are repaired or removed from the forest.

4.6.7.d. Equipment is not parked in riparian management zones, near sinkholes, or ground water supplies.

Finding: St. John's University has a spill plan as part of safety regulations that requires containment by qualified personnel and reporting to St. John's OSB officials. St. John's University has a waste collection facility that is used by SJA forest managers. Recycleable material are transported to recycling facilities, other substances are transported to approved disposal site.

Score: 4

4.6.8. Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.

4.6.8.a. Exotic (i.e., non-indigenous), non-invasive predators or biological control agents are used only as part of a pest management strategy for the control of exotic species of plants, pathogens (see Glossary), insects, or other animals when other pest control methods are, or can reasonably be expected to prove, ineffective. Such use is contingent upon peer-reviewed scientific evidence that the agents in question are non-invasive and are safe for indigenous species (For example, exotic species can host pathogens that might diminish biodiversity in the forest.)

Applicability Note: Genetically improved organisms (e.g., Mendelian crossed) are not considered to be genetically modified organisms (i.e., results of genetic engineering), and may be used. The prohibition of genetically modified organisms applies to all organisms including trees.

Findings: At present, biological control agents are not used. The plan notes the possible use of *Bacillus thuringiensis* as an aid in controlling gypsy moth, infection should this become a problem. The plan also describes the use of pest control measures in the framework of a carefully planned integrated pest management strategy.

Score: 4

4.6.9. The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.

- 4.6.9.a. The use of exotic species (see Glossary) is contingent on peer-reviewed scientific evidence that any species in question is non-invasive and does not diminish biodiversity. If non-invasive exotic species are used, their provenance and the location of their use are documented, and their ecological effects are actively monitored.*
- 4.6.9.b. Written documentation is maintained for the use of exotic species.*
- 4.6.9.c. Forest owners or managers develop and implement control measures for invasive exotic species.*

Findings: Exotic species are not currently employed in SJA’s forest management, although some exotic tree species have been planted in the past. There is some concern about buckthorn and Japanese honeysuckle. Exotic species (birdsfoot trefoil, crown vetch, butter and eggs, and worwood)are being removed in the savanna restoration project. Both buckthorn and Japanese honeysuckle occur within the forest, but do not yet occur in high densities. Buckthorn is removed when found. The management plan notes the need for exotic-invasive species management, however, there are no detailed plans for monitoring and managing exotic-invasive species.

Score: 3

Condition: Within three years of certification, St. John’s OSB must develop written plans and strategies to monitor and control buckthorn, honeysuckle, and other aggressive, exotic invasive species.

4.6.10. Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion:

- a) entails a very limited portion of the forest management unit; and**
- b) does not occur on high conservation value forest areas; and**
- c) will enable clear, substantial, additional, secure, long-term conservation benefits across the forest management unit.**

- 4.6.10.a. Forest to non-forest conversions are carried out only: 1) when unique and rare disturbance-dependent communities are present or the change is a restoration activity, and 2) such changes and conversions are consistent with the long-term written management plan (see also 1.6.d).*
- 4.6.10.b. Forest owners or managers avoid: (1) forest to non-forest conversions that result in removal of the land from the natural resource base, or (2) conversion of natural forest to plantations or short rotation coppice systems. Forest owners or managers avoid conversions of over 1% of the certified forest or 100 acres (whichever is less).*
- 4.6.10.c. When forest lands are sold, a portion of the proceeds of the sale is reinvested in additional forest lands, and/or forest stewardship.*
- 4.6.10.d. Preference is given to land buyers who have demonstrated forest stewardship in past management activities.*

4.6.10.e. *The products from a terminal harvest from converted lands are not labeled.*

Findings: A total of 120 acres have been planted with conifer species on St. John's OSB lands from 1894 to 1981. The initial plantings in 1894 probably occurred in blowdown areas created by a tornado. Subsequent plantings were established on lands cleared for grazing and agriculture. Currently there are no plans to convert existing natural forest to plantation.

St. John's OSB has no plans to sell forested lands.

Score: 3

4.7.0 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.

4.7.1.a. Management objectives.

4.7.1.a.1. *A written management plan is prepared that includes the landowner's short-term and long-term goals, and objectives (ecological, social, and economic). The objectives are specific, achievable, and measurable.*

4.7.1.a.2. *The management plan describes desired future conditions that will meet the long-term goals and objectives, and which determine the silvicultural system(s) and management activities to be used.*

Findings: The 1/12/01 Land Management Plan (Peterson 2001) includes SJA short-term and long-term goals and objectives, which are specific, measurable, and achievable. The management plan describes the desired future conditions that will meet their objectives and which silvicultural systems and management activities to utilize.

The management plan describes a general vision for the property, which includes the whole landscape mosaic (forest, wetland, lakes, savanna/prairie, roadsides, trailsides etc). The plan specifically states that it should be sustainable and maintain or improve the diversity of native plants and animals. Seventeen specific goals are then described, including: sustainable harvest of forest products, maintain and improve natural diversity of plants and animals, establishment of unmanaged natural areas, recognize and manage for RTE species and important geological, and anthropological features.

Specific short and long term objectives and management options and recommendations are described for each of the major vegetation types including prairie/savanna and wetlands. The section on oak forest describes the composition and structure, site quality and growth potential and how this type responds to different silvicultural treatments. Management options are described (selection system, shelterwood with fire, clearcut and replant) and short and long term recommendations are discussed. For the oak forest, the plan recommends shelterwood treatments

at the rate of 100 acres/decade for 60 years in order to regenerate red oak and regulate age structure and wood supply.

4.7.1.b. Description of forest resources to be managed, environmental limitations, land uses and ownership status, socioeconomic conditions, and profile of adjacent lands.

- 4.7.1.b.1. The management plan describes the timber, fish and wildlife, harvested non-timber forest products, soils, and non-economic forest resources.*
- 4.7.1.b.2. The management plan includes descriptions of the following elements: special management areas; sensitive, rare, threatened, and endangered species and their habitats; and other ecologically sensitive features in the forest.*
- 4.7.1.b.3. The management plan includes a description of past land uses and incorporates this information into goals and objectives.*
- 4.7.1.b.4. The management plan identifies the legal status of the forest and its resources (e.g., ownership, usufruct rights, treaty rights, easements, deed restrictions, and leasing arrangements).*
- 4.7.1.b.5. The management plan identifies relevant cultural and socioeconomic issues (e.g., traditional and customary rights of use, access issues, recreational uses, and employment issues), conditions (e.g., composition of the workforce, stability of employment, and changes in forest ownership and tenure), and areas of special significance (e.g., ceremonial and archeological sites).*
- 4.7.1.b.6. The management plan incorporates landscape-level considerations within the ownership and among adjacent and nearby lands, including major water bodies, critical habitats, and riparian corridors shared with adjacent ownerships.*

Findings: The management plan describes the history; land uses; timber; wildlife; NTFP; soils; geology; water and wetlands; rare, endangered, threatened, and special concern species; archaeological and cultural resources; aesthetics and recreation; natural areas; climate change; roads and trails; education and land management ethics; implementation, scheduling, and recordkeeping.

Special management areas such as prairie/savanna and wetlands are described and mapped. Management options are included. The plan includes RTE species and community information from the MN DNR County Biological Survey of Stearns County.

The plan describes general ownership and includes a plat map from 1880, showing original holdings. Easements, deed restrictions, and leasing arrangements are not described in the plan.

Relevant cultural and socioeconomic issues such as deer hunting, fishing, recreation, firewood gathering, educational opportunities are described in the plan.

Landscape level planning is not a specific topic in the plan, however it does describe a holistic or landscape approach to managing within the property. However, our conversations with land management staff indicated a strong awareness of the importance of considering surrounding landscape features and ownerships in management planning.

4.7.1.c. Description of silvicultural and/or other management system.

4.7.1.c.1. The silvicultural system(s) and prescriptions are based on the integration of ecological and economic characteristics (e.g., successional processes, soil characteristics, existing species composition and structures, desired future conditions, and market conditions). (See also 4.6.3.a)

4.7.1.c.2. Prescriptions are prepared prior to harvesting, site preparation, pest control, burning, and planting and are available to people who carry out the prescriptions.

Findings: The silvicultural systems and prescriptions are based on the integration of ecological and economic characteristics. They include the use of clearcut, shelterwood, group selection, single tree selection, crop tree release and thinning as cutting methods. Soil characteristics are described but are not used at the site level to determine species and management options. For the oak type, the plan recommends a shelterwood system to develop oak regeneration and maintain this type and associated wood products over the long term. For the sugarbush area, where maple sugar production is desirable, the plan recommends managing for improved sap production. This includes a gradual reduction of basal area and the corresponding development of larger tree crowns. Single tree selection and group selection will be used to regenerate the upland hardwoods and sugarbush stands. Shelterwood harvests would be applied to the productive sites in the lowland hardwoods with no active management aside from salvage on poor lowland hardwood stands. Clearcuts would be applied in aspen stands.

The management plan discusses various recommended prescriptions by timber type. We have one example of a written prescription, or harvest planning document for an oak regeneration shelterwood prepared by Don Peterson, Consulting forester. This document described the mapping (aerial photo and field) and selection (mature oak, existing log deck and roads) of the harvest unit. Boundaries for this oak regeneration harvest unit were marked based on topographic features (SJA uses forest cover types as the primary variable in delineating *stand* boundaries). The goal was to leave 60 ft basal area per acre of the best oak seed trees. Marking instructions were also included. We could not locate any examples of other written prescriptions for pest control, prescribed fire and planting.

4.7.1.d. Rationale for the rate of annual harvest and species selection.

4.7.1.d.1. Calculations of harvests are detailed or referenced in the management plan, and are based on growth, yield, stocking, and regeneration data. (See also 4.5.6.b)

4.7.1.d.2. Species selection meets the goals and objectives of the forest owner or manager, and leads to the desired future ecological conditions.

4.7.1.d.3. The management plan addresses potentially disruptive effects of pests, storms, droughts, and fires as they relate to allowable cut.

4.7.1.d.4. The periodic rate of harvest of non-timber forest products is described in the management plan.

Findings: The calculations of harvest used in the management plan are based on growth, yield, regeneration and stocking levels from current and previous inventories (refer to Criterion 4.5.6). SJA conducts their harvest scheduling on an area control rather than a volume control regulation. The current 10-year harvest plan is based on average standing volumes per acre and measured

acreage per cover type, which have been taken from the 1997 inventory. Planned harvest acres for the current ten year period are taken from the SJA management plan, and represent a combination of strict area regulation and professional judgment. For example, SJA calculates that there are approximately 578 acres of Red Oak cover type outside of conservation areas. Calculated on a 100-year rotation age, SJA would harvest 5.78 acres per year, or 57.8 acres over ten years. In recognition of the advanced age of the Red Oak stands, the annual harvest acreage for the ten year planning period was rounded up to 10 acres, somewhat arbitrarily, in order reduce the risk of carrying these red oak stands considerably beyond their expected maturity, and thereby reducing the risk of undue age-related mortality.

The average annual harvest for the 10-year period is projected to be 109 BF/acre. While SJA has not calculated growth for their holdings, according to FIA data, annual growth for similar stands (oak types, fully stocked sawtimber stands, SI 60 to 80, 75 to 140 years old) in the MN hardwood region is estimated to be 149 BF/acre. SJA's current estimate for net annual growth on Northern red oak is 150 MBF acre, and is expected to exceed 200 BF/acre if the anticipated increased growth response from planned management activities is included in the AAC calculation. SJA's expectation for higher growth rates include growth in future stands of red oak that are subjected to intensive management regimes, including intermediate thinnings and crop tree release. SJA's expectation of significantly increased growth rates is clearly optimistic when compared to the mean FIA growth of 149 BF/ac., though not out of the question, as 50% of the values for annual growth for red oak in the MN hardwood region fall between 100 to 250BF/ac.

As the SJA oak forests are mostly at maturity, and because the forest management strategy calls for regenerating Northern red oak rather than allowing the forests to succeed to a maple-basswood forest, SJA could initiate an accelerated harvest schedule to capture the un-cut portion of the AAC from many previous years as they employ even-aged regeneration harvests in red oak stands over the next 30 years. SJA plans to extend the rotation age of red oak to the extent that they can minimize age-related mortality.

As SJA goals are to provide a sustainable harvest of forest products while maintaining and enhancing natural species diversity, the species selection meets the goals and objectives of St. John's OSB. Although they do not yet employ a formal site based ecosystem classification system (eg. Habitat type), in general, their plan allows species to grow on appropriate sites. For example, red oak regeneration and maintenance is a high priority, the well drained sand and sandy loam soils are appropriate for red oak growth. The proposed management also incorporates elements or analogues of natural disturbances such as prescribed fire on oak sites and group selection on mesic upland hardwood sites that mimics windthrow gaps.

The management plan does consider the potentially disruptive effects of pests. Gypsy moth is noted as a potential threat to forest health and productivity. The plan states that greater age class and species diversity will provide some buffer against gypsy moth. Oak wilt, another potential threat that is present in Stearns County is not mentioned.

The management plan also discusses some of the problems and opportunities regarding non-timber forest products. This includes maple sugaring, deer hunting and recreational uses. Other potential NTFP are not described.

4.7.1.e. Provisions for monitoring forest growth and dynamics.

4.7.1.e.1. The management plan includes a description of forest monitoring procedures.

Findings: One of the goals in the management plan is to “evaluate and implement if it is desirable to locate and measure permanent plots for monitoring species, volumes, growth, mortality, habitat changes and other objectives.” In the past periodic forest wide inventories have been used to monitor forest growth and general changes in composition and structure. The current plan describes a network of permanent plots that is compatible with public land inventories in Minnesota (MN DNR Forestry Phase II, USDA Forest Service FIA). Both of these systems are appropriate for monitoring general growth and changes in forest composition and structure, however, the FIA system, because of its detailed plot level data provides more information on forest dynamics.

4.7.1.f. Environmental safeguards based on environmental assessments.

Findings: Information from existing and continuing environmental assessment are incorporated into planning. For example, monitoring of oak regeneration in burned and unburned shelterwood treatments will likely lead to increased use of prescribed fire. The MN DNR County Biological Survey information on RTE species and habitat information has been incorporated into the plan. See Criterion 6.1. Other research and monitoring (bird species, butterflies, amphibians) are noted in the plan appendix but have not as yet been incorporated into management planning.

4.7.1.g. Plans for the identification and protection of rare, threatened, and endangered species.

Findings: The Stearns County biological survey and findings are addressed in the plan. The Minnesota Natural Heritage database for the St John’s area lists the following: Threatened: Ram’s-head Lady’s-slipper, Special concern: Red shouldered Hawk, cerulean warbler, and American ginseng. The plan notes that the large area of intact mature upland forest is important habitat for the cerulean warbler. Also refer to Criterion 4.6.3.

4.7.1.h. Maps describing the forest resource base including protected areas, planned management activities, and land ownership.

4.7.1.h.1. The management plan includes maps of the forest’s characteristics, such as: relevant landscape-level factors; property boundaries; roads; timber production areas; forest types by age class; topography; soils; riparian zones; springs and wetlands; archaeological sites; cultural and customary use areas; locations of sensitive, rare, threatened, and endangered species and their habitats; and designated High Conservation Value Forests.

Findings: The land management plan includes maps of St. John’s OSB that show property boundaries; roads; buildings; forest type, size, density; soils; wetlands and cultural sites. Designated forest natural areas are indicated, other potential HCVF areas are not yet indicated. They are good quality hand drawn and colored. More detailed stand and compartment maps are included in the appendix. Mapped data is not yet in digital form, although this is planned for in the near future.

4.7.1.i. Description and justification of harvesting techniques and equipment to be used.

4.7.1.i.1. *Harvesting machinery and techniques are matched to forest conditions to minimize damage and are discussed in the management or harvest plan.*

4.7.1.i.2. *Conditions for each timber sale are established by a timber sale contract or written harvest prescription and accompanying timber sale map.*

Findings: No harvesting machinery was observed in active use during the assessment (SJA employs a small rubber tired skidder, nor is equipment explicitly addressed in the management plan, but based on the minimal amount of damage observed to the soil and residual stand, SJA is appropriately matching the correct machinery and techniques to the land characteristics and operation. There are no contract sales. Rather all wood harvested at St. John's Abbey is cut by employees of the forest management team. No examples of written stand level prescriptions were provided during the assessment. On the shelterwood treatments, stand boundaries and trees were marked by forester forest management staff. See also Criterion 6.5.

Score: 3

Condition: Within one year of certification, the management plan must be validated by the signatures of appropriate representatives from St. John's Abbey including responsible parties from both administrative and forest management staff.

Condition: Within two years of certification or prior to initiating harvest activities in any given stand, whichever comes first, St. John's OSB must develop written prescriptions for each harvest unit that describe management methods and restrictions. These prescriptions must include marking specifications (basal area, leave trees, wetland/riparian buffer zones etc.) and operating restrictions (e.g. slope limitations, saturated soil constraints).

Condition: Within three years of certification, develop a stand level inventory and monitoring system that includes information on timber by species, grade or product, and size including sub-merchantable trees and regeneration; however, additional ecological information such as data on snags and coarse woody debris, soil conditions, insect and disease damage, and herb and shrub layer composition must be included in the inventory database. Soil and herb/shrub layer data will be very useful for site-based ecological classification. Include in the monitoring plan specifications for monitoring site-disturbing activities as described in the Minnesota Voluntary Site Level Guidelines. This could take the form of a post-harvest checklist to assess conditions. (See attached Exhibit D, Postharvest BMP Checklist).

Condition: Within five years of certification, the management plan must be expanded to incorporate landscape level considerations within St. John's OSB and adjacent lands. The incorporation of landscape level considerations should include knowledge of land management by adjacent and nearby landowners and consideration of the St. John's OSB forest in the regional landscape context (Ecological classification hierarchy, province, section, subsection, land type association).

Recommendation: Easements, deed restrictions, and leasing arrangements should be listed and described in the forest management plan.

Recommendation: SJA should consider developing a relevant GIS database showing the forest's characteristics, such as: relevant landscape-level factors; property boundaries; roads; timber production areas; forest types by age class; topography; soils; riparian zones; springs and

wetlands; archaeological sites; cultural and customary use areas; locations of sensitive, rare, threatened, and endangered species and their habitats; and designated High Conservation Value Forests.

4.7.2. The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social, and economic circumstances.

4.7.2.a. Operational components of the management plan are reviewed and revised as necessary or at least every 5 years. Long-term (strategic) management plan components are revised and updated at the end of the planning period, or when other management changes require (see also 4.8.4).

Findings: The land management plan is dated 1/12/01. The land management plan is written for a 10 to 15 year period with reviews and adjustments at five years intervals. As a brand new management plan (still unsigned) therefore, SJA has not had the opportunity to respond to changes or modifications. It does not clearly state protocol for reviews and updates.

Score: 3

Condition: Within two years of certification, the management plan must clearly describe protocol for reviews and updates of operational components of the plan.

4.7.3. Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plans.

4.7.3.a. The forest manager/owner assure that workers are qualified to implement the management plan (see also 4.2).

4.7.3.b. The management plan is readily available to field personnel, understandable, and comprehensive.

Findings: Forest management team members have participated in various formal and informal training sessions. Training includes pesticide/herbicide use, forest ecology seminars, and prairie/savanna ecology and management.

St. John's OSB has recently hired Tom Kroll, a professional forester, as Land Manager to insure proper implementation of the management plan. A variety of well-respected, knowledgeable contacts and consultants have reviewed and commented on the management plan. Forest management staff were found to be familiar with the new planning document. As this is a new document, it has not been "field tested" as of yet.

Score: 3

4.7.4. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.

Applicability note: Forest owners or managers of private forests may withhold proprietary information (e.g., the nature and extent of their forest resource base, marketing strategies, and other financial information).

7.4.a. On private lands, a management plan summary that outlines management objectives (from 7.1.a.), or a summary of the land pool under a resource manager, is available to the public at a reasonable fee. Additional plan elements (7.1b – 7.1.f) may be included if the summary protects the security of environmentally sensitive or proprietary information.

7.4.b. Public forest managers make information related to forest management easily accessible for public review, including the information required by 7.1.

Findings: SJA does not have a publicly available summary of the management plan.

Score: 2

Condition: Immediately upon certification, St. John’s OSB must provide a summary of the primary elements of their management plan to interested members of the public for a reasonable fee.

4.8.0 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.

4.8.1. The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.

4.8.1.a. *The frequency of monitoring activities is established in the management plan.*

4.8.1.b. *Monitoring is carried out to assess:*

- *The degree to which management goals and objectives have been achieved*
- *Deviations from the management plan*
- *Unexpected effects of management activities*
- *Social and environmental effects of management activities*

4.8.1.c. *Public and large private land managers take the lead in identifying, initiating and supporting research efforts to address pertinent ecological questions. Private land owners or land managers use information that has been developed by researchers and other managers.*

Findings: The recently completed management plan (Peterson 2000) describes installing a network of permanent plots to monitor volume, mortality, growth, and forest composition and structure. The frequency of monitoring and data collection is not specified in the current plan. Forest wide inventories were completed in 1949, 1987, and 1997.

Initial monitoring of oak regeneration and understory vegetation in shelterwood and prescribed fire treatments were initiated over the last 2 years. Although SJA land managers plan to continue monitoring these treatments, no protocols have been developed

The monitoring program as described in the current management plan should be sufficient to assess progress towards management goals, deviations from plans and unexpected effects, and social and environmental effects. At present, SJA land managers rely primarily on published and other sources of information to address ecological and management questions such as oak regeneration strategies and prairie and savanna restoration. For example, red oak regeneration strategies are based on research work by Johnson (1994). Regional and local natural resource professionals also provide information and guidance. However, the proposed monitoring plan using permanent plots and recently begun monitoring of shelterwood treatments should supply much useful information in the future.

Score: 3

Condition: Refer to Criterion 4.7.1.

4.8.2. Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators:

a) Yield of all forest products harvested.

b) Growth rates, regeneration and condition of the forest.

4.8.2.b.1. An inventory system is established and records are maintained for:

- 1. Timber growth and mortality (for volume control systems)*
- 2. Stocking, and regeneration*
- 3. Stand level and forest level composition and structure*
- 4. Abundance, regeneration, and habitat conditions of non-timber forest products*
- 5. Terrestrial and aquatic features*
- 6. Soil characteristics (e.g., texture, drainage, existing erosion)*
- 7. Pest conditions*

c) Composition and observed changes in the flora and fauna.

4.8.2.c.1. Forest owners or managers periodically monitor the forest for changes in major habitat elements and for changes in the occurrence of sensitive, rare, threatened, or endangered species or communities.

d) Environmental and social impacts of harvesting and other operations.

4.8.2.d.1. The environmental effects of site-disturbing activities (e.g., road construction and repair, harvesting, site preparation) are assessed.

4.8.2.d.2. Creation or maintenance of local jobs and public responses to management activities are monitored.

4.8.2.d.3. Sites of special significance to American Indians are monitored in consultation with tribal representatives (see also Principle 3).

e) Cost, productivity, and efficiency of forest management

Findings: Records are maintained of standing timber and harvest volumes by species. Quality and quantities are also recorded (e.g. firewood, palletwood, mini bolts, grade logs, veneer logs by species with volumes). At present, harvest data is recorded on an annual basis. Inventory data includes size class and stand condition information, non-merchantable species are included. Growth rates. With the exception of the conifer plantations (Scwhietz 1985) have not been evaluated in the past. The new permanent plot inventory described in the management plan would allow for growth rate estimates. (See Exhibit C, Peterson 2000).

The most recent forest-wide inventory (1997) inventory provides standard information (summaries by compartment and stand by cover type). This information includes area, basal area range, age estimate, size class range, volume in board feet and cords, regeneration estimates, snag abundance, and other descriptive information such as pest conditions or other unusual or interesting characteristics. Wetland/aquatic habitats are described and mapped. The inventory methodology uses standard published procedures and accuracy criteria. This type of inventory is adequate for general forest management planning, but lacks important ecological data such as ground and shrub layer composition and cover, coarse woody debris, and soil conditions.

The current management plan (Peterson 2000) presents a detailed template for record keeping. This includes a log of silvicultural work, forms for sawtimber and pulpwood, deer kill records, mammal and bird populations, and tree seed crops. The log of silvicultural work is a record of all work done in a given stand. Mammal and bird populations are monitored using a qualitative scale (average, low, increasing, decreasing). Tree seed crops are also monitored using a qualitative scale (excellent, good, average, fair, poor, failure). Deer kill record list number of hunters, hunting days, and number does, fawns, bucks killed on an annual basis. The Minnesota County Biological Inventory for RTE species and communities was completed in 1997.

Future inventory will be coordinated with USFS FIA and Minnesota DNR Phase II inventories for the development of an inventory and monitoring system. The FIA plots are points with a set of fixed-area or variable-radius plots, while the MN DNR inventory is based on mapped cover-type polygons. Data collection and information are somewhat different in these systems, although both are adequate for timber management. However, both the FIA and MN DNR Phase II lack important ecological information such as snag density, coarse woody debris, and detailed herb and shrub layer composition. Soil and site condition information in these systems is very general.

At present, there is no plan in place for monitoring the effects of site-disturbing activities. Harvests are undertaken only during winter and generally have low impact.

The SJA and land managers at St. John's are very sensitive to local jobs and public responses. They seemed to be very responsive to public interest and concerns. A local individual who was concerned about the effects of shelterwood harvesting was taken on a tour harvested sites. Almost all of the milling of SJA forest products takes place locally. Neighbors are given priority for fall deer hunts and firewood gathering

Score: 3

Condition: Refer to Criterion 4.7.1.

Recommendation: Incorporate inventory and monitoring information into a digital database format for easy retrieval, entry, and analysis. Maintain paper as well as digital records.

4.8.3. Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain of custody."

Note: For management requirements for chain-of-custody, see Section 3.6 of Chain of Custody Standards, FSC Accreditation Manual.

Findings: Certified forest products from St. John's OSB forest will include pulpwood, boltwood, and sawlogs. The SJA logging crew conducts all logging operations. Some pulpwood, bolts, veneer logs, and sawlogs are sold FOB the mill and some are sold off the landing to be picked up on-site by various Purchasers. Most of the sawtimber harvested on SJA lands, however, is custom-milled at local facilities and then transported to the St. John's campus where it is dried and stored in a small outdoor lumber yard. The SJA Forestry department operates the lumberyard. SJA Forestry maintains ownership of lumber until it is sold. Lumber sold to the SJA woodshop is also stored in the yard and then transported to the workshop when needed for campus building projects. Lumber that is not designated for use by the St. John's OSB woodshop is sold to local or regional wood processors.

Sawlogs destined to be custom-sawn are currently transported directly from the woods landings to two Amish-owned sawmills: the Stutzman Sawmill and Byler Sawmill. Both sawmills are located in the vicinity of Long Prairie, MN. SJA has entered into identical custom sawing arrangements with other sawmills in the past, and will likely do so again in the future. Prior to being hauled to the sawmills, logs will be marked on at least one end with a branding hammer to identify them as SJA logs. The trucks used for hauling logs to the sawmills, and for hauling sawn lumber from the sawmills to the campus lumber yard, are hired via contract by the SJA Forest Manager. Transportation records are maintained by the Forest Manager, as are production records from each sawmill, which are presented with their invoices. As the sawmills are under contract to custom saw the SJA logs, the logs are kept in separate, identified decks at each log yard and are batch run through the sawmills. Lumber is graded, banded into bundles, and marked with identifying text prior to shipment. At the SJA lumberyard, bundles are broken open, stickered, stacked and covered for air drying. Dried and green lumber is sold directly out of the lumber yard.

Score: 3

Condition: Immediately upon certification, and prior to conducting harvesting operations, SJA must develop and implement a load ticketing system (or suitable alternative) for log deliveries bound for manufacturing facilities under contract to custom process SJA logs into lumber, and for hauling processed lumber from said sawmills to the SJA lumber yard. This identification system must include the clear description of FSC-certified forest products and the St. John's OSB FSC code number (issued upon certification). Additionally, SJA logs destined to be custom sawn on behalf of SJA must be marked on at least one end prior to leaving the SJA woods landing. Bundles of SJA lumber must be banded and identified with markings applied directly on the side of the bundle immediately upon exiting the sawing and grading processes at the sawmill. Bundles of lumber stored in the SJA lumber yard subsequent to certification must be clearly identified as FSC certified lumber, and must be stored separately from non-certified lumber. SJA

must retain records for the transport, processing, inventory and sale of logs, lumber and other forest products, and must produce these records during SmartWood annual audits.

Condition: Immediately upon certification, and prior to delivering sawlogs for custom sawing, SJA must develop a standard agreement to be executed by both SJA and each participating sawmill to secure full agreement on chain of custody procedures to be employed while performing custom sawing services. This agreement must explicitly describe the processes and procedures to be employed by the sawmill to ensure the complete isolation and clear identification of SJA logs and lumber during storage, handling, processing, grading and delivery, including the maintenance of accurate records.

Condition: Effective immediately upon certification, all advertisements, contracts, and other log purchase agreements for external sales or deliveries must identify the logs or timber being sold or delivered as FSC-certified and must include the St. John's OSB FSC code number. All FSC-certified forest products must be identified.

4.8.4. The results of monitoring shall be incorporated into the implementation and revision of the management plan.

4.8.4.a. Discrepancies between results of management activities or natural events (i.e. yields, growth, ecological changes) and expectations (i.e. plans, forecasts, anticipated impacts) are appraised and taken into account in the subsequent management plan.

Findings: Current monitoring plans should enable SJA land managers to assess changes in habitat conditions and general trends in vegetative and animal communities . Prior to the current management plan, consistent monitoring was not done on SJA lands, although, land managers were aware of conditions such as the lack of oak regeneration from past inventories and their own observation. From this information, oak regeneration strategies were developed and implemented. Monitoring of oak regeneration in burned and unburned shelterwood treatment showed the benefits of prescribed fire and will lead to increased use of fire. The purpose of the permanent plot inventory and monitoring system described in the plan is to allow managers to adapt forest plans to changing ecological conditions (insect infestation, blowdown, disease outbreak), results of management activities, Changes in growth etc. The conditions and recommendations described in 4.8.2 will increase the effectiveness of monitoring information for forest management.

Score: 3

4.8.5. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.

4.8.5.a. A summary of monitoring information is maintained up-to-date and is available upon request or at a reasonable price. Public forest owners or managers make information related to monitoring of forest management easily accessible for public review, including the information required by 4.7.1, 4.7.4 and 4.8.2.

Findings: As a privately owned forest, St. John’s OSB is not required to disclose proprietary information such as the extent of forest resource holdings or financial information. Land managers have indicated that summaries of monitoring data would be made available on request.

Score: 3

4.9.0 PRINCIPLE 9: MAINTENANCE OF HIGH CONSERVATION VALUE FORESTS

Management activities in high conservation value forests shall maintain or enhance the attributes, which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

High Conservation Value Forests: High Conservation Value Forests are those that possess one or more of the following attributes:

- a) *Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, refugia); and/or large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance*
- b) *Forest areas that are in or contain rare, threatened or endangered ecosystems*
- c) *Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)*
- d) *Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities’ traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).*

4.9.1. Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.

- 4.9.1.a. *Attributes and locations of High Conservation Value Forests are determined by (see “applicability to old-growth” note in 6.3):*
- (1) *Identification of globally rare, threatened or endangered features, habitats, or ecosystems that may be present in the forest (forest manager and certifier)*
 - (2) *Identification and description of regionally and locally rare, threatened, or endangered features, habitats, or ecosystems, culturally and tribally significant areas, or watersheds that supply communities that may be present in the landscape and/or certified forest (forest manager and certifier)*
 - (3) *Broadly based consultations with local authorities and scientists (forest manager, scientists)*
 - (4) *Public review of proposed HCVF attributes and areas on large scale and public ownerships (forest manager, certifier)*
 - (5) *Integration of information from consultations and public review into proposed HCVF delineation (forest manager)*
 - (6) *Delineation by maps and habitat descriptions (forest manager and certifier)*
 - (7) *Approval of HCVFs and final delineation (certifier)*

Findings: In our estimation, the St. John's Abbey OSB forest does meet some of the criteria for HCVF. Most of the forested land here is in a mature state, with much of the red oak forest estimated to be from 100 to 120 years old. There are also some multi-aged mesic upland hardwood stands in which the oldest trees may be ~120 years old. The St. John's Abbey lands are a relatively large island of mature, intact upland forest with elements of restored prairie and savanna that were present on the pre-European landscape in this region. According to the MN County Biological Survey, this is a unique area, as large tracts of remnant forest are rare in this prairie-forest border region. As such, the land also has important habitat values, including high connectivity within the property, and a relatively large contiguous forest interior. The St. John's OSB forest also has great cultural significance to the SJA. The forest is important not only for the traditional use of wood products, but also has spiritual significance to the monks and is an important resource for the University and community at large. In addition to these attributes, the 2 areas designated as natural areas have multi-aged stands of upland hardwoods that could be managed for old-growth characteristics. The 2 natural areas are described under 4.6.5. Maintaining the upland oak and mesic hardwood forests, their associated wetlands and the prairie-savanna area is certainly consistent the HCVF criteria.

However, this is not a "pristine", undisturbed landscape. A majority of the land here has been subject to commercial forest management at some point in time. It appears that most of the present forest here originated after the SJA began occupying the land approximately 140 years ago. The even-aged cohorts of red oak suggest that post-settlement land use likely influenced this oak regeneration. We also note that, given the mature state of the red oak stands and the SJA objective to maintain oak, significant management will have to occur to produce red oak regeneration.

The Minnesota County Biological Survey found no RTE species on the SJA lands. The following species of state special concern do occur here: red shouldered hawk, cerulean warbler and American ginseng. We also observed that some areas have degraded understory (herb and shrub) layers, likely due to past grazing, deer browsing, and the presence of non-native earthworm species. Because of the deer browsing problem, St. John's OSB has instituted a fall deer hunt in 1997 in an attempt to lower local population levels. The hunt occurs on an annual basis. At this point in time, it is too early to determine if the hunts have had an effect on understory conditions including herbaceous plants and tree regeneration.

As previously noted, maintaining red oak forest will require a significant management effort.

Score: 3

Condition: Within three years of certification, St. John's OSB must determine the extent of HCVF land on the property. This inventory must be conducted in consultation with the Minnesota County Biological Survey, Natural Heritage program staff, or experts from conservation groups such as the Nature Conservancy. These areas will be identified in the management plan and described in terms of attributes that are consistent with HCVFs. Specific measures & strategies will be included in the plan and implemented on the ground that maintain or enhance the attributes consistent with HCVF. Modify the monitoring and inventory plan to ensure HCVF attributes are monitored at an appropriate frequency. Changes in HCVF forest conditions must be noted with corresponding adaptations made to management activities in order to retain or enhance HCVF attributes.

4.9.2. The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.

Findings: The assessment team assessed HCVF characteristics through 2 days of field visits, interviews with staff, literature review, and interview with Minnesota County Biological Survey field biologists. We evaluated a broad range of criteria applicable to HCVF forest including RTE species and communities, the regional landscape context (is this forest significant in the regional landscape and why), landscape and conservation biology criteria (patch size, forest contiguity, forest interior), forest age structure, and cultural significance.

We discussed the general HCVF attributes that might apply with St. John's OSB staff. There was some concern that HCVF status might hamper management goals, however, the basic management philosophy and goals of St. John's OSB will serve to maintain and enhance HCVF attributes

Score: 3

4.9.3. The management plan shall include [and implement] specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.

4.9.3.a. Forest management plans and activities are appropriate for maintaining, enhancing and/or restoring attributes that make the area an HCVF.

4.9.3.b. Active management in old-growth forests and stands (unentered or intact) is allowed only where necessary to maintain or enhance HCVF values.

4.9.3.c. The management plan summary includes information about HCVF management without compromising the confidentiality of the landowner or the risk to environmentally and culturally sensitive features (see also 7.1.f).

4.9.3.d. Forest owners and managers of HCVFs (forests and/or stands) coordinate conservation efforts with owners and managers of other HCVFs in the landscape.

Findings: The current management plan addresses maintaining and enhancing HCVF attributes, but does not at this time contain specific references to HCVF. Red oak management, if successful, will maintain this forest type on a long-term basis. However, red oak regeneration management is still in the early stage, although recent monitoring data show that the approach is promising. The upland hardwood natural areas are currently in a multi-aged state and will not be managed. Oak savanna restoration will continue, thus preserving and maintaining a rare feature on the landscape. At present there is no coordination with other HCVF landowners and managers.

Score: 3

Condition: Refer to Criterion 4.9.1.

Recommendation: Through the Minnesota County Biological Survey and NGOs such as the Nature Conservancy, identify other similar HCVF lands in the region. Contact land managers of

these sites and exchange information on management practices and goals and objectives. This would also be an opportunity to collaborate on landscape level goals and objectives.

4.9.4. Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.

4.9.4.a. Landowners and managers of small forests may satisfy this requirement with informal observations (see 8.1 and 8.2.). When observations detect changes, a written report is prepared.

4.9.4.b. Owners and managers of mid-sized and large forests monitor activities within and adjacent to HCVFs that may affect HCVF attributes (see 8.1 and 8.2.). When annual monitoring detects changes to HCV attributes, a written report is prepared.

Findings: The monitoring described in the current management plan does not specifically address HCVF conditions, however the network of permanent plots and scheduled sampling could easily be modified to monitor and evaluate HCVF criteria. These areas would be sampled under the current plan, but probably not on an annual basis.

Score: 3

Condition: Refer to Criterion 4.9.1

4.10.0 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.

Applicability note: A plantation is a forest that results from a forest management system that allows development of only a few of the principal characteristics and key elements of native ecosystems in the Lake States/Central Hardwoods region, and which results from the human activities of either planting, sowing or intensive silvicultural treatments.*

** Principle characteristics and key elements of the region's forests are determined by FSC-accredited certifying bodies.*

Non-forest land being afforested becomes either a plantation or a natural forest stand, based on the owner's objectives and the development of natural forest attributes.

4.10.1. The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

4.10.1.a. For the sake of Principle 10, plantations exist when 1) the planting or seeding is managed with the primary stated objective of maximizing financial return; and 2) the management system allows the development of only a few of the principle characteristics and key elements of a native ecosystem

Findings: The land management plan states that the first conifers were planted for aesthetics and later ones for forestry purposes. According to the management plan, SJA will tend the existing plantations but does not plan for the creation of more. It does state, however, that “future plantings for timber should be in manageable stands (blocks) of 10 or more acres.”

Score: 3

4.10.2. The design and layout of plantations should promote the protection, restoration and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones and a mosaic of stands of different ages and rotation periods, shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.

4.10.2.a. Plantation layout protect soil and water quality, with consideration of slope, aspect, erodibility, and surface water movement, and minimizes soil degradation and erosion (see also 6.5).

4.10.2.b. Plantations are managed and integrated with the surrounding landscape to improve natural habitats.

4.10.2.c. On areas already converted to plantations, even-aged harvests lacking within-stand retention are limited to forty acres or less in size unless a larger opening can be justified by scientifically credible analyses.

4.10.2.d. Plantations may be re-established on former plantation sites (see 10.5.a.), consistent with the management plan. They may be established on non-forested lands in historically forested areas (see also 6.10).

4.10.2.e. Regeneration in previously harvested areas reaches a mean height of at least ten feet or achieves canopy closure (see Glossary) before adjacent areas are harvested. Buffers between harvest units are arranged to allow contiguous populations of native species.

Findings: Plantations are a minor component of the forest landscape on SJA lands, comprising only 5% of the forest land area. Though not likely deliberately considered in the initial planting design, the layout of existing plantations does not threaten soil and water quality with consideration to slope, aspect, erodibility, and surface water movement, and minimizes soil degradation and erosion.

Plantations were probably not deliberately integrated into the surrounding landscape; the first plantations were established to restore trees to an area that had been affected by a tornado. Subsequent plantations have been established on lands that had been cleared for agriculture. Consequently, the size and shape of plantations matches that of the disturbance, either natural or agricultural, that prompted the establishment of planted trees.

Plantations will be managed under an even-aged harvesting regime with intermittent intermediate thinnings for the foreseeable future.

Score: 3

4.10.3. Diversity in the composition of plantations is preferred, so as to enhance economic, ecological and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes and structures.

4.10.3.a. Forests containing plantations are managed to create and maintain structural and species diversity that results in viable wildlife habitat and long-term soil maintenance and replenishment.

4.10.3.b. Plantation management activities are planned to generate and maintain long-term employment.

Findings: These plantations have been managed for their aesthetic, recreational and educational qualities and for the production of pine sawtimber. The plantation units are small, ranging in size from < 1 to 27 acres, and are sufficiently dispersed so as not to have significant impacts on native species diversity and habitats. Wildlife thermal cover is also noted as a benefit. The vast majorities are comprised of relatively long-lived species but long-term employment was not discussed in the plan as a purpose for these plantations.

Score: 3

4.10.4. The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which shall be used only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

4.10.4.a. The use of exotic plant species (see Glossary) is contingent on peer-reviewed scientific evidence that any species in question is non-invasive and does not diminish biodiversity. If non-invasive exotic plant species are used, their provenance and the location of their use are documented, and their ecological effects are actively monitored.

4.10.4.b. The genetic composition of plantations is managed for diversity to avoid pest infestations and is suitable for local conditions.

4.10.4.c. Potentially invasive species of exotic plants are not used (see also 6.9).

Findings: Less than 10% of the 118.3 acres of plantation contain exotic species (Scots pine and Norway spruce) which were planted between 1884 and 1927. As noted in Criterion 4.10.3, these plantations are small and likely have minimal impacts on biological diversity. Their ecological affects are specifically being monitored, however the new monitoring plan should provide adequate information about these plantings. The management plan for the conifer plantations at St. John's states "There appear to be two possible reasons why the monks began planting conifers; First, that these Bavarian monks missed their native managed conifer forests, and second, to repair the extensive damage done to the woods by the 1894 tornado." Data from Schweitz (1985) indicates that both of these species are well adapted to the conditions here.

Score: 3

4.10.5. A proportion of the overall forest management area, appropriate to the scale of the plantation, shall be managed so as to restore the site to a natural forest cover.

4.10.5.a. The ratio of plantations to natural and semi-natural forests (see Glossary), as well as the plantation's spatial distribution, maintain and/or restore the landscape to a condition that includes a diversity of community types, wildlife habitats, and ecological functions similar to a mosaic of native forests.

4.10.5.b. The certified forest has less than 30% of its area in plantation

4.10.5.c. The management plan for forests with plantations details management activities to reach a mid- to long-term goal of having <15% of the certified forest area in plantations.

4.10.5.d. Areas of forest and/or plantation to be restored to natural conditions are chosen through a landscape analysis that focuses on enhancing ecological integrity and habitat connectivity.

Findings: Approximately 5% of the land base (118.3 acres of 2445 total acres) is represented by conifer plantings, which falls well short of the 30% allowed for plantations. With the possible exception of some farm field restoration, SJA has no current plans to establish additional plantations, so the long-term goal of 15% is also attained. Because of the small area of plantations and their spatial distribution, they have little impact on ecological functions on St. John's OSB lands. SJA has not documented the objective of restoring any plantations to natural conditions in the management plan.

Score: 4

Recommendation: Consider restoration of some conifer plantings to native forest cover when plantings reach a mature state and can be harvested and restored.

4.10.6. Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long-term soil degradation or adverse impacts on water quality, quantity, or substantial deviation from stream course drainage patterns.

Findings: Throughout the area, we saw no water problems or soil movement and did see adequate ground cover and /or shrub layers which indicate these plantations are not degrading soil or water.

Score: 4

4.10.7. Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers. Plantation

management should make every effort to move away from chemical pesticides and fertilizers, including their use in nurseries.

Findings: The 146 acres of plantations were established between 1894 and 1999, with 65% of the planting done between 1894 and ~1940. In his management plan for conifer plantations, Schweitz (1985) recommended gopher poisoning, herbicide application to control competition, and application of sewage sludge as fertilizer. Because of lack of records we cannot ascertain the use of pesticides and fertilizers. The current management plan recommends pesticide/herbicide use only within an IPM framework. There have been some sanitation cuts in the scots pine and white pine but they have not demonstrated specific measures to minimize pests and fire.

Score: 4

Recommendation: Develop alternatives to pesticide/herbicide and sludge application on these plantations.

4.10.8. Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessment of potential on-site and off-site ecological and social impacts, (e.g. natural regeneration, effects on water resources and soil fertility, and impacts on local welfare and social well-being), in addition to those elements addressed in Principles 8, 6 and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well-adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.

Findings: We found no ecological or social concerns with the current plantings on St. John's OSB lands. These cover a small area (5%) and are in very small patches (<1 to 27 acres). The permanent plot monitoring system should be adequate to address ecological impacts. These conifer plantations are important as they represent historical activities and have aesthetic significance to St. John's OSB.

Score: 3

10.9. Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly for such conversion.

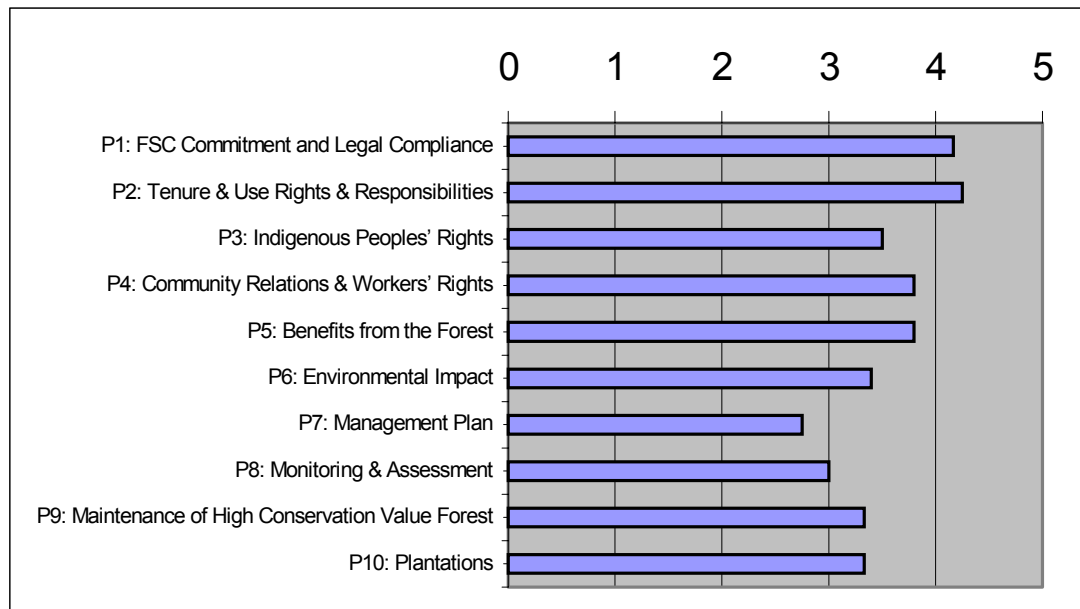
Findings: Two stands have been planted since November 1994. One, in 1996 is 10 acres of white ash and a second, in 1998 is a 20 acre stand of white pine, which are both native species. The white ash planting does not represent a conversion of forest type. The remarks in the land management plan about the ash planting state the presence of large quantities of canary reed grass and to leave it unmanaged. Observations of the white pine planting indicated a failure with very few remaining seedlings. The failed white pine treatment was an attempt at conversion. However this area is reverting to natural cover. Based on our findings, certification should be permitted on these sites.

Score: 3

5. CONCLUSION

5.1. Cumulative Certification Score By Subject Area

This figure illustrates the average score by principle of the SmartWood Guidelines. It is intended to provide a graphic depiction of the applicant's performance across the various areas reviewed in the certification assessment. The cumulative score for each subject is an average of the individual scores for the criteria under that subject. In assigning values to specific criteria, assessors have taken into consideration regional norms, regulations, benchmarks, the scale, and objectives of the operations, and the



regional SmartWood guidelines.

<i>Score</i>	<i>General Description</i>
N/A	Not an applicable criteria.
1	Extremely weak performance; strongly unfavorable or data lacking.
2	Weak performance improvement is still needed.
3	Satisfactory performance.
4	Favorable performance.
5	Clearly outstanding performance.

5.2. Team Recommendation

The assessment team recommends that St. John's Abbey OSB be certified as well managed once they agree to meet certain conditions (See Sections 3 and 4) over the first five years of certification. We found no conflicts with FSC principles and criteria in letter or in spirit. The team was impressed with the overall commitment of the institution and the land managers to forest management that integrates ecological and socio-economic principles.

APPENDICES

APPENDIX I: Stakeholders consultation list

<i>Name</i>	<i>Organization</i>	<i>Contact</i>	<i>Type of Participation</i>
Bundy, Peter	Masconomo Forestry	ppbundy@emily.net	Notification/interview
Brother Mark	St. John's Abbey, OSB	St. John's Abbey, OSB	Public Meeting
Pflueger, Gary	St. John's University, employee, forestry crew	320-363-2050	Public Meeting
Changxiao, Li	Southwest China Normal University	lichangx@hotmail.com	Public Meeting
Benson, David R.	Tamarack Group, Oblate, St. John's Abbey, OSB	218-728-3207	Interview
Converse, Carmen	Minnesota Department of Natural Resources, Minnesota County Biological Survey	651-296-9782	Interview
Beuning, Tony	Logger/Sawmill operator	32906 Co Rd 50 Avon, MN 56310	Interview
Erkel, Jim	Minnesota Center for Environmental Advocacy	651-223-5969	Interview
Larson, Derek	St. John's University Professor of History	320-363-3247	Interview
Mike Lee	Minnesota Department of Natural Resources, Minnesota County Biological Survey		Interview
Brown, Gordon	St. John's University Professor of Biology	320-363-3175	Interview

APPENDIX II: Peer review addendum

Peer Reviewer 1- Christopher Nowak, Silviculturist

Reviewer Comments: See table below

Assessment Report Quality:

How would you rate the overall quality of the assessment report?

High Acceptable Poor (please provide comments below)

Comments: *I see the report is of high quality. Operations were described clearly and the certification process and rationale for certification decision were clear and consistent with SmartWood tenets and guidelines.*

Areas for improvement:

Editing/Formatting: Comments:

Lack of Clarity: Comments:

Technical Analysis: Comments: (reference weak sections)

Information lacking: Please indicate areas: (if detail is needed include in the comments table)

Assessment Process:

Based upon the information in the assessment report, do you have any comments on the assessment process (i.e. team composition, field time, stakeholder consultation)?

Yes No

Comments: *I found the credibility of the assessment to have been high. The standards were appropriate and consistent with my previous experiences with SmartWood and FSC. This was my first time working with the FSC Draft Regional Stewardship Standards for the Lake States and Central Hardwood Region, Version 4.60. I found them to be satisfying and consistent with my previous experiences with certification in New England and the Mid-Atlantic States. I was intrigued by the breadth and depth of coverage of standards on plantations. I liked them. While they really did not have much bearing on this assessment, because of the small area of plantations and minor indications of future plantation efforts, I could see how they might be well suited to plantation forestry in the Mid-West. I would like to see them more broadly applied to other regions.*

The assessment team seemed well-qualified for the assessment. The procedures and mechanisms that were used to generate findings were fine.

Report Conclusions:

Do you agree with certification recommendation of the team? Yes No

If no, state reasons why?

I agree with the certification assessment: to certify St. John’s Abbey, Order of St. Benedict. I was glad to see there were no preconditions, as I felt none were needed. I think all of the conditions were appropriate, well-based on the findings, and well scoped in terms of time constraints. I had only a few, minor comments on findings and conditions, as outlined below, and as detailed in the text for the “Peer Reviewer Comments Table”.

Peer Reviewer Comments Table

Report Section	Issue: Disagreement or Suggested Action	SmartWood Response
1.3.C.	How does the annual net growth of 123.6 MBF compare with regional values? What does FIA data indicate is the regional growth? How about growth on comparable National Forests?	The annual net growth figure of 123.6 MBF was calculated (by the assessment team) by taking the difference between the 1949 inventory volume and the 1997 inventory volume, and dividing it by the 48 years that transpired between the two measurements. This calculation does not account for harvest volumes during this period, and is therefore inaccurate and an oversimplification of net growth. Consequently, the use of 123.6 MBF as a measurement of growth has been stricken from the report, and replaced with an explanation that SJA has not yet calculated growth figures for their ownership. FIA data for red oak suggest annual growth of 150 bd.ft./ac.
Section 1.5.A. Criterion 4.7.1.d.	How does the 182 MBF annual allowable cut (p.11) compare with the 123.6 MBF annual net growth (p.6). Not well, I propose.	The 182 MBF figure was derived by multiplying the 1484 forested acres by 123 bd.ft./ac. As we have previously acknowledged (see above), the annual net growth for SJA was misrepresented as 123.6 MBF/year. This same figure was then errantly reported as 123 bd.ft./ac/yr in Section 4.7.1.d., and misapplied in the calculation of the AAC to arrive at 182 MBF. Hence, both numbers referred to by the peer reviewer are in err and have been stricken from the report. Clarification of SJA’s current approach to applying an AAC and to regulating their harvest has been added to Sections 1.3.C., 1.3.D. & 4.7.1.d.
Criteria 4.5.3 4.6.3	I am surprised at the specifics on coarse woody debris. I am not aware of any really good, solid science that supports such specifics. So, I’d be	The assessment team agrees with the peer reviewer in that the current science in regard to CWD does not

4.8.2	interested in seeing the bases for CWD management	support specific numbers, nor is there much inventory information available on CWD as noted in Criterion 4.8.2. However, some of the SJA harvest sites supported much less large CWD than a “natural” oak stand would contain. The low levels of CWD were often the deliberate result of reducing fuel loads in anticipation of prescribed burning activities. Throughout the assessment report, the team has refrained from including specific, prescriptive language regarding CWD, but has encouraged SJA to recruit more CWD, particularly larger diameter CWD, and to collect inventory data for CWD. No changes to the report were made in response to this comment.
General Comment	I am a bit concerned that a score of “5” was not used consistently throughout the report. For example, why is Criterion 4.1.2 scored as a 5, but Criterion 4.1.3 is only scored a 4? How about 4.1.4? What about 4.2.1? 4.6.10?	A score of “5” indicates “Clearly Outstanding Performance” on the part of the candidate operation, which was clearly demonstrated by SJA in regard to Criterion 4.1.2 as described in the Findings. In reviewing the criteria listed by the peer reviewer, the score for Criterion 4.2.1 was changed from “3” to “4”. All other scores were left unchanged. While the assessment team agrees that SJA’s performance in regard to these criteria was favorable, the team believes that the scores initially provided are most appropriate.
General Comment	I found it difficult to review the Findings, Conditions, etc, associated with Principle 7 because the Conditions and Recommendations were separated from the Findings. It was difficult to match up Findings with Conditions and Recommendations. I understand why this was done, this separation, but I encourage that the style be violated, and that the Findings be immediately followed by the related Conditions and Recommendations.	The peer reviewer’s opinion is noted. Both the existing format and that proposed by the peer reviewer have advantages and limitations. No changes made.
General Comment	When I first saw the acronym “OSB” I thought of oriented-strand board. Of course OSB is for “Order of Saint Benedict”, but I was temporarily confused. Others may be too?	The acronym “OSB” is used extensively by St. John’s Abbey and others familiar with them To reduce the potential for confusion, OSB has been added to the list of acronyms at the beginning of the report.

General Comment	Are the MBF figures that are reported throughout the text (e.g. 123.6 MBF annual net growth, p. 6) in International units?	SJA actually reports volumes with both Scribner and International scale rules. Text clarifying SJA's use of scale rules has been included in Section 1.3.C.
Section 1.3.C.	I see clearcuts referenced as part of planned acres for cut. What triggers a clearcut in upland hardwoods? I hope it is stand maturity and adequate advanced regeneration. If so, how are both judged?	The inclusion of clearcutting as a regeneration method in upland hardwoods was an error. Clearcuts are only specified for the small amount of bigtooth aspen (49 acres), however there are small aspen patches interspersed within upland hardwood stands that may be clearcut in accordance with standard silvicultural principles for aspen management. Stand maturity, stand condition, site quality, and stand composition are factors used to evaluate aspen regeneration harvest.
Criterion 4.5.2	I do not think of "serenity" as a product (p. 36). A benefit, yes. But, not a product.	Agreed. The word "product" has been replaced with the word "benefit" in the Findings of Criterion 4.5.2.
Condition 7	Condition 7 makes reference to the Minnesota Voluntary Site Level Guidelines. I would have liked to have seen this document to support my review.	The MN Voluntary Site Level Guidelines are Minnesota's BMPs. SJA is quite familiar with these guidelines as are most forest management practitioners in MN. The guidelines are also referenced in Appendix III "Literature Cited" at the end of the assessment report.
General Comment	A general reaction: There's a whole lot of conditions for what seems to be a fairly well run organization. I wonder if some of the conditions could be better combined to reduce the total number and apparent preponderance.	The assessment team agrees with the peer reviewer in the apparent preponderance of Conditions for SJA, a comparatively well managed forest ownership. However, each Condition is warranted, and the team felt that SJA would be better served with a larger number of concise Conditions rather than fewer Conditions that address multiple issues.
General Comment	I expect that, regionally, on private lands, the majority of the hardwood resource, and particularly the oak resource, has been exploited and degraded over the past few decades. This makes St. Johns even more unique.	Agreed.
Condition 9	On developing written prescriptions: why wait 2 years? I propose that this be done "immediately upon certification". Why? Because I believe that this is one of THE critical aspects of silviculture...the written prescription. It represents	The assessment team agrees with the peer reviewer with respect to the importance of the written prescription. However, as SJA is currently implementing sound

	<p>the formulation of the management activity. It is the plan. It has the specifics on stand density, structure, species, both present and desired future conditions. It is the contract against which we judge field performance. It is the message to future managers on the intent of the activity, so that fully sensitive adjustments can be made in the future based on the past. I could go on.</p>	<p>silvicultural practices on the ground, and in recognition of the very recent hiring of the Forest Manager, the team feels that there is little risk in proving an extended time period to complete written prescriptions for all stands. The SJA Forest Manager has also indicated his intent to develop time sensitive prescriptions for each stand. However, in recognition of the importance of developing written prescriptions in advance of harvesting operations, the condition has been modified to require written prescriptions be completed prior to harvesting.</p>
<p>Criterion 4.4.2</p>	<p>I agree with the Condition and approve of the findings. But I am concerned with the idea of St. John's folks doing the timber harvesting. I recommend that this activity be pointed out specifically as a potential hot spot of safety problems.</p>	<p>Agreed. Text inserted into the findings of Criterion 4.4.2 highlighting the potential risk of employing non-professionals for logging work. Also, a Recommendation was added to Criterion 4.4.2 to address this issue.</p>
<p>Criterion 4.4.5</p>	<p>In the findings for Criterion 4.4.5 (p. 35), the following statement seems oddly bold: "However, in the event of damage or loss, St. John's OSB will provide fair compensation or mitigation to the affected parties." Upon what evidence is this statement based?</p>	<p>This statement is based on our interviews with St. Johns Land managers and officials regarding their relationships with neighbors. It was clear that fair settlement was important to them. However, the statement is unsubstantiated. Consequently, the Findings have been modified to more objectively describe SJA's insurance coverage.</p>
<p>Criterion 4.5.4</p>	<p>The light cut of northern red oak sawtimber and contemporary efforts to regenerate oak are consistent with sustainable practices. But, I take pause when I see that most of the sawtimber cut from the property does come from northern red oak, and regeneration to date has failed. Red oak represents 77% of the cut sawtimber (Table 1, p. 11), but red oak only represents 47% of the forestland area (p. 5) and 53% of the standing volume (p. 37). I think the assessment team did very well in repeatedly pointing out the potential for a catastrophe here. I hope future audits focus on the issue of a potential over cut of a single species and consistent failures to regenerate that species. I am especially concerned with oak regeneration. My experience indicates we have not consistently regenerated oak on mesic sites. NOTE that the assessors do clearly recognize this, as indicated by the "weakness" statement made on p. 18: "St. John's OSB is dependent on the red oak resource. The</p>	<p>The assessment team strongly agrees with the overall message of the peer reviewers comment with respect to the sustainability of the red oak resource given current circumstances. The word "potentially" has been deleted from the strengths & weaknesses section, and added emphasis has been included within the Findings of Criteria 4.5.4 & 4.5.6. As SJA's Forest Manager is keenly aware of the importance of regenerating red oak, and is already very committed to an aggressive regeneration campaign, adding a Recommendation for SJA to continue working on the red oak problem was not considered necessary.</p>

	<p>mature condition of red oak, and the lack of regeneration will potentially lead to a wood shortage in the future.” In simple terms, I am proposing here that the word “potentially” be removed from the statement, and that a more forceful statement be made throughout the document on this topic. In specific, I would add a strong recommendation here to keep working on the oak problem, and indicate the problem as a sore spot for sustainability.</p> <p>A side note: since St. John’s has been focusing “on strategies to develop red oak regeneration in order to maintain and sustain a significant component of oak forest” since 1991 (p. 40), where are the positive results? If the problem could not be solved in 10 years, what does that indicate about the next 10 years? Yes, I know some efforts are likely new today compared to the past, e.g., fire, herbicides, and deer control. But, I am dubious.</p>	<p>In response to the “side note”, SJA has really only started their current program of aggressively regenerating red oak in earnest over the last 4 years or so, and have had a some measure of success. Consequently, while the team is in full agreement with the peer reviewers concern over this issue, we are cautiously optimistic and inclined to provide SJA with the benefit of the doubt, and time, to demonstrate consistent success over a longer period of time. In the event that they eventually become FSC certified, SJA’s success in addressing red oak regeneration would continue to be a focus of SmartWood audits throughout SJA’s certification</p>
Criterion 4.5.5	<p>Reference is made to riparian zone harvesting restrictions (p. 37). I would have liked to have seen specifics on those restrictions so as to judge their adequacy.</p>	<p>SJA follows the MN BMPs on riparian zone restrictions. These restrictions are detailed in the Minnesota Voluntary Site Level Guidelines, which are listed in the citations.</p>
Criterion 4.5.6	<p>As a northern hardwood expert (not including red oaks), the 60 sq ft does not ring well. What does this mean in terms of a portion of the total BA before the shelterwood cut? Is it 30%? 50%? I propose using relative stand density to control stocking during partial cuts may be beneficial (see McGill et al. 1999, Northern Journal of Applied Forestry)? The idea of using 60 sq ft for all shelterwood cuts seems too simple, and may not be producing the same effect in different stands. I am particularly concerned about this if the 60 sq ft rule is transferred over to other forest types.</p>	<p>The residual basal area of 60 sq.ft./ac applied in oak shelterwoods is taken from the prescription for red oak regeneration developed by Paul Johnson, a lead researcher on oak based in MO. The prescription is applied only in red oak stands. SJA is removing approximately 30% of the crown closure, which on the one 60 acre oak stand currently being harvested, represents about 50% of the trees, and 70% of the volume according to SJA Forest Manager Tom Kroll. The residual basal area target may be adjusted in the event that the residual crown closure deviates significantly from the desired level of 70%.</p>
Criterion 4.5.6	<p>See comments on Criterion 4.5.4. I propose that the score here be lowered to a “2” with a condition of specific plans for action and monitoring, or at least cross-references to other conditions.</p>	<p>The assessment team does not agree that the score should be lowered to a “2”. SJA’s overall harvest rates have been shown to be within levels that can be sustained when yield is measured against net growth estimates. The sustainability of the red oak resource is in question, as</p>

		has been pointed out by both the assessment team and the peer reviewer. However, it is the opinion of the assessment team that this issue has been given adequate emphasis in the report, that the SJA Forest Manager is keenly aware of the challenge facing SJA to retain red oak in the stands where it is currently a dominant component, and that SJA is also placing significant emphasis on employing aggressive management strategies to regenerate red oak.
Criterion 4.6.3	Numerous references are made to the connectivity value of the property (p. 17), yet I see it as an island of oak forest in a sea of agricultural land. Where does “connectivity” play into this? What is being “connected”? I see reference to the paper by Mladenoff et al. (p. 44) that is used to present the notion that “patches within the forest are large, leading to high connectivity”. But, I thought the property was essentially one, large patch. This sense is supported later in the findings when the assessors state that there is a large amount of “contiguous, intact forest”. Also, I think of connectivity at a larger scale than one patch (stand?) next to another.	We are talking about habitat connectivity and interspersion within the SJA property. As the peer reviewer has pointed out, the issue of connectivity is a question of scale and can be viewed in the context of particular species and processes. For example, for forest interior bird species, the SJA area provides an island of habitat that includes a relatively large amount of mature interior forest with very little “edge”. While the SJA property is not highly diverse, it does provide some variability of habitats. The SJA property can be viewed as an intact landscape mosaic in itself, with wetlands, lakes, scattered conifer stands, some aspen stands, and prairie savannah interspersed within an upland hardwood forest matrix. So the contiguous mature upland forest does hold value in providing connectivity between various habitats within the SJA property. On a broader landscape scale, the SJA property can be viewed an island, though it’s relative uniqueness makes the SJA property regionally important ecologically.
Criterion 4.6.3	Also, more on regeneration. How long does St. John’s get to experiment with oak regeneration in the context of certification? Does the following new condition have value: “Within 5 years of certification, significant progress must be demonstrated with oak regeneration, as evidenced by successfully regenerated stands totally at least one half of the area entered into the renewal process.”? If so, then what happens when we get to	Because there are so many factors beyond the control of SJA that can impact the success of their regeneration efforts, the assessment team is reluctant to adopt the suggested condition establishing measurable threshold requirements for successful oak regeneration. Additionally, five years is a

	<p>the end of 5 years and St. Johns has not been successful in regenerating oak. Then, we say, oak management is not sustainable. I expect we will not arrive at this negative juncture, but we should set the stage to expose such a juncture if it occurs.</p>	<p>relatively marginal period of time during which to conclude stands have become “successfully regenerated” for all but perhaps those harvested in year 1 of the certification period. Furthermore, SJA is currently applying “state of the art” harvesting and regeneration techniques in an aggressive campaign to regenerate red oak. During the course of a five year certification period, SJA’s forest management practices would be evaluated annually via audits, and would be subject to another certification assessment in 6 years, providing ample opportunity to measure their progress in achieving successful oak regeneration.</p>
<p>Criterion 4.6.3</p>	<p>I have progressively wondered how the effort to increase snags matches with OSHA rules for timber harvesting?</p>	<p>OSHA requirements state, “Each danger tree shall be felled, removed or avoided. Each danger tree, including lodged trees and snags, shall be felled or removed using mechanical or other techniques that minimize employee exposure before work is commenced in the area of the danger tree. If the danger tree is not felled or removed, it shall be marked and no work shall be conducted within two tree lengths of the danger unless the employer can demonstrate that a shorter distance will not create a hazard for an employee”. SmartWood encourages the retention of snags to the extent that the safety of forest workers is not compromised.</p>
<p>Criterion 4.6.6</p>	<p>Are employees of St. Johns certified as pesticide applicators? If not, a condition or recommendation should be made to support certification training.</p>	<p>Dan Vogel, SJA’s Forestry Technician is a licensed forest pesticide applicator. This information has been added to the Finding of Criterion 4.6.6.</p>
<p>Criterion 4.7.1</p>	<p>On the recommendation that includes “leasing arrangements”: Were leases reviewed by the assessors? Were there any leasing arrangements to be reviewed? Hunting leases?</p>	<p>To date, SJA has not entered into any conservation easements or leases though they have been considered.</p>
<p>Criterion 4.7.1.c.</p>	<p>I reacted to the use of topographic features to produce stand boundaries. Is this a common factor, or are stand boundaries usually driven by forest cover type, which may traverse across topo boundaries. I generally have a concern for forest management at the stand-level, and feel that many</p>	<p>Stand boundaries are primarily driven by cover type. Topographic features are employed in situations where there may be a hazardous slope condition or a wetland boundary. The reference to the use</p>

	folks do not appreciate or use stands correctly, where “correctly” means in an ecologically sound manner.	of topographic features to establish boundaries pertained to a particular harvest unit as opposed to a stand. Additional text was inserted into the Findings under Criterion 4.7.1.c. to clarify this point.
Criterion 4.7.1.d.	What activities will increase annual net growth of northern red oak to over 200 MBF per year (p. 54, first full paragraph). Given that the oak stands are well over 100 years old, I would expect a progressive decrease in net growth over the next 100 years.	Our analysis of FIA plot data suggests that 150 MBF/year is on the high end for red oak stands of this age range, but it seems reasonable for the St. Johns sites. Certainly 200 MBF/year is possible, but the team would have to agree that we would more likely see a progressive decrease in net growth on existing stands. However, SJA has measured some site indexes on red oak that are in the mid to high 70’s on a 50 year basis and has realized notable increases in growth on red oak in response to crown release resulting from shelterwood harvests. Furthermore, SJA’s expectations for annual net growth of up to 200 bd.ft/ac. include growth in future stands of red oak that are subjected to intensive management including intermediate thinnings and crop tree release. Consequently, while the team is in general agreement with the peer reviewer, it is also reluctant to discount SJA’s optimism. The Findings of 4.7.1.d. have been modified to clarify the intent of SJA’s expectations, and to temper these expectations with current FIA data.
Criterion 4.7.1.h	I recommend adding a “recommendation” on progressive use of computer generated maps and GIS.	The team has already included a Recommendation under Criterion 4.7.1 to develop a GIS database.
Criterion 4.8.1	More specifics on which Criterion is being referred to in the condition. It is unclear, as there are multiple conditions associated with Criterion 4.7.1. Of course, this multiple condition state and related confusion could be cleared up if the condition were matched to findings by sub-criterion (a, b, c, etc.).	Of the four Conditions listed under Criterion 4.7.1, only one addresses monitoring, which is the focus of Criterion 4.8.1. Additionally, in Section 3.3 of the report, the Criteria referenced in each Condition are identified in parentheses. Consequently, no change is considered necessary.
Criterion 4.9.3	In the opening, bold-type statement, it is unclear to me what is meant by “the precautionary approach”.	Taken from the Glossary in the FSC Rocky Mountain Standards, the

		precautionary approach is “An operational principle in which managers err on the side of caution when making choices that could have adverse environmental consequences. This approach requires managers to take precautionary measures even if some cause and effect relationships are not fully established scientifically.”
Criterion 4.10.3	Under findings: It is unclear to me what is the point behind the reference to “long-term employment” (p. 67).	The existence and management of these plantings will not likely have an effect on the employment of St. Johns forest workers. The potential impact of establishing these plantings on generating or maintaining long term employment for workers, an issue raised in the second Indicator under Criterion 4.10.3, was not a consideration when the plantings were established. As this point appears clear to the assessment team, no report modifications have been made in response to the peer reviewers comment.

Peer Reviewer 1, Silviculturist:

Peer Reviewer 1- Jerry Kemperman, Silviculturist

Reviewer Comments: See table below

Assessment Report Quality:

How would you rate the overall quality of the assessment report?

High Acceptable Poor (please provide comments below)

Areas for improvement:

Editing/Formatting: Comments: *Report needs final edit for minor typo's. The macro running this review template will not allow me to check the option boxes nor use the comment table (until I unprotected the document)*

Lack of Clarity: Comments:

Technical Analysis: Comments:

Information lacking: Please indicate areas:

Assessment Process:

Based upon the information in the assessment report, do you have any comments on the assessment process (i.e. team composition, field time, stakeholder consultation)?

Yes No

Comments: *Appeared to be a comprehensive and well-implemented process.*

Report Conclusions:

Do you agree with certification recommendation of the team? Yes No

If no, state reasons why?

Peer Reviewer Comments Table

Report Section	Issue: Disagreement or Suggested Action	SmartWood Response
1.3.C.	Table of a “10 year harvest plan”. What 10-year period does this represent – starting with 2001 or is this an ongoing “rolling” 10 years?	The ten-year period begins with 2001. The dates of the 10-year period have been added to the report to increase clarity.
Section 1.3.C.	The harvest plan lists 30 acres of clearcut for the upland hardwood. Does this imply all upland management is even-aged? This is not discussed elsewhere in the report.	The use of clearcutting in Upland Harwood types would be limited to small pockets of aspen that are intended to be retained as aspen rather than converted to hardwoods, and does not imply even-age management for all upland forests. Upland hardwood stands are not clearcut. The table has been modified to list single tree selection as the harvesting regime to be employed in upland hardwoods.
Criterion 4.5.6	The findings related to rate of harvest/sustainability only address red oak (699 acres) which will be managed by shelterwood. An additional 610 acres of upland/lowland hardwood and aspen types are not addressed in relation to harvest and sustainability.	The mesic upland hardwood dominated by sugar maple and the mixed upland hardwoods will be managed primarily using group or single tree selection methods. The Findings under Criterion 4.5.6 have been modified to address the management of hardwood and aspen stands. The Findings have also been expanded to address SJA’s current approach of harvest regulation using an area based control. Two Conditions and one Recommendation have been added to address weaknesses in SJA’s harvest scheduling technique.
Criterion 4.5.6	The findings state the plan for oak regeneration is 600 acres of shelterwood over a 60 year period. As the oak stands are already “mature” in the 90-120 year range (page 44), will adequate red oak persist through this 60 year period to successfully regenerate under the	This issue is discussed several places in the report including Criterion 4.5.6, in several instances in response to peer reviewer comments. There is a significant amount of uncertainty tied to the regeneration of oak because of a number of factors including deer browsing, oak

	<p>shelterwood system? Also this addresses only 600 of the 699 acres in the oak type.</p> <p>Perhaps this is the location to discuss a target rotation age for oak management, I don't believe it is specifically stated elsewhere in the document.</p>	<p>wilt, gypsy moth, blowdown and the mature state of red oak. It seems possible that 60 years may be an unrealistic time window given all the potential problems. SJA's intent is to carry the oak stands as long as possible in order to minimize the aesthetic impact of regeneration program, and to begin to regulate the harvest schedule toward a more even flow over the entire rotation. SJA will be carefully monitoring the condition of the red oak stands and will adapt their harvest schedule accordingly. Some of the 699 acres of red oak stands were not included in the harvest projection to account for natural areas and previously harvested stands. Target rotation age for red oak is given at 100 years in the management plan. The Findings of Criterion 4.5.6 have been modified to address the peer reviewers comment.</p>
Criterion 4.6.3	<p>There is no statement in the findings as to the "Applicability to Old Growth". If there is no "Applicability", this should probably be stated due to the value of and public interest in old growth. There may also be a possibility of uneven aged management of the upland hardwoods or extend rotation age of oak to develop some old growth conditions/characteristics.</p>	<p>Old growth characteristics and issues are discussed under Principle 9, HCVF forests. Uneven aged management is discussed in the plan for upland hardwood sites, and SJA will be extending the rotation age of oak as discussed in Criterion 4.5.6. Text has been added to the Findings of Criterion 4.6.3 to clarify the absence of old growth on SJA lands.</p>
Criterion 4.6.3	<p>The "primary forest management goal is to regenerate red oak on all appropriate sites". Does this include only the 669 acres of oak type identified in the harvest plan table on Page 6 or also some of the additional 610 acres of hardwoods and aspen types. The table lists clearcut management for the upland hardwood type, which is not consistent with the shelterwood approach for red oak if some of the upland hardwood is actually to be managed for oak.</p>	<p>Red oak may be regenerated on some of the additional acreage with sufficient seed source. The findings in Criterion 4.6.3 have been modified to clarify which stands may be considered for red oak regeneration. Additionally, the table referred to was in error, and has been modified to indicate that single tree and group selections are be the primary harvest strategies in upland hardwoods.</p>
Criterion 4.6.3	<p>Two clearcuts of aspen were mentioned. Was this done specifically to maintain the aspen type and if so, what is the planned rotation age – if too short, may take on plantation characteristics?</p> <p>The statement is made that "Clearcutting has been and will continue to be a minor component of forest management". Based on the harvest plan table (page 6), the 30% of the land which is in upland</p>	<p>Clearcuts were done to regenerate bigtooth aspen. Planned rotation age is 50 years for aspen, which has been added to the findings of Criterion 4.5.6.</p> <p>The table in Section 1.3.C. previously listed 30 acres to be managed by clearcut in the upland hardwoods. The table has been corrected to list single tree and group selection as the harvesting method in upland hardwoods. The harvest plan for</p>

	<p>hardwood type will be managed by clearcuts averaging 3 acres per year with an apparent rotation age of 139 years (418 acres/3 acres/year). With 30% of the land managed by clearcuts, is this still considered “minor”? Perhaps it should also be recognized that the final overstory removal in a shelterwood system will be viewed aesthetically by most people as a clearcut.</p>	<p>this 418 acres primarily involves selection and group selection for maple-basswood stands. Clearcutting would only be applied to aspen stands, although there are small pockets of aspen nested within the upland hardwood type, and these stands may be clearcut. Adjustments to the report have been made in response to earlier peer reviewer comments.</p>
<p>Criterion 4.7.1.c.</p>	<p>The findings state that the shelterwood system will be used for oak type and group selection for the sugarbush area. There is no discussion for the remaining 41% of the non-conifer forest areas (upland and bottomland hardwoods and aspen). Again just based on the page 6 harvest table, it appears the upland hardwood and will be managed with an even-aged (clearcut) system and the bottomland hardwood by selection. Discussion of the non oak 41% of the area appears to be needed. Can upland hardwood be managed on an all aged system and if so, what are the standards for this management? Why is the shelterwood system selected for the lowland hardwoods and what are the targeted species for regeneration?</p>	<p>The other upland hardwood areas will be managed primarily with single tree selection and group selection methods as previously noted in response to other peer reviewer comments. The management recommendation for lowland hardwoods is even-aged management on good sites (80 year rotation) and no management on poor sites. The Findings under Criterion 4.5.6 and 4.7.1.c. have been expanded to include brief descriptions of the harvesting regimes to be applied in upland hardwood, lowland hardwood and aspen stands.</p>
<p>Criterion 4.7.1.d.</p>	<p>All the oak harvest discussion throughout the report has been in relation to shelterwood. Are thinnings in oak stands permitted or even planned for and is this accounted for in the annual allowable harvest? Again, the harvest table on page 6 only lists shelterwood harvests for the oak type. Commercial thinnings should be addressed if anticipated.</p>	<p>Thinning is not described in the management plan, however there has been some discussion of thinning to improve productivity. Thinning or single tree selection are not accounted for in the annual allowable harvest because SJA is currently operating under an area control approach to regulating their harvest schedule. This issue is addressed in Section 1.3.C. and Criterion 4.5.6.</p>

APPENDIX III

People Interviewed

Main Assessment

Br. Benedict Luethner, OSB, Treasurer, St. John's Arboretum/Land Management
Tom Kroll – Land Manager/Director of Arboretum
John Geissler – Assistant Director of Arboretum
Dan Vogel – Forestry Technician
Don Peterson – Consulting Forester
Elizabeth Sim – Arboretum Secretary

Post Assessment

Cynthia Hale - University of Minnesota, Department of Forest Resources
Mike Lee – Minnesota DNR, County Biological Survey
Carmen Converse - Minnesota DNR, County Biological Survey

Attached Documents

Exhibit A: Map of sites visited by assessment team
Exhibit B: Land Title Documents
Exhibit C: Current Draft Management Plan
Exhibit D: Postharvest BMP Checklist

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