



OFFICE OF THE LEGISLATIVE AUDITOR
STATE OF MINNESOTA

EVALUATION REPORT

DNR Forest Management

AUGUST 2014

PROGRAM EVALUATION DIVISION

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OFFICE OF THE LEGISLATIVE AUDITOR

STATE OF MINNESOTA • James Nobles, Legislative Auditor

August 2014

Members of the Legislative Audit Commission:

Forests are one of Minnesota's most valuable resources. They provide economic, recreational, and environmental benefits throughout the state. The Forestry Division in the Minnesota Department of Natural Resources (DNR) is responsible for managing a significant amount of state-owned land—about 4.2 million acres. The division also works with private and other public landowners to achieve various state forest management objectives.

According to state law, DNR and the Forestry Division must manage state-owned forests consistent with the principles of “multiple use and sustained yield.” It is a challenging mandate that requires a balancing of often competing—and sometimes conflicting—needs and interests, both within DNR and among the many constituencies the department serves. Our report is an assessment of how well the department and the Forestry Division are meeting that mandate.

Our evaluation was conducted by Carrie Meyerhoff (evaluation manager), Catherine Reed, and Valerie Were, with assistance from Susan Von Mosch. The Department of Natural Resources cooperated fully with our evaluation.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jim Nobles'.

James Nobles
Legislative Auditor

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Summary

Overall, we concluded that the Forestry Division operates within a framework that supports the division's responsibility to manage state forest land sustainably and for multiple uses.

Key Facts and Findings:

- The Forestry Division in the Department of Natural Resources (DNR) administers 4.2 million acres of land for economic, recreational, and environmental benefits. (pp. 5-7)
- State law directs the division to manage state forest resources according to principles of multiple use and sustained yield. (p. 5)
- Interdisciplinary forest resource management planning by the DNR divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources contributes to management that satisfies multiple uses sustainably. (pp. 33-34)
- Independent, third-party forest management certification and use of best-practice guidelines also support management for multiple uses over the long term. (pp. 40, 49)
- Some recent forest management policy statements and their implementation have emphasized the economic uses of forest resources. (p. 55)
- According to Forestry Division staff, most loggers who harvest state timber perform well, but there are insufficient options to penalize those who do not. (p. 74)

- The Forestry Division's forest management database is inadequate to support some on-the-ground activities and fully monitor progress toward achieving forest management goals. (pp. 28, 38-39)
- Direct appropriations to the Forestry Division, excluding those for land and easement acquisition, dropped between 2008 and 2012 and remain below their 2008 level. (p. 17)

Key Recommendations:

- DNR should accelerate implementation of changes to forest management policies only when it is essential. (p. 63)
- DNR should prioritize resources to improve monitoring of forest resource management plans. (p. 39)
- The Forestry Division should determine criteria for identifying underperforming loggers and expand options to penalize them. (p. 74)
- DNR should provide guidance to department staff on prioritizing goals that affect long-term economic returns when school trust land is involved. (p. 59)
- DNR should continue to improve its interdisciplinary forest management efforts. (p. 35)

Report Summary

Minnesota contains over 17 million acres of forest land. Almost one-quarter of the forest land is owned and administered by the state. The Forestry Division in the Department of Natural Resources (DNR) manages 4.2 million acres of land.

Forest management includes activities undertaken to affect the health and growth of forests to achieve a desired outcome. These activities can contribute to the economy, create habitat for wildlife, support diverse plant and animal life, lessen fire risk, and promote forest health. For example, an aspen timber harvest may provide employment for a logger, raw material for a paper mill, and make room for young forest that provides habitat for ruffed grouse and golden-winged warblers. Forest management can be controversial because activities that meet one objective can adversely affect others.

State statutes direct DNR to manage forest resources according to the principles of multiple use and sustained yield. These principles require DNR to manage forest resources to meet current economic, environmental, and recreational needs, without risking the ability of future generations to do the same. State law defines forest resources to include timber, wildlife habitat, air, and aesthetic values, among others.

DNR's subsection forest resource management plans support sustainable management of forest resources for multiple uses, but plan monitoring and some aspects of interdisciplinary work need improvement.

Subsection forest resource management plans support the

Forestry Division's work by requiring interdisciplinary planning, opportunities for public input, and long-term goals for state-administered forest land.

In each subsection, a team of staff from the DNR divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources guide development of the subsection plan. (Subsections are physical areas sharing features such as climate and distribution of tree species.) These ten-year plans bring the divisions' expertise and perspectives "to the table," helping address the multiple-use principal of forest management. The plans also include long-term forest management goals, providing a focus that supports management for a sustained yield of forest resources. The forest resource plans contribute directly to the Forestry Division's annual work plans and influence harvest and regeneration plans for stands of trees.

However, DNR has not adequately monitored the extent to which it is making progress toward plan goals. In addition, DNR staff have identified opportunities to improve interdisciplinary planning.

Independent, third-party forest certification validates that DNR's forest management considers multiple uses and sustainability.

Independent, third-party certification requires DNR to meet standards established and audited by others. Almost 5 million acres of DNR-administered land is certified by the Forest Stewardship Council® and the Sustainable Forestry Initiative.

The organizations that certify DNR forest land have standards that include management for multiple uses and sustainability. To maintain certification, DNR must meet these

standards, as verified by independent auditors. Although some Forestry staff thought certification has not changed the division's forest management practices, others in DNR commented on positive effects of certification, such as improved interdisciplinary work.

DNR's commitment to follow best-practice guidelines developed by the Minnesota Forest Resources Council further supports its sustainable forest management.

As directed by state law, the Minnesota Forest Resources Council oversaw development of site-level timber harvesting guidelines that consider the economic, social, and ecological values of forest resources and support sustainability.

DNR has committed to following these guidelines. The guidelines include, for example, the amount of live trees to leave in a harvest area to provide habitat and food for wildlife and a seed source for reforestation. Guidelines also address minimizing the impact of harvests on resources such as soil and water quality.

Some recent statements of forest management policy and their implementation have emphasized economic uses of forest resources.

In 2012, DNR reiterated its responsibility to manage school trust land to maximize economic returns over time. School trust land is land granted by the federal government to the state for the benefit of schools. As trustee, the state must manage the land in the interests of current and future trust beneficiaries.

Depending on how DNR implements changes to school trust land management, other forest land could be affected. However, maximizing

economic return is not necessarily the primary goal for these other lands.

DNR has also reconsidered some of its policies related to harvest age, with the consequence that forests may be available for harvest earlier than they otherwise would have been. For example, the department rescinded its policy on extended-rotation forests—forests for which the time between harvests has been prolonged. DNR also has decided to harvest planted red pine on school trust land when it is 60 to 70 years old—its “economic rotation age”—rather than the average normal rotation age of 112 years reflected in forest management plans.

DNR implemented the change to the extended-rotation forest policy with an emphasis on offering timber for sale quickly. DNR is considering whether to apply the economic rotation age policy to planted red pine on non-school-trust land.

The Forestry Division relies on timber harvest as its main forest management tool.

The Forestry Division has 17 area offices throughout northern and southeastern Minnesota. Area foresters begin the timber sale process with a list of stands derived from subsection forest resource management plans. The division directs foresters to consider the plans' goals and Minnesota Forest Resource Council guidelines when designing sales. Staff from the Fish and Wildlife Division and the Ecological and Water Resources Division may review the harvest and regeneration plans designed by foresters.

For the majority of timber sales, foresters appraise the timber and offer it for sale in oral or sealed-bid auctions. Foresters issue permits to

successful bidders. Regular permits typically last three years.

According to some Forestry staff, underperforming loggers create inefficiency, and penalty options are insufficient.

Forestry Division staff indicated that the vast majority of loggers who operate on state forest land comply with guidelines and timber sale specifications and leave the harvest site in good condition. However, several staff indicated that the small number of loggers who do not operate to these standards require significantly more supervision and guidance than others.

Currently, the division may charge loggers for liquidated damages if they breach permit terms. For example, the division may bill a logger who damages trees that were reserved from harvest. However, the division cannot prevent the logger from bidding or operating on future sales, no matter how regularly the logger commits violations of this kind. Representatives from the Forestry Division and a contract-loggers association indicated willingness to work together to establish criteria for identifying and penalizing loggers who habitually violate permit terms.

According to staff, portions of the Forestry Division's forest management database do not support efficient operations or provide needed monitoring data.

The Forestry Division's database has modules for (1) recording timber sales, (2) maintaining an inventory of state forest land, and (3) planning and documenting timber stand and forest road activities. Forestry staff were fairly positive in their assessment of the timber sales module.

However, some Forestry staff indicated that incorrect and outdated inventory data can contribute to planning difficulties and timber sales inefficiencies. For example, a plan may identify a stand to harvest to help achieve plan goals. But an on-site visit by a forester to design a timber sale may reveal that the stand is not ready for harvest.

The module for planning and documenting timber stand activities requires duplicative data entry, according to some staff, and does not generate reports needed to monitor progress toward plan goals.

The Forestry Division is working on updating inventory records and has developed an approach to minimize duplicative data entry and improve monitoring capabilities.

Fiscal year 2014 direct appropriations to the Forestry Division were lower than 2008 appropriations.

Fiscal year 2008 appropriations to the Forestry Division totaled \$43.2 million. Appropriations, excluding those for land and easement acquisitions, declined steadily between 2008 and 2012, to \$34.4 million. Appropriations for fiscal year 2014 increased to \$36.8 million, but remain below the 2008 level.

The Forest Management Investment Account, which includes timber sales and related revenues, is a primary source of division funding, but its balance has been declining. The account's ending balance in fiscal year 2007 was over \$9 million, compared with \$1.4 million in 2013.

Introduction

The Forestry Division in the Department of Natural Resources (DNR) is responsible for managing the state's wildfire operations, working with private and other public forest landowners, and managing much of the state-owned forest land. The 4.2 million acres of land that the division manages includes a mixture of forest types (aspen and pine in the north; valuable hardwoods, such as oak, in the southeast; and various other species throughout the state) and nonforest land, such as brush lands and wetlands.

In April 2013, the Legislative Audit Commission directed the Office of the Legislative Auditor to evaluate DNR forest management. We started the evaluation in November 2013, and narrowed its scope to focus on the Forestry Division's management of state-owned forest land. We asked the following questions:

- **How is the Forestry Division organized and funded? Do funding sources reflect the diverse interests for which the division manages forest land? To what extent do timber sales finance Forestry Division activities?**
- **How have planning, certification, and other strategies contributed to the division's ability to sell timber while managing for multiple uses and sustained yield? What have been the effects of these strategies?**
- **What is the state's timber sales process? How do the division's timber revenues and expenditures compare with those of other forest landowners in Minnesota?**

To answer these questions, we read state statutes, the Forestry Division's timber sales manual, DNR certification reports and planning documents, and various department policies and publications. We also analyzed data on appropriations and spending over the past several years, and collected information from St. Louis County on its forest management work. Beyond that, a great deal of our effort was spent interviewing DNR natural resource professionals. We interviewed Central Office and regional representatives of the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources. We also spoke with foresters in 7 of the Forestry Division's 17 area offices. Finally, we interviewed representatives of two forest industry groups and two environmental organizations.¹

While this evaluation focuses on the Forestry Division's management of state-owned forest land, we did not evaluate all of the division's practices. For example, we did not review individual timber sales to weigh in on how well they were designed and executed. Nor did we evaluate decisions about which areas of forest to harvest and which to let stand. Rather, we reviewed the processes in

¹ We contacted two organizations that represent hunting interests but were unable to complete interviews with them.

place that guide those decisions. Finally, we did not evaluate the degree to which DNR is fulfilling its fiduciary responsibility with regard to school trust land; that would require a separate evaluation.

Chapter 1 includes background information about forest land in Minnesota, forest management activities, and state policy for managing DNR-administered forest land. In Chapter 2, we describe the Forestry Division's responsibilities, funding, and expenditures. Chapter 3 describes the framework within which timber is harvested on state-owned land. This framework includes forest management plans, third-party certification, and best-practice guidelines. Chapter 4 focuses on some recent forest management policy issues addressed by DNR. Finally, in Chapter 5, we describe the division's timber sales process and provide information about recent activity.

Chapter 1: Background

Minnesota contains over 17 million acres of forest land. In this chapter, we present information about forest land in the state and explain what forest management entails. We also discuss state policy for management of forest land under the Department of Natural Resources' (DNR's) jurisdiction. We describe the priorities of different DNR divisions for the forest land they administer. Finally, we explain the different "statuses" of state-owned land and how they affect forest management.

FOREST LAND

Ownership of Minnesota's 17.4 million acres of forest land is mixed.¹ Approximately 45 percent of the state's forest land is owned by private individuals, businesses such as forest-products companies, or tribal governments. Almost one-quarter of forest land is owned and administered by the state. The federal government owns approximately 2.9 million acres of forest land in the state, while counties and other local governments administer the remaining forest land.²

Minnesota's forests include an array of forest resources, including a variety of tree species that provide many products and benefits. The most common tree species in Minnesota is the quaking aspen. Exhibit 1.1 shows that aspen can be used to make paper, plywood, matches, and other consumer products. It also provides habitat for ruffed grouse, white-tailed deer, and other animals. Other tree species have different uses and provide habitat to other fauna. For example, black spruce can be used as pulpwood, and tamarack provides habitat for the great gray owl.

FOREST MANAGEMENT

Forest management includes activities undertaken to affect the health and growth of forests in pursuit of a desired outcome. Forest management activities can be complementary: contributing to the economy, creating habitat for wildlife species, promoting diverse plant and animal life, lessening fire risk, and promoting forest health. For example, an aspen timber harvest provides income for landowners, employment for loggers, and raw material for pulp and paper mills or other forest-product businesses. The harvested area will soon be covered with young aspen, providing habitat for ruffed grouse and golden-winged warblers. In an aspen-dominated part of the state, the area might be replanted with jack pine to increase forest diversity. The removal of trees that are dead or dying can reduce fire risk and threats to forest health.

¹ The United States Forest Service (USFS) estimates total forest land in the state and acreage by ownership. USFS defines forest land based in part on the amount of trees on the land.

² County-administered forest land includes tax-forfeited land that is owned by the state.

Exhibit 1.1: Tree Species, Products, and Other Benefits

Tree Species	Products	Other Benefits
Aspen	Paper, particleboard, lumber, studs, veneer, ^a plywood, shingles, matches, novelty items, biomass fuel, and animal feed	Habitat for ruffed grouse, woodcock, snowshoe hare, beaver, porcupine, white-tailed deer, moose, and black bear
Black Ash	Lumber, veneer, fuelwood, and baskets	Seeds are an important food to game birds, songbirds, and small animals; twigs and leaves provide food for deer and moose
Black Spruce	Pulpwood	Habitat for spruce grouse and songbirds
Jack Pine	Pulpwood, poles, and small sawlogs ^b	Habitat for wildlife, including snowshoe hare and Kirtland's warbler ^c
Red (Norway) Pine	Lumber, pulpwood, piling, poles, cabin logs, railway ties, posts, mine timbers, box boards, and fuel	Nesting sites for bald eagles and songbirds
Northern White Cedar	Rustic fencing and posts, cabin logs, lumber, poles, shingles, paneling, piling, novelties, and woodenware	Cedar leaf oil is distilled for medicines and perfumes, boughs are used in floral arrangements; habitat for white-tailed deer, snowshoe hare, porcupine, red squirrel, and songbirds
Tamarack	Pulp, poles, and lumber	Habitat for red squirrel, snowshoe hare, porcupine, and songbirds; habitat for the great gray owl and its small mammal prey

^a Veneer is thin sheets of wood usually less than one-quarter inch thick.

^b Sawlogs are at least 10 to 12 inches in diameter, 8 feet long, and solid.

^c Kirtland's warbler is an endangered bird species.

SOURCE: Melvin J. Baughman, Charles R. Blinn, John G. DuPlissis, and Eli Sagor, eds., *Woodland Stewardship: A Practical Guide for Midwestern Landowners*, 2nd Edition (St. Paul: University of Minnesota Extension, 2009), 55-90.

Forest management activities can be controversial. Activities undertaken to meet one objective might adversely affect others. For example, while providing a logger with employment, a timber harvest might leave an unattractive gap in a forested area, interfere with a recreational trail, destroy a nesting area, or damage soil and water quality. Forgoing harvest might result in lost jobs or increased fire risk. As another example, allowing an aspen stand to regenerate to aspen might provide habitat for white-tailed deer while the trees are young, and raw material to a mill when the trees are harvested. However, it might also contribute to a lack of biodiversity.

Forest management activities may be planned years in advance of their execution. For example, a forester might plan for an area to be regenerated with black spruce and checked after several years have passed. Other activities may be emergency responses to immediate needs. For example, two wind storms in July 2011 damaged almost 100,000 acres of state-owned forest land. The Forestry Division responded to salvage what value it could from the damaged trees, limit fire and insect risk, and begin the process of restoring the forest.

DNR FOREST MANAGEMENT

DNR's management of state-owned forest land is guided in part by two state policies in Minnesota statutes. In addition, management of DNR-administered forest land is affected by (1) the division that is responsible for administering the land and (2) the land status. We discuss state policies, administration, and land status in the following sections.

Statutory Forest Management Policies

The state's Sustainable Forest Resources Act defines a policy for all forest land in the state. The policy supports forest management "to achieve the state's economic, environmental, and social goals," now and in the future.³ In addition, the Legislature has specified a "forest resource management policy" for state forest land administered by DNR. Specifically, state law directs DNR to manage those lands according to the forest management principles of multiple use and sustained yield.⁴ These principles, as defined in statutes and shown in Exhibit 1.2, require the department to manage forest resources to meet various forest-related needs of the current generation without jeopardizing the ability of future generations to do the same.⁵

Exhibit 1.2: Forest Management Principles, *Minnesota Statutes 2013, Chapter 89*

Multiple use	Forest resources are utilized in the combinations that will best meet the needs of the people of the state; including the harmonious and coordinated management of the forest resources, each with the other, without impairment of the productivity of the land and with consideration of the relative values of the resources, and not necessarily the combination of uses resulting in the greatest economic return or unit output
Sustained yield	The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of forest resources without impairment of the productivity of the land; allowing for periods of intensification of management to enhance the current or anticipated output of one or more of the resources

SOURCE: *Minnesota Statutes 2013*, 89.001, subds. 9 and 10.

³ *Minnesota Statutes 2013*, 89A.02, (1).

⁴ *Minnesota Statutes 2013*, 89.002, subd. 1.

⁵ Land acquired for specific purposes or that is part of specific units within the state's outdoor recreation system are not covered by this policy. These units include: state parks, state trails, state wildlife management areas, state scientific and natural areas, state water access sites, state historic sites, state rest areas, and state wilderness areas.

Forest resources listed in statutes and Exhibit 1.3 reflect multiple uses. For example, resources include timber, game species, rare wildlife species like the red-shouldered hawk, and water quality. The multiple uses encompassed by these resources include economic development, recreation, and environmental protection.

Exhibit 1.3: Forest Resources, *Minnesota Statutes* 2013, Chapter 89

Forest resources are natural assets of forest lands, including:

- Timber and other forest crops
- Biological diversity
- Recreation
- Fish and wildlife habitat
- Wilderness
- Rare and distinctive flora and fauna
- Air
- Water
- Soil
- Climate
- Educational, aesthetic, and historic values

SOURCE: *Minnesota Statutes* 2013, 89.001, subd. 8.

Economic Development

Timber sales from state-owned land help businesses that rely upon forest products. Particularly as timber prices fall and private forest landowners sell less timber, industry relies upon the state to offer a constant timber supply. In northern Minnesota, which is more heavily forested than the rest of the state, forest-related activities are an important part of the economy.

DNR and the forest industry have a symbiotic relationship. Offering timber for sale helps the state by maintaining a logging infrastructure and demand for forest products in the state. The state relies upon both to accomplish forest management activities that produce benefits beyond economic development. According to the Division of Fish and Wildlife's *Forest Wildlife Habitat Management Guidelines*, "Managing wildlife habitat via commercial logging is the most economical and efficient method, and affects the greatest amount of habitat on an annual basis."⁶

Recreation

Forest management activities can provide benefits to recreationalists. State forests provide habitat for game and nongame species. They also contain plant communities and scenic areas. Hunters, bird watchers, hikers, and others benefit from recreational opportunities provided by well-managed and accessible forests.

⁶ Minnesota Department of Natural Resources, Division of Fish and Wildlife, *Forest Wildlife Habitat Management Guidelines* (St. Paul, 2012), 10.

Environmental Benefits

As specified in the state’s forest management policy, forest resources include air, water, biodiversity, and climate. As with other forest resources, DNR must manage these environmental forest resources to accommodate multiple uses for current and future generations.

DNR Administrative Divisions

Responsibility for managing DNR-administered land is divided among divisions. The division that is responsible for managing forest land can affect forest management decisions. According to DNR, the Forestry Division is responsible for managing 4.2 million acres of land. The division is directed to manage state-owned forest land according to forestry principles of multiple use and sustained yield. These principles, and strategies employed by the division to meet the principles, are discussed throughout the report. As just described, the principles require the division to manage the forests with a long-term view and with regard to numerous forest resources—including timber, wildlife habitat, and aesthetic values.

Other DNR divisions manage forest land under their jurisdiction with priority given to certain forest resources. For example, among other things, the Division of Fish and Wildlife manages the state’s wildlife management areas. According to statutes, wildlife management areas are to be administered “to perpetuate, and if necessary, reestablish quality wildlife habitat for maximum production of a variety of wildlife species.”⁷ Management of forest land in wildlife management areas is done with these priorities in mind.

Land Status

The lands the Forestry Division manages have different “statuses,” as listed in Exhibit 1.4. The status reflects the state’s ownership or management interest in the land. For example, school trust land is land that the federal government granted to the state to support schools.

The Forestry Division has tended to manage all land under its jurisdiction without regard to status. According to the division, managing land without regard to status contributes to forest management efficiencies. However, as we discuss in Chapter 4, renewed emphasis on maximizing revenue from school trust land has made the status of land relevant to forest management decisions. Land status also affects the percentage of timber sales revenue that is available to fund Forestry Division activities.

In the following sections we provide information about the three land statuses that together account for over 99 percent of Forestry Division-administered land: school trust land, consolidated conservation land, and acquired land.

⁷ *Minnesota Statutes* 2013, 86A.05, subd. 8 (c).

Exhibit 1.4: Forestry Division Acres by Land Status, September 2013

Land Status	Acreage	Percentage ^a
School Trust Land ^b	2,474,804	58.5%
Consolidated Conservation ^c	1,239,793	29.3
Acquired	489,197	11.6
Volstead ^d	29,702	0.7
Total	4,233,496	

^a Percentages do not total 100 due to rounding.

^b Trust land was granted to the state by the federal government. Most of this acreage is school trust land managed for the support of schools. Approximately 26,000 acres are university trust land.

^c Consolidated conservation land is land the state acquired after assuming responsibility for bonds issued by counties to finance drainage ditches.

^d The federal Volstead Act of 1908 permitted states to issue liens against swampland to finance drainage ditches. Under a 1958 federal law, title to that land was transferred to the state.

SOURCES: Clarence Turner, Minnesota Department of Natural Resources, Division of Land and Minerals database query results (St. Paul, July 15, 2014); and Samuel Trask Dana, John Allison, and Russell Cunningham, *Minnesota Lands: Ownership, Use, and Management of Forests and Related Lands* (Washington, DC, 1960).

School Trust Land

At nearly 2.5 million acres, school trust land makes up the majority of Forestry Division-administered land, as shown in Exhibit 1.4. When Minnesota became a state, the federal government granted two sections of every township to the state to generate revenue for public schools.⁸ Over time, the state sold many sections of school trust land to generate money for the trust. However, many areas, particularly in the northeast, still contain significant acreages of school trust land.

DNR is required to manage school trust land to maximize long-term economic return, while continuing to follow sound natural resource conservation and management principles.⁹ One source of revenue from school trust land is timber sales. Gross revenue generated from school trust land is deposited in an account, from which DNR's costs for management activities on the land are reimbursed.

Consolidated Conservation Land

The Forestry Division also manages over 1.2 million acres of consolidated conservation land. Consolidated conservation land, or "con-con" land, is held in trust by the state specifically for conservation purposes. In the late 1920s and early 1930s, the state acquired title to this land in return for assuming certain county debts. Several counties in northern Minnesota had issued bonds to finance drainage projects to make the land fit for agricultural purposes. However, much of the land was not suitable for agricultural use. This fact, as

⁸ A section is one square mile. A township comprises 36 sections.

⁹ *Minnesota Statutes* 2013, 84.027, subd. 18(a)(4).

well as the Great Depression, put the counties at risk of defaulting on the bonds. The state paid the bonds in exchange for ownership of the land. Statutes require the state to pay 50 percent of all timber sales revenue from con-con land to the county in which the timber sale occurred, regardless of the costs incurred managing the land.¹⁰ The remaining 50 percent of timber sales revenue helps fund Forestry Division forest management activities.

Acquired Land

DNR may purchase land to provide additional recreational or environmental opportunities for the public or to increase management efficiencies through land consolidation. The Forestry Division manages approximately 490,000 acres of acquired land. Land acquisition occurred through purchase, county board action, condemnation, or gifts. One-hundred percent of timber revenues from acquired forest land helps fund forest management activities.

¹⁰ *Minnesota Statutes* 2013, 84A.51, subd. 3.

Chapter 2: Forestry Division

The Forestry Division in the Department of Natural Resources (DNR) administers 4.2 million acres of land. The division also assists other DNR divisions with managing timber sales on lands they administer. For example, the division has worked with the Parks and Trails Division to manage pine trees in Itasca State Park, and it is working with the Fish and Wildlife Division to harvest aspen in a wildlife management area in northwest Minnesota.

In this chapter, we describe the Forestry Division's organizational sections and their different sets of responsibility. Then, we explain how the division is structured hierarchically and geographically. We review the division's funding and spending over the past several years and recommend that the Legislature reassess its approach to funding forest management activities. We conclude with a discussion of resource-related challenges for the division.

DIVISION SECTIONS

The Forestry Division has four sections, as shown in Exhibit 2.1. Each section administers several programs with a range of responsibilities. While many of the division's activities are directed at managing state-administered forest lands, others are focused on improving and assisting management activities on other public and private forest land. Below, we describe activities in each of the Forestry Division sections.

Outreach and Strategic Planning

As shown in Exhibit 2.1, the Outreach and Strategic Planning section is responsible for working with private landowners and local communities, among other things. For example, the urban and community forestry program works with external partners to help local programs build the capacity to improve the protection and management of community forests. Section staff also work with private forest landowners to educate them on the benefits of sound forest management practices and provide forest management planning services.

The Outreach and Strategic Planning section is also responsible for the Forestry Division's strategic planning efforts and working with independent, third-party forest certification organizations. Among other plans, strategic planning efforts result in ten-year subsection forest resource management plans. Subsection forest resource management plans contain suggested management direction to help achieve desired future conditions of DNR-administered forest land.¹

The section also includes programs for forest easements and information systems. For example, this section administers the Minnesota Forests for the

¹ We discuss subsection forest resource management plans and third-party certification in Chapter 3.

Future and Forest Legacy programs, which identify and acquire easements on private, working forest land. Easements help to protect private forest lands for their valuable recreation space, wildlife habitat, rare or endangered species, and timber.

Exhibit 2.1: Forestry Division Sections and Programs

Outreach and Strategic Planning

Forestry Outreach and Education	Educate the public on the benefits of forests and other natural resources
Private Forest Management	Encourage private forest landowners to manage their land sustainably
Forest Recreation	Support forest-related outdoor recreation opportunities
Site-Level Guideline Monitoring	Monitor use of timber harvest and forest management guidelines across all forest land ownerships in Minnesota
Urban and Community Forestry	Work with external partners to improve the management of community forests
Forest Policy and Planning	Coordinate Forestry Division policy and planning efforts, and foster continual improvement of division and department policies; provide support in pursuing Forestry Division legislative priorities
Minnesota Forests for the Future and Forest Legacy Program	Protect private forests through acquisitions or conservation easements
Forestry Information Systems	Develop and maintain Forestry Division information systems for timber sales, silviculture, and inventory ^a

Forest Protection and Health

Wildfire Operations and Fire Management	Prevent and suppress wildfires on all public and private land in Minnesota
Invasive Species	Protect Minnesota's forest resources from land-based invasive species
Forest Health	Reduce impacts of forest insects, diseases, or other nonliving factors on all nonfederal forest land in Minnesota
State Forest Nursery	Provide a source of seeds and seedlings for state, county, federal, and private plantings

Business and Administration

Forest Resource Assessment	Maintain inventory of all the Department of Natural Resources' forest lands, as well as inventory of other public and private forest land in Minnesota; survey the state's wetlands and other natural resources
Financial Management and Human Resources	Manage the division's budget and provide financial oversight; provide direction for human resources across the division

Forest Operations and Management

Timber Sales	Facilitate the sale of the Department of Natural Resources' forest products for industrial and personal use
Utilization and Marketing	Provide information and assistance to public and private interests in the forest products industry
Silviculture ^a	Keep the state's forests healthy and productive by implementing silvicultural forest management prescriptions
Forestry Lands	Increase the efficiency of managing Forestry Division lands and provide access through strategic land acquisitions and exchanges
Tree Improvement	Improve the genetic and biologic quality of tree seed
Ecological Classification System	Develop ecological classifications and train Forestry Division staff in using the classification system in forest management decisions
Forest Roads	Ensure access to the state's forest road system through construction and regular maintenance activities

^a Silviculture is the science and practice of establishing, growing, and tending stands of trees.

Forest Protection and Health

The Forest Protection and Health section includes fire-related activities, work on forest health and invasive species, and the state forest nursery. Fire management and operations activities protect all Minnesotans from wildfires, whether the fires are on public or private land. The division's fire management efforts also include assistance to rural fire department programs in the form of equipment and training.

This section also includes the state's nursery, which produces and sells seedlings for public and private forest landowners. In addition, natural resource managers in this section work to protect the state's forests from invasive species, as well as native insects or disease. For example, staff developed the "PlayCleanGo" marketing campaign to educate the public about preventing the spread of land-based invasive species like the emerald ash borer.

Business and Administration

The Business and Administration section includes forest resources assessment, as well as human resources and financial services. The resource assessment program is responsible for maintaining an inventory of DNR-administered forest land, as well as some other public and private forest land in Minnesota. This program's work consists of both on-the-ground surveying and aerial photography. Overall, resource assessment oversees approximately 100,000 acres of inventory work each year, completed by both contractors and division staff. In addition, section staff oversee billing for the timber sales program and provide guidance on hiring decisions.

Forest Operations and Management

The Forest Operations and Management section conducts work related to timber sales, silviculture, and forest roads, among other things.² As we discuss in Chapter 5, timber sales are the main forest management tool the Forestry Division employs. This section is also responsible for regenerating tree stands after harvest through planting, seeding, or natural regeneration.³ For example, the silviculture program planted and seeded approximately 8,000 acres of forest land in fiscal year 2013. This section is also responsible for maintaining the state's forest road system through activities such as laying new gravel and repairing bridges and culverts.

DIVISION ADMINISTRATIVE STRUCTURE

The Forestry Division has three administrative levels: a Central Office, regional offices, and area offices. Exhibit 2.2 shows this structure. The Central Office,

² Silviculture is the science and practice of establishing, growing, and tending stands of trees.

³ A tree stand is a group of trees with common factors such as species composition, age, and condition.

located in St. Paul, establishes division policy and works to maintain consistent policies across regions and areas. It also works on division-wide issues and priorities. For example, program staff in the Central Office facilitate forest resource planning and third-party certification. Central Office staff interact with the Legislature by seeking funding or changes to statutes and responding to requests for information. Finally, Central Office staff provide administrative and program support to Forestry region and area staff. For example, Central Office staff manage the finances of timber sales and are a final point of contact for questions that rise from the area or region offices.

Exhibit 2.2: Forestry Division Organization

Central Office St. Paul		
Forestry Regions		
Region 1 Northwest-Bemidji	Region 2 Northeast-Grand Rapids	Region 3 Central-St. Paul
Forestry Area Offices		
Bemidji Blackduck Warroad Baudette Backus Park Rapids	Deer River Aitkin Hibbing Tower Cloquet Two Harbors Littlefork	Little Falls Lewiston Sandstone Cambridge

NOTE: The Forestry Division intends to consolidate the Sandstone and Cambridge area offices, as well as the Blackduck and Bemidji offices.

SOURCE: Minnesota Department of Natural Resources, Forestry Division.

Region and area offices represent the Forestry Division throughout the state. Region offices are located in Bemidji (the Northwest Region Office), Grand Rapids (the Northeast Region Office), and St. Paul (the Central Region Office).⁴ Region staff provide guidance on policies and regulations to the areas. Region offices also provide administrative support to area offices and review timber sales before they are auctioned. Finally, the region offices are the first stop for issues that areas are unable to resolve. For example, if area foresters and staff from other DNR divisions are unable to agree on a harvest plan for a stand of trees, area staff can send the issue to region division managers for consideration.

The 17 Forestry area offices implement policy and manage programs “on the ground.” Among other things, area foresters design and supervise timber harvests, work with private forest landowners, and maintain forest roads. Area offices coordinate the department’s forest-related interdisciplinary activities and work with local governments and the public in their area. Area staff may participate in policy setting, provide feedback on how programs are working in

⁴ See Appendix A for a map of the Forestry Division’s regions and areas. Appendix B includes descriptive information about each Forestry area office.

the field, respond to requests for information from the Central Office or legislators, and keep the region and central offices informed of local issues that might be elevated beyond the local level.

FINANCES

In this section, we discuss issues related to the Forestry Division's finances. We describe funding sources and analyze appropriation levels over the past several years. We also explore some changes to agency accounting practices that have affected the division's funding, before presenting information about expenditures.

Appropriations

The Legislature appropriates money to the Forestry Division from several revenue sources, as described in Exhibit 2.3. The range of sources that fund the Forestry Division's activities reflects the diverse interests for which the division

Exhibit 2.3: Sources of State Funding for Appropriations to the Forestry Division

General Fund	Receives most of the revenue from major state taxes, such as the individual income tax, corporate tax, and sales tax. Most of the money in the General Fund is not earmarked for specific uses.
Natural Resources Fund	Receives fees and receipts from services associated with natural resource management. Some accounts related to forestry include: Land Acquisition Account, Forest Management Investment Account, and the Natural Resources Miscellaneous Account, which includes dedicated receipts such as those related to burning permits and permits to harvest forest boughs.
Forest Management Investment Account	Receives revenue from timber sales, certified costs from forest management of school trust land, costs recovered from forest management services on land administered by other Department of Natural Resources divisions and other departments, up to half the timber revenue generated from consolidated conservation lands, and other miscellaneous sources.
Special Revenue Fund	Forest-related revenues include fees collected for services to private landowners, income from forest nursery sales, and a portion of taxes collected on gasoline and special fuels (in recognition of vehicle use of state forest roads).
Game and Fish Fund	Receives revenue from hunting and fishing licenses, a portion of the in-lieu-of sales tax on lottery tickets, and other sources.
Heritage Enhancement Account	Includes a portion of in-lieu-of sales tax on lottery tickets.
Environmental and Natural Resources Trust Fund	Receives at least 40 percent of the state-operated lottery net proceeds.
Sales tax dedicated funds: Outdoor Heritage, Clean Water, Parks and Trails, and Arts and Cultural Heritage	Receive constitutionally dedicated receipts from a 3/8 of 1 percent sales tax. Of the four constitutionally created funds, the Forestry Division has received funding from the Outdoor Heritage Fund and Clean Water Fund.
Bond Proceeds Fund	Includes proceeds from the sale of state general obligation bonds.

NOTES: The exhibit includes descriptions of accounts that are most relevant to Forestry Division funding. Federal funds also support Forestry Division activities.

SOURCE: Office of the Legislative Auditor, review of session laws, Minnesota Department of Natural Resources reports, and Minnesota statutes.

manages forest resources. For example, appropriations from the General Fund, which includes most major tax revenues, reflect the benefits that all Minnesota citizens derive from forest resources that are managed sustainably to meet multiple societal demands. Similarly, long-term investments in forest resources from general obligation bond proceeds reflect wide-ranging benefits.⁵

The Forest Management Investment Account in the Natural Resources Fund reflects the economic interests that benefit most directly from management for timber. Created by the Legislature in 2004, the Forest Management Investment Account receives revenue from timber sales, reimbursements for forest management services on certain state-owned land, and other miscellaneous revenue.

Appropriations to the Forestry Division from the Game and Fish Fund (specifically, the Heritage Enhancement Account) have allowed the division to continue field surveys and other tasks instrumental to classifying state-administered forest land based on the ecological classification system. The system allows for more ecology-based forest management decisions that potentially benefit game and nongame species.

Direct appropriations to the Forestry Division totaled over \$73.6 million for the 2014-2015 biennium, as Exhibit 2.4 shows.⁶ Open and statutory appropriations provided the Forestry Division an estimated \$53.7 million for the biennium.⁷ Forestry Division open appropriations of an estimated \$26 million were primarily for fighting wildfires. Estimated statutory appropriations to the division totaled \$27.6 million for 2014 and 2015. An example of a statutory appropriation is the revenue that is generated by the state forest nursery through the sale of tree planting stock and appropriated by statute to DNR for nursery-related activities.⁸

⁵ The Legislature has appropriated bond proceeds for reforestation, tree stand improvement, maintenance of forest roads and bridges, and acquisition of forest land and easements. State statutes require DNR to maintain forest land under its jurisdiction in appropriate forest cover and to “strive to assure” adequate reforestation of harvested or poorly stocked land. They also require DNR to maintain a system of forest roads and trails. *Minnesota Statutes* 2013, 89.002, subds. 2 and 3.

⁶ A direct appropriation is an authorization to spend a specific amount of money from a specific revenue source for a limited period of time. The Legislature makes direct appropriations in session laws; direct appropriations are not codified in statutes.

⁷ An open appropriation is an authorization to spend an unspecified amount of money to meet a program objective or constitutional requirement. Open appropriations are typically codified in statutes. A statutory appropriation is an ongoing authority for an agency to spend money as it is available from a particular revenue source, typically for a particular purpose. Statutory appropriations are codified in Minnesota statutes.

⁸ *Minnesota Statutes* 2013, 89.37, subd. 4.

Exhibit 2.4: Forestry Division Appropriations by Type, Fiscal Years 2014-2015

	2014 (in thousands)	2015 (in thousands)	Total (in thousands)
Direct appropriations ^a	\$36,830	\$36,780	\$ 73,610
Open appropriations ^b	13,040	13,040	26,080
Statutory appropriations ^c	14,977	12,657	27,634
Total	\$64,847	\$62,477	\$127,324

NOTES: Figures do not reflect direct appropriations to the Minnesota Forest Resources Council or apparent pass-through grants. Figures reflect \$550,000 each year from an appropriation to the Department of Natural Resources from the Clean Water Fund.

^a A direct appropriation is an authorization to spend a specific amount of money from a specific revenue source for a limited period of time. The Legislature makes direct appropriations in session laws; direct appropriations are not codified in statutes.

^b An open appropriation is an authorization to spend an unspecified amount of money to meet a program objective or constitutional requirement. Open appropriations are typically codified in statutes.

^c A statutory appropriation is an ongoing authority for an agency to spend money as it is available from a particular revenue source, typically for a particular purpose. Statutory appropriations are codified in Minnesota statutes.

SOURCE: Office of the Legislative Auditor, review of appropriation laws, Minnesota Department of Natural Resources budget tracking sheets, and Minnesota House of Representatives fiscal staff budget tracking sheets.

The 2014 Legislature appropriated \$2.96 million from the bond proceeds fund for reforestation and tree stand improvement.⁹ Some species, like aspen, regenerate naturally while others, such as jack pine, typically require investment for seeding or planting. General obligation bond proceeds help fund these activities.

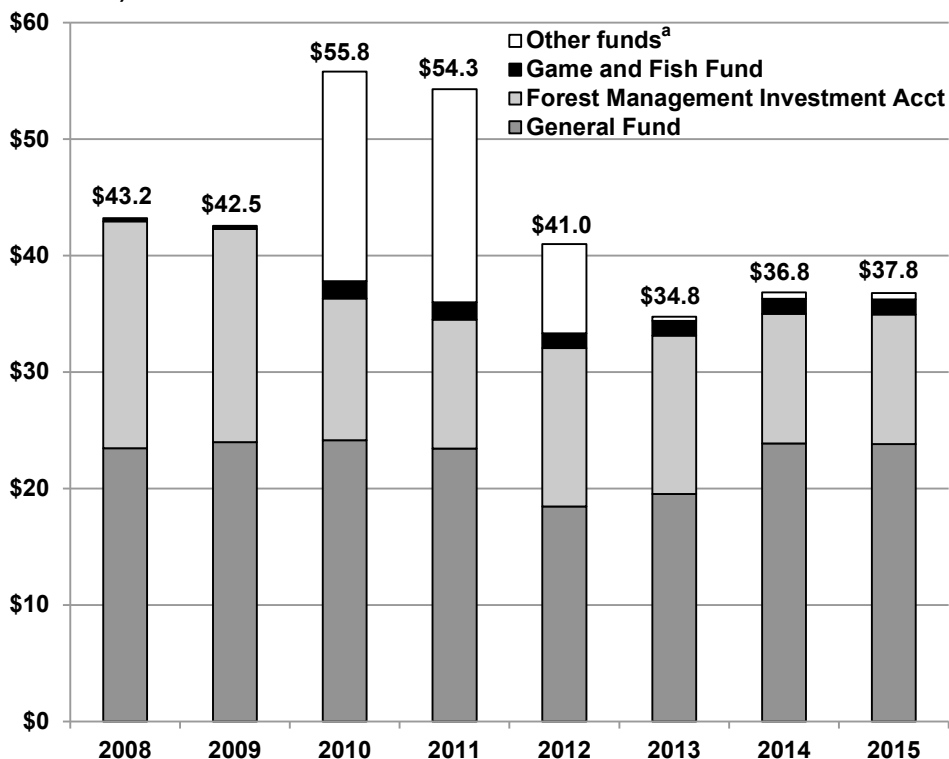
Direct appropriations to the Forestry Division, excluding those for acquisition of land and easements, dropped steadily between 2008 and 2012 and remain below their 2008 level.

Exhibit 2.5 shows that, between 2008 and 2015, direct appropriations to the Forestry Division ranged from \$55.8 million in fiscal year 2010 to \$34.8 million in fiscal year 2013. However, 2010 through 2012 included sizable direct appropriations for acquisition of forest land and easements. Absent these appropriations, which comprise the majority of the white portions of the bars in Exhibit 2.5 for those years, direct appropriations to the division declined from \$43.2 million in 2008 to \$33.7 million in 2012.

⁹ *Laws of Minnesota* 2014, chapter 294, art. 1, sec. 7, subd. 9. This amount is less than half of the agency's request. Reforestation and tree stand improvement activities include, for example, site preparation, purchasing and planting seeds or seedlings, and removing vegetation that is competing with desired trees.

Exhibit 2.5: Direct Appropriations by Fund, Forestry Division, Fiscal Years 2008-2015

Appropriations
(in millions)



NOTES: Appropriations reflect session laws, including supplemental appropriations and reductions. The 2012 through 2015 appropriations include portions of appropriations each year to the Department of Natural Resources from the Clean Water Fund. Appropriations do not reflect: (1) appropriations for the Minnesota Forest Resources Council or (2) apparent grants to other entities through the Minnesota Department of Natural Resources.

^a Other funds include Legacy Funds and the Environment and Natural Resources Trust Fund.

SOURCE: Office of the Legislative Auditor, review of appropriation laws, Minnesota Department of Natural Resources budget tracking sheets, and House Fiscal staff budget tracking sheets.

Direct appropriations to the Forestry Division (excluding those for acquisitions) increased between 2012 and 2015, but they remained below their 2008 level. The 2012 Legislature made an additional \$1.075 million General Fund appropriation to the division due to two wind storms in 2011. The wind storms damaged over 97,000 acres of state-owned forest land in the Sandstone Area. The storms necessitated field work above planned levels to clear the damaged timber in the area. Left untreated, the damaged trees could have been susceptible to insects and fire and prevented new trees from growing. The damaged timber also meant a decrease in timber revenues, which contribute to the Forest Management Investment Account, and an increase in unplanned regeneration costs.

Unrelated to the wind event, the Legislature increased General Fund direct appropriations to the Forestry Division to \$47.7 million for the 2014-2015 biennium, compared with almost \$38 million the previous biennium. As Exhibit 2.5 shows, the General Fund is and has been the single largest source of appropriations to the Forestry Division.

Typically, the Forest Management Investment Account is the second largest source of Forestry Division appropriations. When the Legislature increased the General Fund appropriation to the division, it decreased the biennial appropriation from the Forest Management Investment Account from \$27.2 million for fiscal years 2012-2013 to \$22.2 million for fiscal years 2014-2015.

The Forest Management Investment Account balance has declined since the Legislature created the account in 2004.

Being dependent, in part, on timber sales revenue, the Forest Management Investment Account is vulnerable to fluctuations in timber sales and prices. As we show in Chapter 5, gross receipts from timber sales dropped by more than a third between fiscal years 2008 and 2013, from \$25.3 million to \$15.9 million. The account's ending balance in fiscal year 2007 was over \$9 million, compared with just under \$1.4 million in 2013. Between 2007 and 2013, expenditures exceeded revenues in four of the seven years, and the department has projected a negative fund balance in 2015 and beyond. Between the account balance and revenues, the department projected available resources of \$11.7 million for 2014, over \$10 million less than the amount available for fiscal year 2008. DNR cancelled over \$4 million of the fiscal year 2013 appropriation from the account due to an expected fund shortfall.

RECOMMENDATION

The Legislature should reassess its approach to funding the Forestry Division's management of state-owned land.

We make this recommendation because the Forest Management Investment Account, which is a primary source of division funding, is unreliable. In addition, the demand for timber-related forest management activities may be unrelated to the revenues those activities generate. For example, when the private sector restricts the quantity of timber it supplies due to falling timber prices, the division continues to offer a relatively constant amount of new timber from state land each year.

Periodic review of accounts is an effective oversight mechanism to ensure that their continuation is appropriate.¹⁰ An assessment should consider whether the Forest Management Investment Account, as currently designed, continues to be a sound approach to funding forest management activities. If the Legislature were to eliminate the account, all revenues currently deposited in the account could be

¹⁰ Legislative Commission on Planning and Fiscal Policy, "Guidelines for Creating and Evaluating Funds and Accounts," December 2002.

deposited in the General Fund. This option is not unknown in Minnesota; from 1989 through 2004, the state did not have a separate account for forest management activities.¹¹

Agency Accounting Changes

In 2006, DNR began allocating costs of “shared services” among divisions. Shared services include things such as financial management, human resources, information technology, outreach, and communications. Over time, DNR has expanded the categories of services for which it allocates costs to divisions. For example, the department began including “leadership” as a shared service in fiscal year 2012, and “real estate services” in fiscal year 2014. According to DNR staff, sometimes these expansions have been agency initiated, and sometimes they reflect negotiations with the Legislature to accommodate General Fund budget reductions. DNR has allocated appropriations the department received to provide the services to the divisions to help defray the impact on the divisions.

A second change to intradepartmental accounting occurred in fiscal year 2012. That year, the Forestry Division began recouping the cost of providing timber-sales services to other DNR divisions from the revenue generated by the sales. For example, a forester might work with staff from the Fish and Wildlife Division to appraise, mark, sell, and oversee a timber harvest designed to create habitat in a wildlife management area. Foresters used to perform this work as part of their duties without passing the costs onto the other divisions.

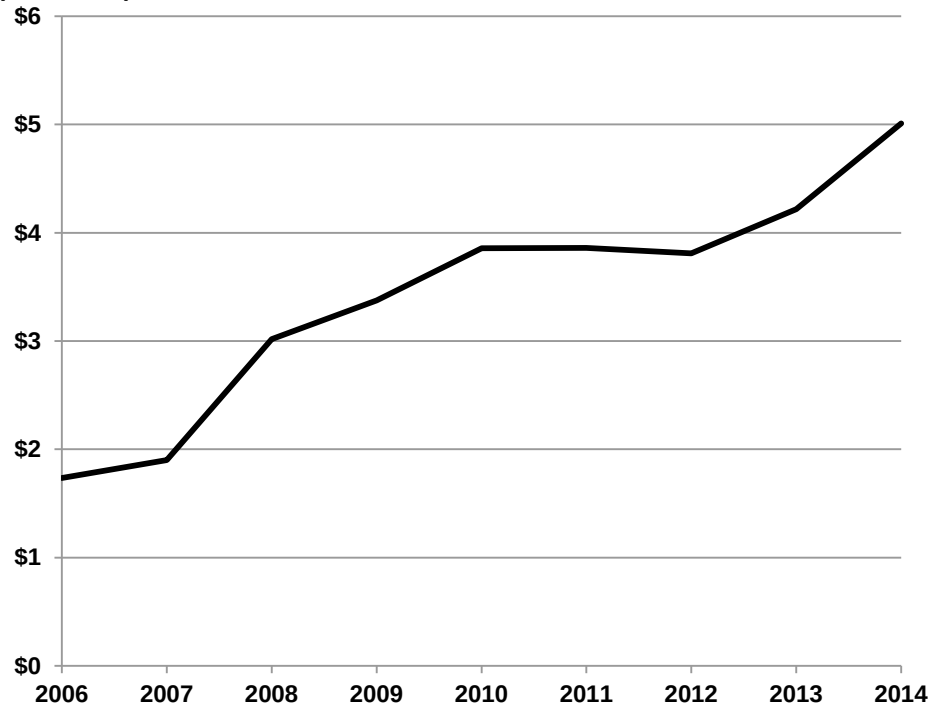
We found that departmental accounting changes have compounded the effects of reduced Forestry Division funding and complicate interdivisional work.

Appropriations to the Forestry Division have been declining at the same time the appropriations are expected to cover a greater range of costs, compounding the effects of a reduced budget. While direct appropriations to the Forestry Division declined between fiscal years 2008 and 2012, Exhibit 2.6 shows that the division’s costs for shared services increased. Department allocations have not covered the Forestry Division’s shared services costs. For example, in fiscal year 2013, DNR allocated a total of \$320,000 of agency appropriations for operational support to the Forestry Division to offset costs associated with leadership services. The division’s costs for these services exceeded \$400,000, and its total shared services costs were over \$4.2 million. According to DNR, it did not receive any appropriations for real estate services for fiscal years 2014 and 2015 that it could allocate to the Forestry Division. Thus, the division’s costs for these new shared services (over \$659,000 in fiscal year 2014) will not be offset by any departmental allocations.

¹¹ In 1982, the Legislature created the Forest Management Fund for receipts from various forest management activities. The fund was to finance reforestation, forest road improvements, equipment and training for fire prevention and suppression, and forest pest prevention and treatment. The 1989 Legislature eliminated the fund as part of an effort to consolidate state funds.

Exhibit 2.6: DNR Shared Services Costs Allocated to the Forestry Division, Fiscal Years 2006-2014

Shared Services Costs
(in millions)



NOTES: In some years, agency shared services costs allocated to the Forestry Division have been partially offset by direct appropriations to the Department of Natural Resources (DNR) for the services. Over time, DNR has added to the services that comprise shared services. As of fiscal year 2014, shared services included Human Resources, Management Resources (including information technology), the Office of Management and Budget Services, the Office of Communications and Outreach, leadership services, and real estate services.

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources data.

The Forestry Division's reduced budget has also affected interdivisional work. Exhibit 2.7 shows that the Forestry Division has recaptured over \$1 million in the two fiscal years since it began recouping costs for forest management services from other divisions. This practice has provided funding to the Forestry Division as its appropriations have declined, but it has other effects, too. First, an area forester and a staff person from the Fish and Wildlife Division indicated the practice introduces accounting complexity to interdivisional work.¹²

¹² We interviewed Central Office and regional representatives of the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources. We also spoke with foresters at 7 of the Forestry Division's 17 area offices. We have indicated the seven offices we visited in Appendix B.

Exhibit 2.7: Forestry Division Costs Recouped from Timber Sales on Land Administered by Other DNR Divisions, Fiscal Years 2012-2013

DNR Division	2012	2013	Total
Fish and Wildlife	\$300,279	\$431,230	\$ 731,509
Parks and Trails	172,089	116,590	288,679
Ecological and Water Resources	3,060	4,887	7,947
Total	\$475,428	\$552,707	\$1,028,135

NOTES: DNR is the Department of Natural Resources. *Minnesota Statutes* 2013, 89.0385, directs the DNR commissioner to transfer revenue derived from forest management activities on non-Forestry Division-administered land to the Forest Management Investment Account. The amount transferred in a fiscal year is limited by the revenues generated from the activities. Activities covered by this statute are those related to "forest management, forest improvement, and road improvement."

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources, Forestry Division data.

Second, the divisions that Forestry staff assist may have been relying upon the revenue from the timber sales to fund projects. The divisions still receive revenue from the sales, but a lesser amount. One staff person from the Fish and Wildlife Division said that, among other things, the division uses revenue from timber sales to develop parking and access for sites the division administers.

Third, this practice may have more subtle consequences for interdisciplinary cohesion. On the one hand, DNR is encouraging an interdisciplinary approach to forest management. For example, the department's primary forest management planning effort requires interdisciplinary cooperation.¹³ On the other hand, billing one division for the expertise of another reinforces that the divisions are separate entities. For example, one area forester commented that other divisions' activities that support sustainable forest management, such as assistance shearing brush on Forestry-administered land, are not charged to the Forestry Division. In another context, a staff person from the Ecological and Water Resources Division commented that the division "subsidizes" DNR forest management when division staff contribute their expertise to forest management activities. Practices that reinforce division distinctions might undermine departmental goals for a unified approach to forest management. They are contrary to the notion of three divisions, each with an area of expertise, contributing to sustainable management of the state's forest resources to meet varied uses.

Expenditures

Forestry Division activities can be grouped by sections and programs. For example, fire suppression activities fall within the fire operations and management programs in the Forest Protection and Health section. As another example, field surveys of stands that have been seeded or planted after a harvest

¹³ We evaluate this planning effort, called subsection forest resource management planning, in Chapter 3.

(called field regeneration surveys), fall within the silviculture program in the Forest Operations and Management section.¹⁴ We provide information on expenditures for all Forestry Division activities below, due to general legislative interest in this information. We then focus on activities within the Forest Operations and Management section and expenditures from the Forest Management Investment Account because timber sales are the focus of much of this evaluation.¹⁵

Exhibit 2.8 shows Forestry Division expenditures from all funding sources for activities by section and program for the 2012-2013 biennium. The wildfire operations and fire management programs (reported as a single line item in the exhibit) accounted for nearly \$62 million of the \$139 million expended during the biennium (45 percent). Taken together, activities in Forest Operations and Management programs accounted for approximately 17 percent of expenditures in the 2012-2013 biennium.

Activities that fall within a particular section organizationally might benefit programs in other sections. For example, subsection forest resource management planning is administered by the forest policy and planning program in the Outreach and Strategic Planning section. This planning is integral to the timber sales program in the Forest Operations and Management section. In addition, almost \$29 million of expenditures in fiscal years 2012 and 2013 were not associated with activities in particular programs. These include, for example, employee leave time, general meetings, and miscellaneous transactions.¹⁶

Forest Operations and Management Section

As discussed earlier, programs in the Forest Operations and Management section are responsible for several activities. These include: timber sale preparation and design, interdisciplinary forest management coordination, timber permit supervision, timber scaling, timber program administration, timber enforcement, reforestation and site preparation, regeneration surveys, timber stand improvement, forest inventory,¹⁷ ecological classification systems, forest roads, lands and leases, and utilization and marketing. Exhibit 2.8 shows that expenditures for activities in these programs reached almost \$24 million in the 2012-2013 biennium.

¹⁴ We listed Forestry Division sections, programs, and examples of activities in Exhibit 2.1.

¹⁵ The timber sales program is in the Forest Operations and Management section of the Forestry Division. Revenues from timber sales contribute to the Forest Management Investment Account, which is to be used for timber sales, among other things.

¹⁶ “Miscellaneous transactions” include, for example, shared services, utility bills, and payroll transactions not recorded under other activity codes.

¹⁷ Inventory-related activities in the Forest Operations and Management section include data collection in the field and data entry. The forest inventory is maintained by the resource assessment program in the Business and Administrative Services section.

Exhibit 2.8: Forestry Division Expenditures by Section and Program Activities, Fiscal Years 2012-2013

	Expenditures	Percentage ^a
Forest Protection and Health	\$ 66,050,203	47.5%
Fire Operations and Management	61,848,094	44.5
State Forest Nursery	2,871,434	2.1
Invasive Species and Forest Health	1,330,675	1.0
Forest Operations and Management	23,956,030	17.2
Timber Sales	10,839,573	7.8
Silviculture	4,856,374	3.5
Forest Roads	3,965,036	2.9
Forestry Lands	2,237,916	1.6
Ecological Land Classification	1,629,099	1.2
Utilization and Marketing	428,033	0.3
Outreach and Strategic Planning	12,019,127	8.7
Forests for the Future and Forest Legacy	5,554,361	4.0
Forest Policy and Planning	1,783,410	1.3
Private Forest Management	1,671,260	1.2
Urban and Community Forestry	1,164,025	0.8
Forestry Information Systems	862,161	0.6
Forestry Outreach and Education	728,503	0.5
Site-level Guideline Monitoring	153,672	0.1
Forest Recreation	101,736	0.1
Business and Administration	7,924,241	5.7
Forest Resource Assessment	4,298,939	3.1
Financial Management and Human Resources	3,625,302	2.6
Expenditures not assigned to programs	28,983,319	20.9
Other ^b	26,846,153	19.3
Division Operations	2,137,166	1.5
Total	\$138,932,920	

^a Program percentages do not total section percentages and section percentages do not total 100 due to rounding.

^b "Other" includes employee leave time off, totaling approximately \$8 million, and miscellaneous transactions not attributed by the division to individual programs.

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources, Forestry Division expenditure data.

Each year since fiscal year 2008, expenditures for forest operations and management activities have declined. As Exhibit 2.9 shows, we estimated 2008 expenditures of at least \$13.8 million for these activities.¹⁸ Fiscal year 2013 expenditures totaled \$11.7 million, over \$2 million less than six years earlier.

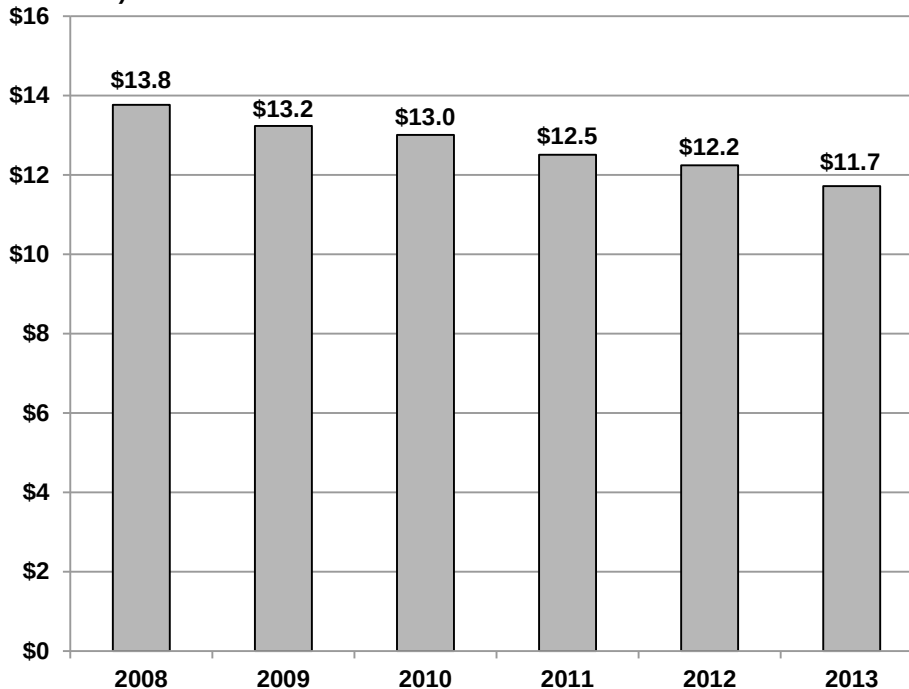
One explanation for reduced spending on forest operations and management activities may be the decline of the Forest Management Investment Account described above. In fiscal years 2012-2013, this account funded almost

¹⁸ We were unable to assign some of each year's expenditures to sections. The amount of unassigned expenditures lessened over time. If some or all of the unassigned expenditures were for forest operations and management activities, their inclusion would alter the magnitude of decline over time, but it would not change the fact of lower expenditures in 2013 than in earlier years.

53 percent of the nearly \$24 million spent on forest operations and management activities. In contrast, the account funded approximately 60 percent of the estimated \$27 million expended on these activities in the 2008-2009 biennium.

Exhibit 2.9: Forest Operations and Management Activity Expenditures, Fiscal Years 2008-2013

Expenditures
(in millions)



NOTES: "Forest operations and management" activities include timber sale preparation and design; interdisciplinary forest management coordination; timber permit supervision; timber scaling; timber program administration; timber enforcement; reforestation and site preparation; regeneration survey; timber stand improvement; forest inventory; ecological classification systems; forest roads, lands and leases; and utilization and marketing. We were unable to assign some of each year's expenditures to sections. For the most part, the amount of unassigned expenditures lessened over time. If some or all of the unassigned expenditures were for forest operations and management activities, their inclusion would alter the magnitude of decline over time, but it would not change the fact of lower expenditures in 2012 and 2013 than in earlier years.

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources, Forestry Division expenditure data.

Forest Management Investment Account Expenditures

According to Minnesota statutes, the Forest Management Investment Account may be used for: (1) reforestation and timber stand improvement; (2) timber sales administration and other timber sales costs; and (3) some state forest road maintenance costs.¹⁹ In addition, the Legislature has approved use of the account

¹⁹ *Minnesota Statutes* 2013, 89.039, subd. 2.

to fund appropriations for a land records system maintained by the DNR Lands and Minerals Division.²⁰ DNR has characterized the Forest Management Investment Account as creating “a direct connection between state timber program revenues and expenditures.”²¹

Exhibit 2.10 shows 2012-2013 expenditures from the Forest Management Investment Account. The exhibit shows that the account supports many forest-management-related activities beyond those specifically listed in statutes. Over half of the account expenditures were for Forest Operations and Management programs, which include timber sales, silviculture, tree stand improvement, and forest roads, among others. DNR spent \$1.2 million from the account for the

Exhibit 2.10: Forest Management Investment Account Expenditures by Activity, Fiscal Years 2012-2013

	Expenditures	Percentage ^a
Forest operations and management ^b	\$12,645,498	52%
Leave time off	3,872,244	16
Personnel and fiscal management	1,995,982	8
Miscellaneous forestry transactions	1,636,548	7
Land and Minerals land records system	1,192,405	5
Other forest planning	619,271	3
Subsection forest resource management planning	463,133	2
Forest health management	413,620	2
FORIST database	238,231	1
Information and education	212,637	1
Third-party certification	202,415	1
Other	163,296	1
Non-fire training	153,259	1
General office, clerical, meetings	144,418	1
Forestry environmental quality control and monitoring	134,857	1
Forestry safety facility and maintenance	112,426	<1
Statewide indirect costs	96,394	<1
Total	\$24,296,633	

^a Percentages do not total 100 due to rounding.

^b “Forest operations and management” includes timber sale preparation and design; interdisciplinary forest management coordination; timber permit supervision; timber scaling; timber program administration; timber enforcement; reforestation and site preparation; regeneration survey; timber stand improvement; forest inventory; ecological classification systems; forest roads, lands and leases; and utilization and marketing.

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources, Forestry Division expenditure data.

²⁰ *Laws of Minnesota* 2007, chapter 57, art. 1, sec. 4, subd. 2. The appropriation references the Natural Resource Fund, which includes the Forest Management Investment Account.

²¹ Minnesota Department of Natural Resources, *Natural Resources Fund, Fiscal Year 2011 Annual Report, Forest Management Investment Account* (St. Paul), 17.

Land and Minerals land records system. Other expenditures included almost \$3.9 million for employee leave, and \$3.6 million for personnel and fiscal management and miscellaneous transactions.²²

CHALLENGES

In this section we highlight two resource issues that challenge Forestry Division operations: staffing and data systems. We could not measure the extent to which these challenges hinder division operations. However, the consistency of comments about them suggests that the challenges they present are real. Below, we discuss these challenges and division efforts to address them.

Staffing

According to DNR staff, the Forestry Division has been operating with almost 100 fewer foresters than in the late-2000s and has experienced significant turnover, due in part to retirements. Some area offices have seen or are anticipating one-quarter to two-thirds of their employees retiring over the next several years.

As part of a Forestry Division workforce planning effort, area and program offices created “fact sheets” that, among other things, listed challenges. Some area fact sheets indicated challenges from working with fewer staff. Among them: increased workload, challenges balancing priorities, and inability to manage forests for higher quality and higher value forest products. Different challenges arise when staff retire, even when they are replaced. Area office fact sheets listed the loss of local knowledge and experience, difficulty attracting or retaining staff due to rural locations, and needing to rebuild relationships with interest groups. Program fact sheets also referenced the loss of expertise due to retirements and the difficulty of meeting work demands with fewer staff.

The Forestry Division undertook the workforce planning effort mentioned above to help address staffing challenges. The project is designed to prioritize hiring and recruitment where it is most needed. For example, before filling a vacant position in an area office, the division will look across all Forestry areas to determine where the position is most needed in terms of work load expectations.

Other division personnel efforts include consolidating some area offices and hiring forest technicians. Consolidating area offices reduces administrative positions. According to a Forestry Division staff person, the division completed five consolidations over the past several years. He said the Forestry Division intends to complete two additional consolidations: the Sandstone and Cambridge area offices, as well as the Blackduck and Bemidji offices. Instead of hiring only professional foresters, the division has begun hiring forestry technicians to fill vacant positions. Forestry technicians, who are required to have two-year

²² According to Forestry Division documents, “personnel and fiscal management” includes recordkeeping, developing budget and spending plans, dispersing funds, and performing personnel related tasks, such as those related to position descriptions and performance evaluations.

degrees, do field work; only those with a four-year degree may be promoted to professional forester positions or management or supervisory positions.

FORIST Database

FORIST is the main database used by the Forestry Division to track timber sales, silviculture work, and road projects, and to aid forest planning and monitoring efforts. The database includes three of the key modules used for state forest management: the timber sales module, silviculture and roads module, and forest inventory module.

The timber sales module allows timber program staff to record activities related to a timber sale. The activities in the module include appraisals, auctions, harvest guidelines, and scaling.

The silviculture and roads module allows Forestry Division field staff to record planned and actual silvicultural activities, as well as road maintenance and construction activities. The module tracks several key indicators: planting, seeding, site preparation, timber stand improvement, and protection.

The forest inventory module contains data on the characteristics of all state-owned forest land, such as cover type, stand density, and age. Data from this module is used to inform planning decisions and initial harvest prescriptions.

According to some Forestry staff, the division's FORIST database is inadequate to support on-the-ground activities and provide complete and up-to-date information.

Technological challenges with the silviculture and roads module prevent program staff from using the data to track some forest management activities efficiently and accurately. While this module allows the Forestry Division to track progress in terms of timber harvest goals or acres treated, the current database structure prohibits effective tracking of some subsection forest resource management plan goals. For example, a division staff person indicated that site-specific goals, such as slowing the spread of invasive species, can be difficult to track.

Further, entering data in the module is time consuming and often duplicative of data entry in other modules. Slow Internet speeds in some remote field offices make it difficult for staff to update map files. Because of these challenges, some field staff enter incomplete data, resulting in monitoring reports that do not accurately reflect forest management plan accomplishments. In addition, staff have limited ability to retrieve data from the module, having to instead rely on information technology staff to develop custom queries to extract data.

Forestry Division staff indicated that inaccurate or outdated information in the forest inventory module makes forest management more difficult and causes inefficiencies. Further, inaccuracies in the inventory may lead to complications in developing and achieving forest management plan goals. For example, the ten-year stand exam list is created based on data in the inventory. However, foresters indicated that much of the inventory is outdated and may be inaccurate. Data may be inaccurate either because they were incorrect when originally

recorded, or because a natural event has changed the composition of the stand. For example, insects, disease, or rot may have killed many trees in a stand. Or windstorms or flooding may have damaged stands since the inventory was recorded. When foresters visit a stand that is not what the inventory indicated, they may have to select new stands to meet management objectives.

RECOMMENDATION

The Forestry Division should allocate resources to address functional and content shortcomings of the FORIST database.

Division management is aware of technical issues related to the silviculture and roads module and content issues with the forest inventory module data. The division contracted to develop a new data entry tool that promises to reduce the amount of time required for data entry and allow field staff to more efficiently and accurately track progress toward planning goals. The division released this tool in late July 2014, and scheduled staff training for the following August and September.

The Forestry Division has also implemented changes to improve the inventory, including the creation of a new inventory coordinator position. This person will have a role in quality control and inventory training. The division set a goal for fiscal year 2014 for each area to re-inventory approximately 350 acres per forester or technician.

Chapter 3: Forest Management Framework

State law directs the Department of Natural Resources (DNR) to manage state forest land according to principles of multiple use and sustained yield.¹ DNR has developed a framework that assists the department and the Forestry Division in managing the state's forest resources. In this chapter, we describe the framework, including: subsection forest resource management plans, third-party certification, and best-practice guidelines. We evaluate the extent to which each of them supports forest management that is sustainable and responsive to multiple, diverse uses. We also present information on their costs. While our assessment is mostly positive, we identify some areas for improvement and make recommendations.

SUBSECTION FOREST RESOURCE MANAGEMENT PLANS

Subsection forest resource management plans are the primary plans that guide the Forestry Division's forest resource management. Prior to 2000, the division based its work on the Forestry Division's administrative area boundaries.¹ In 2000, DNR began developing comprehensive forest management plans by ecological subsection—physical areas sharing similar features including local climate and distribution of tree species. Planning by ecological subsections allows DNR to work in concert with natural conditions. In addition, while administrative boundaries might change, ecological boundaries are more stable.

Initially, DNR developed ten plans covering 17 ecological subsections. Exhibit 3.1 shows the area covered by each of the ten plans. The department completed the first series of these management plans in April 2012. Each subsection forest resource management plan includes the following: (1) an assessment of forest conditions within the subsection; (2) a long-term (10- and 50-year) strategic direction and desired future forest composition goals; and (3) a selection of tree stands, known as the “stand exam list.”²

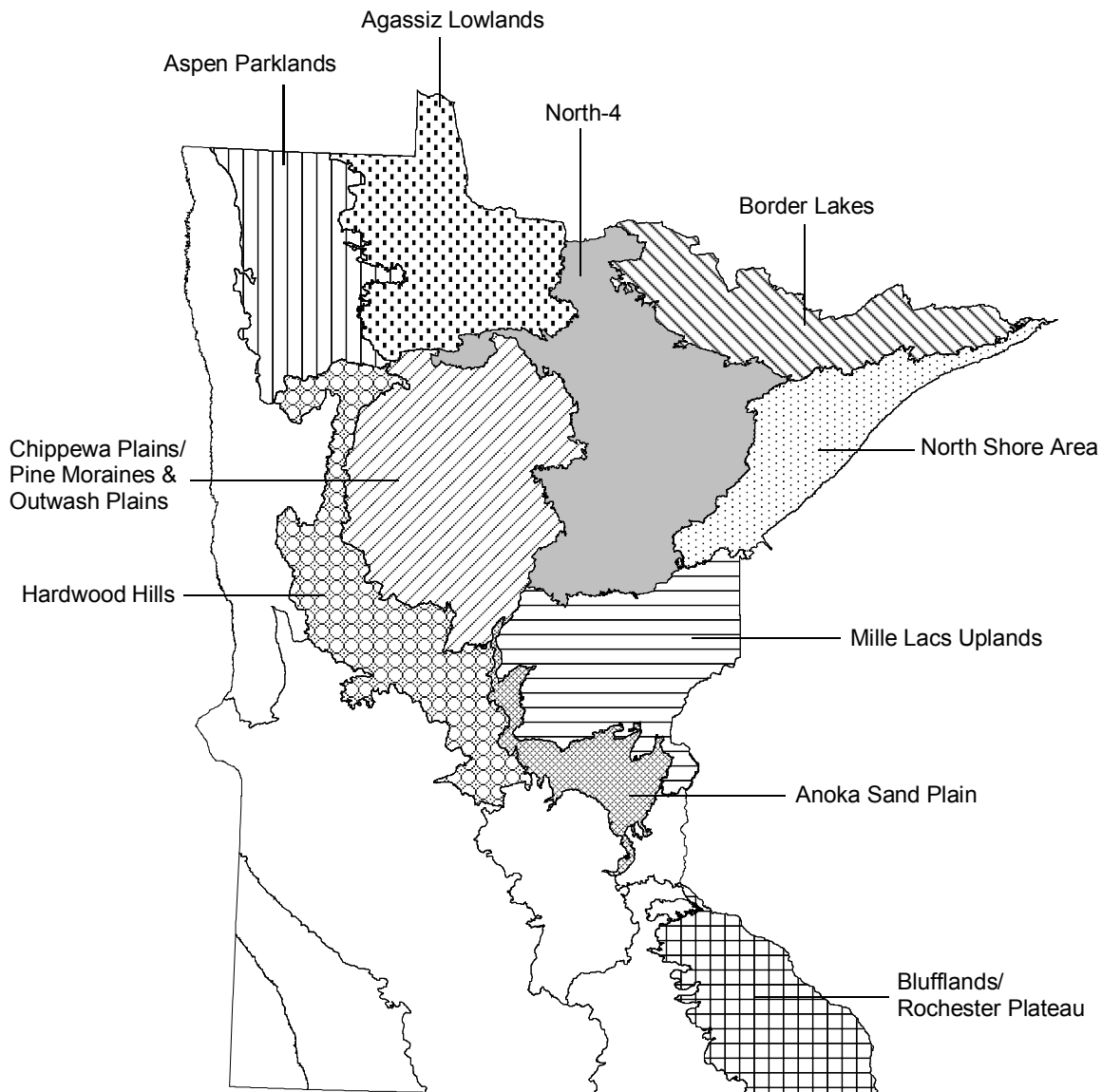
The stand exam list contains the stands to be visited over the ten-year plan period and potentially treated, using methods such as harvesting, to meet the goals in the plan. The list excludes forest lands that are slated for special management that does not include timber harvesting. For example, high quality old-growth forests

¹ The Forestry Division had 30 area offices at that time.

² A tree stand is a group of trees with common factors such as species composition, age, and condition.

do not appear on stand exam lists. Old-growth forests are valuable as benchmarks for natural forest conditions, habitat for wildlife and plants, and reservoirs of genetic material. As such, DNR identifies and designates old-growth forests and leaves them intact.

Exhibit 3.1: Completed Subsection Forest Resource Management Plans, 2012



SOURCE: Office of the Legislative Auditor, review of Minnesota Department of Natural Resources forest management plans.

We found that subsection forest resource management plans support the Forestry Division’s ability to manage forest resources according to the statutorily dictated principles of multiple use and sustained yield.

Subsection forest resource management plans support the Forestry Division’s work by requiring (1) interdisciplinary planning, (2) opportunities for public input, and (3) long-term goals for state-administered forest land. Plans also contribute directly to on-the-ground forest management activity. In the following sections, we discuss how these requirements and plan implementation support management of DNR-administered forest land for multiple use and sustained yield. We conclude with information on planning costs.

Interdisciplinary Planning

Since subsection forest resource management plans (SFRMPs) address multiple forest resources, DNR considers them department plans rather than Forestry Division plans. The interdisciplinary nature of SFRMPs begins with the policies and process that guide plan development. The Forest Resources Issues Team develops statewide forest management policy and direction for staff working on interdisciplinary forest management issues, including subsection forest resource management plans. The directors from the divisions of Fish and Wildlife, Ecological and Water Resources, and Forestry form this team. The guidance provided by the team addresses issues that, if unaddressed, could hamper the planning process and other interdisciplinary efforts.³

Interdisciplinary teams develop SFRMPs. Core members of SFRMP teams include staff from the Forestry Division, the Wildlife Section in the Fish and Wildlife Division, and the Ecological and Water Resources Division. Forestry Division staff often coordinate and lead the planning process, but this is not always the case. In the Aspen Parklands subsection in northwest Minnesota, for example, staff from the Wildlife Section often lead the process.

Forming the interdisciplinary team of DNR staff to guide plan development is among the first tasks in the planning process. The interdisciplinary team develops a preliminary list of issues to be addressed in the plan, contributes to and finalizes the desired future forest conditions, develops criteria for stands to be selected for harvest or other treatment, and flags stands for further review via a site visit.

DNR has developed an “interdisciplinary coordination framework” to improve decision-making among the divisions. The framework applies primarily to planning for land administered by the Forestry Division or the Fish and Wildlife Division. The framework specifies which activities, plans, or projects require interdisciplinary review. It also establishes a process for resolving differences of

³ An interdisciplinary team of staff supports and advises the Forest Resources Issues Team (FRIT). In addition, each forested region has a regional FRIT, whose members include regional managers of the Ecological and Water Resources, Fish and Wildlife, and Forestry divisions. The staff team, FRIT, and regional FRITs also address forest management issues that arise outside of the planning process.

opinion among staff from the different DNR divisions about forest management approaches. The framework states that, ideally, staff should work with their supervisor and the people most closely associated with the issue to resolve it locally. Should the issue remain a problem, the framework provides the steps staff follow for formal dispute resolution, including documenting decisions and how to move the issue from the area to regional levels and above.

We found that subsection forest resource management planning brings forestry, recreation, wildlife, and ecological considerations “to the table,” helping address the multiple-use principal of forest management.

Staff from different DNR divisions bring different perspectives and priorities to forest management. For example, Wildlife Section staff might advocate for a harvest to create habitat for certain game species, while staff from the Division of Ecological and Water Resources might prefer to maintain a forested area due to its exceptional diversity. Forestry staff might propose increasing red pine in a subsection to meet expected market demand, while staff from another division might favor increasing pre-settlement species such as oak. Interdisciplinary planning results in plans that reflect a balance of these perspectives on forest resources.

Staff from the divisions of Forestry, Ecological and Water Resources, and Fish and Wildlife told us how interdisciplinary engagement has affected subsection forest resource management planning.⁴ For example, an area forester indicated the SFRMP in his area calls for more jack pine than the area has historically planted, reflecting the influence of the other divisions’ emphasis on habitat and biodiversity. The plant ecologist in one region said that, through the SFRMP process, sites of biodiversity significance have gained some standing.

Other staff with whom we spoke focused on less concrete effects of interdisciplinary work on forest management plans. A wildlife manager said planning has changed forest management in his region, characterizing planning as more holistic, integrated, and consistent with principles of multiple use and sustainability. An area forest supervisor said planning is done with a team approach and broad scope. He said this gives foresters a better understanding of other divisions’ issues and gives plans more credibility. A regional nongame specialist said she thinks interdisciplinary planning probably makes all the divisions more effective in their work.

DNR staff noted that there are challenges to interdisciplinary work because it brings together staff with different backgrounds and training. However, several staff said they have seen improvement to interdisciplinary coordination at DNR. One regional plant ecologist said she has seen a fairly significant improvement in communication, listening, and support among staff. An area forester said communication is much better and there is a willingness to work together to accomplish multiple things on a piece of land. A Wildlife staff person said staff

⁴ We interviewed Central Office and regional representatives of the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources. We also spoke with foresters at 7 of the Forestry Division’s 17 area offices. We identify the seven offices we visited in Appendix B.

were more rigid in their division positions in the past; now there is more of a common department purpose to generate a good plan and good management on the ground.

Nonetheless, we found that there is room for the Department of Natural Resources to improve interdisciplinary activities.

In spite of many positive comments, we learned of continuing challenges associated with interdisciplinary work that suggest opportunities for improvement. In addition, a March 2012 survey DNR conducted of staff from the divisions of Forestry, Ecological and Water Resources, and Fish and Wildlife also identified areas needing improvement. These areas included a better dispute resolution process; better communication of policies, priorities, and expectations from management and across divisions; and more monitoring to allow staff to learn from earlier coordination efforts.

Differences in divisions' administrative boundaries and staffing levels can introduce challenges to interdisciplinary work, too. These factors can become an issue when staff need to conduct joint site visits. For example, one area forest supervisor indicated that his area overlaps five Wildlife managers' areas. He said foresters might have to contact all five managers to talk about the stand exams on the annual list. As another example, a regional plant ecologist said that she is a resource for an entire region. She said this sometimes frustrates Forestry field staff who may have to wait for her input. In addition, staff said that the divisions of Fish and Wildlife and Ecological and Water Resources have fewer area and regional staff than the Forestry Division. One regional plant ecologist said Forestry is constantly being "bottle-necked" by the lower staffing levels in the other divisions.

RECOMMENDATION

The Department of Natural Resources should continue to improve interdisciplinary forest resources management efforts.

According to many staff, interdisciplinary work has had positive effects on forest management and cooperation among DNR divisions. We encourage DNR to continue its efforts to improve interdisciplinary coordination. In recognition of divisions' different administrative boundaries and staff resources, DNR should address how to incorporate changes to forest management policies or priorities that could significantly affect other divisions' work. The department has delayed work on its interdisciplinary coordination framework due to other priorities; staff expect to draft recommendations for changes in fall 2014.

Public Involvement

The SFRMP process also provides opportunities for public review and comment. This aspect of planning allows input directly from interest groups and members of the public, rather than relying solely on state agency staff to speak for them.

The department requires public input to make the SFRMP process more transparent.

There are several opportunities for the public to provide input. For example, the public has the opportunity to comment on the list of issues the SFRMP will address. Public comments are also sought on the draft stand exam list. The department responds to all the comments it receives and includes the responses in the final plan. DNR implemented a change to the planning process in 2014 to obtain public input earlier in the process than it had in the past. The department is also using webinars in hopes of engaging more people in reviews.

We reviewed all the comments submitted during public comment periods for four SFRMPs. Submissions came from a variety of individuals including private landowners, representatives from the timber industry and environmental groups, and tribal resource managers, and addressed a variety of issues. For example, during the public review of the Anoka Sand Plains SFRMP, one person raised a concern about increased illegal use of all-terrain vehicles in the Sand Dune State Forest as a consequence of planned harvests. Another asked whether hunting would still be permitted in areas that the plan indicated would be managed for rare and natural features. Comments on the Hardwood Hills SFRMP process focused on the difficulty of reviewing the plan documents because of their technical detail.

Long-Term Goals

Subsection forest resource management plans include long-term goals that address multiple use and sustainability. The SFRMP process requires interdisciplinary planning teams to identify a “desired future forest composition” for the subsection. This future condition represents the desired future of the forest and might include, for example, the types and ages of trees and their distribution that will accommodate desired habitat and timber production. The desired future forest composition is a long-term goal; plans might include interim goals for 25 or 50 years into the future to measure progress toward meeting the ultimate desired condition.

Establishing long-term forest goals supports the division’s ability to manage for a sustained yield of forest resources. Plans identify management activities to achieve the desired forest composition. To reach long-term goals, forest management activities have to support forests capable of providing the resources reflected in the goals. For example, in the Agassiz SFRMP, one of the desired future forest conditions is an increase in acres of white pine. The plan specifies that to achieve this goal, DNR will do three management activities: (1) employ silvicultural practices, including planting seedlings and protecting natural pine regeneration; (2) plant white pine under other suitable trees because the species tolerates shade; and (3) follow the DNR White Pine Management Guidelines.

Plan Implementation

As previously discussed, each subsection forest resource management plan generates a ten-year stand exam list. The area timber program forester in each

Forestry area breaks the full ten-year stand exam list into ten lists, one for each year in the planning period, called an annual stand exam list. Division staff in the Central Office review each annual stand exam list to confirm the list represents approximately one-tenth of the SFRMP stand exam list and to estimate the volume of timber the stands will yield. The public also has an opportunity to review the annual list. The annual stand exam list includes the stands Forestry Division staff will visit and potentially appraise for a timber sale.

To help foresters design harvests that reflect the plans, which can be several hundred pages in length, the Forestry Division created shorter “field guides” that summarize plan goals. The two-page field guide for the Anoka Sand Plain subsection, for example, includes the desired future forest compositions for the subsection (such as more oak) and general direction statements for other issues such as wildlife habitat and prescribed timber productivity. The department also provides staff training on the contents and implementation of new plans.

We found that subsection forest resource management plans directly affect on-the-ground forest management activities, but plans can be difficult to implement.

In a very concrete and operational way, SFRMPs establish the Forestry Division’s forest management priorities each year. In addition, plan goals for the desired future forest composition contribute to decisions about forest management activities. For example, the goal of establishing more pine in the northwest means harvested areas that support pine will be planted or seeded with pine. Exhibit 3.2 provides an example of plan goals reflected in prescribed activities for a stand in the Little Falls Area. Reflecting the goals listed in the first row of the exhibit, the forester has specified activities (the “prescription”) with the objective of creating favorable conditions for oak and conifers and limiting impacts on bird habitat (as outlined in the final row of the exhibit).

Translating subsection forest resource management plans into annual work targets can be challenging in Forestry administrative areas that are covered by more than one plan. For example, one timber program forester we spoke with manages an area covered by four plans. To develop an annual list for the area, he has to combine the stand exam lists from the plans, which are completed at different times. The desired future forest compositions, which can affect timber sales and plans for the site after harvest, might differ among the plans.

Some department staff voiced concern that field foresters who implement the plans may lack understanding of plan objectives. These staff said that this might be because the field foresters were not involved in plan development, have not studied the plan, have forgotten things during the ten years covered by the plan, or are in an area covered by multiple plans. Other staff said that prescriptions might focus on part of the plan or one or two goals, but miss others. For example, the forester might focus on the goal to increase aspen, but miss the goals for rare species and biodiversity.

Exhibit 3.2: Sample Forest Management Prescription, Little Falls Area

Relevant general goals from management plan	Increase the oak component. Identify low quality northern hardwood stands for rehabilitation. Contribute important habitat and population support for wildlife; maintain long lived conifer species in hardwood stands for winter cover; maintain mast species as leave trees. Use site level guidelines for all activities to ensure site quality is maintained.
Desired future stand condition	Mixed northern hardwood/aspen stand with improved growth and stem quality, an increasing oak component, and a steady conifer component
Prescription	A variable density harvest treatment on 75 percent (33 acres) of the stand which will include: red pine and spruce thinning on 6 acres, an oak/northern hardwood shelterwood cut retaining a minimum of 50 basal area on 6 acres, and a large patch regeneration cut on 21 acres to rehabilitate lower quality northern hardwood/aspen. The remaining 11 acres of the stand will be retained in three separate reserve patches. Legacy trees and den trees will be retained as observed throughout the harvest area. Regeneration standards check five years post harvest; evaluate the necessity and timing of shelterwood removal, also evaluate future timber stand improvement/release needs. Schedule additional site visits as needed to plan follow-up treatments. It is anticipated that an oak release treatment may be completed at five to ten years post harvest.
Remarks/prescription rationale	The objective of the harvest treatment is to rehabilitate hardwoods of marginal quality, improve growing conditions in the conifer patches, and create favorable conditions for the oak component to expand. The various harvest treatments will be situated to limit canopy gaps and minimize the impacts on bird species identified as a concern in the high conservation value forest documentation.

NOTES: This exhibit includes selected portions from the silvicultural prescription worksheet for this stand. It illustrates prescriptions, or planned forest management activities, to achieve subsection forest resource management plan goals and desired future forest conditions.

SOURCE: "Stand Silvicultural Prescription Worksheet – Central Region" (spreadsheet, Minnesota Department of Natural Resources, Forestry Division, Little Falls Area Office, April 30, 2014).

In addition, desired future forest compositions might not be achieved easily. For example, because it can be challenging to regenerate jack pine, foresters might overlook goals to increase jack pine acreage in favor of other goals. As another example, it might be difficult to establish pine in an area with a significant deer population because deer eat the seedlings. Finally, achieving more young forest for wildlife habitat purposes can be difficult in areas with poor timber markets.

We found that the department has not adequately monitored the progress of subsection forest resource management plans toward achieving plan goals.

While plans affect on-the-ground activity, it is unclear the extent to which implementation is achieving plan goals. Some staff noted that certain things are easy to measure, such as acres examined during a year. In contrast, there is not a mechanism to operationalize and measure goals such as "increase biodiversity" or "improve hydrology." In addition, consequences of actions are not necessarily immediately apparent. It takes time to see the consequence of actions to reach goals to establish tree species in an area, for example. Some DNR staff indicated that monitoring reports the department has generated have not been very useful.

RECOMMENDATION

The Department of Natural Resources should prioritize resources to improve monitoring of subsection forest resource management plan implementation.

Active monitoring is critical to determine the success of the SFRMP process in achieving goals for desired future forest conditions. DNR has conducted some monitoring for specific SFRMPs, such as the Agassiz Lowlands and Border Lakes plans. The department developed an SFRMP monitoring plan in 2006 but, according to a staff person in the Forestry Division and another in the Division of Ecological and Water Resources, staff and funding affect the department's ability to perform monitoring.

DNR staff told us that monitoring also depends on the stand exam layer in FORIST, the Forestry Division's database. The stand exam layer brings together elements of the silviculture and roads module and the timber sales module. As discussed in Chapter 2, the division released the stand exam layer in late July 2014; staff will be trained in its use in August and September.

Planning Costs

Forest management planning helps the Forestry Division manage state forest land sustainably and for multiple uses. There are costs associated with these planning efforts. In the 2012-2013 biennium, the Forestry Division alone spent over \$500,000 on subsection forest resource management planning. DNR staff we interviewed said they spend significant amounts of time on forest management planning, specifically, travelling to and attending meetings. According to some staff, the first SFRMPs took several years to complete.

The department has taken steps to reduce the amount of time and number of staff needed to complete plans. A few staff we interviewed mentioned that SFRMPs now take less time to complete than the first round of plans. In early 2014, the department began developing the second generation of plans. The new iteration of planning reduces the number of plans from ten to seven by planning for larger ecological landscapes known as sections. The seven section-level plans will cover all of the land covered by the previous ten plans.

In addition to time, some DNR staff said there are other costs to planning related to interdisciplinary work. A few said that interdisciplinary coordination requires a lot of emotional energy. Others said that it takes a lot of energy to build relationships with staff from other disciplines. Individual personalities, trust among staff people, and communication were among the factors that affect working relationships among staff.

THIRD-PARTY FOREST CERTIFICATION

Third-party certification is another strategy in DNR's approach to forest management. Forest certification is a verification system in which an independent entity evaluates and recognizes sustainable and responsible forest management and procurement practices. A certification organization defines the standards; a second party (for example, DNR) seeks the certificate; and a third party, which is accredited by the certification organization, assesses whether the second party conforms to the standards.

We found that independent, third-party forest certification requires the Forestry Division to manage state forest land sustainably and for diverse uses, complementing the division's statutory forest management responsibility.

For DNR to maintain third-party certification, forest management must reflect the principles and standards required of the certification organizations. These organizations' standards address multiple use and sustainability. Since 2005, nearly five million acres of DNR-administered forest land have been certified by two independent organizations: the Forest Stewardship Council and the Sustainable Forestry Initiative. We describe these organizations below. The discussion also includes information on the standards DNR must meet to maintain certification.

Forest Stewardship Council®

The Forest Stewardship Council (FSC) formed in 1993 to promote sustainable forest management globally. FSC® is a nonprofit, independent, membership association. FSC forest management certification means that certified landowners and managers meet the FSC-US forest management standard. The standard consists of principles, criteria that correspond to each principle, and one or more performance indicators for each criterion. Exhibit 3.3 shows the ten FSC principles; certificate holders must meet applicable principles, criteria, and indicators to acquire FSC certification. The current standard has 56 criteria and approximately 190 indicators associated with the ten principles.⁵

"Chain-of-custody" certification is a way to assure consumers that the materials in a product originate from a forest certified as meeting forest management standards. It requires an information trail that tracks forest products from a certified forest to the consumer. There must be an unbroken chain of certified organizations at every change of legal ownership from the certified forest to the final product for the product to be labeled or sold as FSC-certified.

⁵ Forest Stewardship Council – U.S., *FSC-US Forest Management Standard (v1.0)* (Minneapolis, MN, 2010).

Exhibit 3.3: Forest Stewardship Council Principles for Forest Management Certification

- | | |
|--------------|---|
| Principle 1 | Respect for all applicable laws of the country, international treaties and agreements to which the country is a signatory, and compliance with all Forest Stewardship Council principles and criteria |
| Principle 2 | Definition, documentation, and legal establishment of long-term tenure and use rights to the land and resources |
| Principle 3 | Recognition and respect for legal and customary rights of indigenous peoples to own, use, and manage their lands, territories, and resources |
| Principle 4 | Maintenance or enhancement of long-term social and economic well-being of forest workers and local communities |
| Principle 5 | Efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits |
| Principle 6 | Conservation of biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes |
| Principle 7 | A current management plan that clearly states long-term objectives and the means of achieving them |
| Principle 8 | Monitoring to assess the condition of the forest, yields of forest products, chain of custody, management activities, and their social and environmental impacts |
| Principle 9 | Maintenance and enhancement of high conservation value forests |
| Principle 10 | Planning and management of plantations in accordance with all Forest Stewardship Council principles and criteria |

SOURCE: Forest Stewardship Council – U.S., *FSC-US Forest Management Standard (v1.0)* (Minneapolis, MN, 2010), 6-65.

Sustainable Forestry Initiative

In the early 1990s, the American Forest and Paper Association developed the Sustainable Forestry Initiative (SFI) as an industry-backed alternative to FSC's environmentally rooted certification system. SFI is now an independent, nonprofit organization. In contrast to FSC, SFI certification occurs primarily in the United States and Canada. Forest management certification with SFI means that certified landowners and managers conform to the applicable parts of the SFI standard. The current standard contains 20 objectives, 38 performance measures, and 115 indicators.⁶ To obtain SFI forest management certification, an organization must meet objectives 1 through 7 and 14 through 20 shown in Exhibit 3.4.⁷

⁶ Sustainable Forestry Initiative, *Requirements for the SFI 2010-2014 Program: Standards, Rules for Label Use, Procedures and Guidance* (Washington, DC, 2010).

⁷ SFI objectives 8 to 13 cover fiber sourcing. Fiber sourcing refers to wood bought by a manufacturer of wood-based products. Objectives 8 to 13 are not part of the department's SFI certificate. SFI also has a chain-of-custody standard. The department does not have SFI chain-of-custody certification.

Exhibit 3.4: Sustainable Forestry Initiative Objectives for Forest Certification

Forest Land Management Objectives

Objective 1	Forest management planning
Objective 2	Forest productivity
Objective 3	Protection and maintenance of water resources
Objective 4	Conservation of biological diversity, including forests with exceptional conservation value
Objective 5	Management of visual quality and recreational benefits
Objective 6	Protection of special sites
Objective 7	Efficient use of forest resources

Fiber Sourcing Objectives^a

Objective 8	Landowner outreach
Objective 9	Use of qualified resource and qualified logging professionals
Objective 10	Adherence to best management practices
Objective 11	Promote conservation of biological diversity, biodiversity hotspots, and high-biodiversity wilderness areas
Objective 12	Avoidance of controversial sources, including illegal logging
Objective 13	Avoidance of controversial sources, including fiber sourced from areas without effective social laws

Forest Land Management and Fiber Sourcing Objectives

Objective 14	Legal and regulatory compliance
Objective 15	Forestry research, science, and technology
Objective 16	Training and education
Objective 17	Community involvement in the practice of sustainable forestry
Objective 18	Public land management responsibilities
Objective 19	Communications and public reporting
Objective 20	Management review and continual improvement

^a Fiber sourcing refers to wood bought by a manufacturer of wood-based products. The Minnesota Department of Natural Resources is not certified for objectives 8 to 13.

SOURCE: Sustainable Forestry Initiative, *Requirements for the SFI 2010-2014 Program: Standards, Rules for Label Use, Procedures and Guidance* (Washington, DC, 2010), Section 2, 4.

DNR Forest Certification

In 2003, then-Governor Pawlenty convened an advisory task force on the Competitiveness of Minnesota's Primary Forest Products Industry to assess the long-term competitiveness of the forest-based manufacturing sector. Forest certification was among the task force's recommendations for addressing major barriers to economic competitiveness. The task force said that by aggressively pursuing forest certification, Minnesota could sustain the state's existing advantage in the domestic market. In addition to more market access, many people expected certified wood to earn price premiums.

DNR pursued certification for other reasons besides perceived economic benefits. The department thought certification would protect the agency from lawsuits and enhance the department's credibility among its stakeholders who were concerned about timber harvesting. DNR also wanted to be a leader in certification and thought certification would be useful for identifying areas where the department could improve management.

According to a department staff person, DNR pursued certification from both FSC and SFI for several reasons. First, certification was relatively new when DNR began the process in 2005 and the department did not know whether FSC or SFI would become the leader in forest certification. Second, DNR thought that maintaining dual certification would not double the cost because FSC and SFI standards were similar. Third, dual certification provided DNR customers with more options for purchasing sustainable timber products. Finally, DNR did not want to engage in “brand wars” between the two organizations.

By December 2005, the Forestry Division obtained forest management certification through FSC and SFI on all Forestry Division and most Division of Fish and Wildlife managed land. By April 2013, FSC and SFI had certified almost 5 million acres of state-managed forest land. DNR also has chain-of-custody certification through FSC.

Certification Audits

To become FSC and SFI certified, DNR underwent on-the-ground assessments by independent auditors who determined the department’s compliance with certification standards. To maintain certification, DNR must undergo periodic full certification assessments, as well as annual surveillance audits in the years between full assessments. Surveillance audits are less intensive than full audits.

Full recertification audits assess the department’s compliance with all applicable certification standards. Full recertification audits occur every five years for FSC and three years for SFI. The 2013 SFI audit, for example, was a full recertification audit that assessed all the applicable standards and DNR’s progress toward addressing issues raised during the 2012 annual surveillance audit.

The 2013 FSC audit was an annual surveillance audit. Annual surveillance audits for FSC certification have three main components: (1) an assessment of whether the department has addressed any outstanding areas of concern, (2) an examination of new issues since the last audit, and (3) an additional focus on select topics unknown to DNR prior to the audit. Annual surveillance audits for SFI typically assess only a subset of the SFI standards.

Recertification and annual surveillance audits take several days and involve site visits, conversations between the audit team and DNR staff, and conversations between the audit team and DNR stakeholders. Auditors may randomly select timber harvests for site visits after they consult with DNR. During the 2013 SFI recertification audit, auditors met with over 70 DNR staff, including the commissioner. At the end of a recertification or annual surveillance audit, auditors assign corrective action requests to any areas of concern that the certificate holder must correct within a specified period. This period is typically three months to one year. To remain certified, DNR must respond to major concerns in the specified time period.

Discussion

We reviewed DNR's third-party forest certification audit reports for insight into the department's forest management practices on state-owned land. DNR has complied with most forest management certification standards, although audits identified some issues requiring change. The department has addressed major areas auditors highlighted as needing improvement in the time required to maintain certification. Exhibit 3.5 lists the major issues of concern identified by external auditors since 2005, along with DNR's responses. For example, in 2008, FSC cited DNR for its failure to provide assurance that certain types of old-growth stands had been completely identified. In response, DNR completed a process to evaluate old-growth stands that may have been missed. Similarly, in 2011, SFI cited DNR for having an outdated wildlife guidance document. In response, DNR updated its *Forestry-Wildlife Guidelines to Habitat Management* policy. Auditors did not identify any major areas of concern in their 2012 or 2013 audits.

SFI audit reports have included commendation for areas where DNR practices exceeded basic requirements. In 2013, auditors commended DNR's practices of (1) modifying timber sales to accommodate recreational use, (2) designing harvests to address aesthetic considerations, and (3) classifying sites based on native plant communities and ecological classification systems to improve management decisions.

We found that the third-party certification process has contributed to improvements to the Forestry Division's management of state forest land for sustainability and multiple uses.

The third-party certification process has improved state forest management by requiring DNR to address certain forest management issues and encouraging interdisciplinary coordination, as discussed below. As noted in Exhibit 3.5, DNR has responded to forest management concerns identified during certification audits, such as reviewing old-growth timber stands and managing biodiversity sites as high conservation value forests.

Certification led to the creation of an interdisciplinary team—the Forest Certification Implementation Team—which oversees the department's certification program. At a minimum, the team includes representatives from the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources. Team responsibilities include participating in audits, responding to corrective action requests, and communicating the effects of certification throughout the department.

DNR created an internal audit team in response to an "opportunity for improvement" identified during an SFI audit. The 2013-2015 internal audit team includes representatives from the divisions of Forestry, Ecological and Water Resources, and Fish and Wildlife. The internal audit process assesses implementation of the department's practices and policies, as well as DNR's responses to corrective action requests issued by the third-party forest certification auditors.

Exhibit 3.5: Major Issues of Concern Identified during Department of Natural Resources Forest Certification Audits

Year	Certifier ^a	Major Concern	Department of Natural Resources (DNR) Response ^b
2005	FSC	Use of two pesticides on FSC's list of prohibited chemicals	Issued an office memorandum to discontinue use of one of the pesticides immediately; use of the second pesticide was under review
2006	FSC	Absence of specific targets for each Forestry area to contribute to subsection plan goals for tree species	Allocated goals to each Forestry area for changes to tree species
2007	FSC	Inadequate assurance that timber from noncertified DNR lands are not sold as certified	Developed a new tracking procedure
2008	FSC	Lack of sufficient progress in identifying and managing high conservation value forests	Created interim approach for managing certain biodiversity sites as high conservation value forests
2008	FSC	Failure to completely identify certain types of old-growth stands	Completed a process to evaluate any missing old-growth stands
2008	FSC	Lack of short-term, measurable targets for protecting representative samples of ecosystems	Designated sites and developed management agreements for pilot sites in one subsection
2008	FSC	Absence of complete subsection forest resource management plan monitoring results	Provided evidence demonstrating current monitoring and a timetable for addressing areas needing improvement
2008	SFI	Absence of details showing how subsection forest resource management plan implementation will achieve management goals for future conditions and cover types	Provided evidence demonstrating current monitoring and a timetable for addressing areas needing improvement
2009	FSC	Failure to meet all requirements for identifying and establishing Representative Sample Areas ^c	Completed development of Representative Sample Area goals
2010	FSC	Absence of a subsection forest resource management plan for some certified areas	Provided evidence documenting management in the absence of subsection forest resource management plan
2010	FSC	Lack of monitoring on high conservation value forests	Developed a high conservation value forest monitoring work plan
2011	SFI	Outdated wildlife guidance document	Updated guidelines and notified staff

^a FSC is Forest Stewardship Council. SFI is Sustainable Forestry Initiative.

^b The department's responses have adequately addressed certification auditors' concerns.

^c Representative Sample Areas are lands protected in their natural state to serve as reference areas, create or maintain under-represented ecological conditions, or prevent species loss.

SOURCE: Office of the Legislative Auditor, review of Forest Stewardship Council and Sustainable Forestry Initiative audit reports.

Department staff generally held favorable views of forest certification. Staff from the Ecological and Water Resources Division and Fish and Wildlife Division told us that certification improved interdisciplinary coordination among the divisions because it created opportunities for interaction and expectations for collaboration across divisions. Staff from these divisions also emphasized that certification provides benefits in terms of maintaining and enhancing Minnesota's unique natural resources. Forestry Division staff noted that

certification audits have provided opportunities for constructive discussions about forest management. While some Forestry staff indicated that certification had little effect on current management because they believe the department was already managing forests well, they noted that because of certification, actions and decisions are documented more fully.

We found that some third-party forest certification requirements create complexity for the Forestry Division’s management of state forest land.

Some DNR staff indicated that forest certification adds complexity to the department’s management of Minnesota’s forests. Staff from all divisions commented that preparing for and participating in the annual audit takes a significant amount of time. Responding to major audit issues, such as identifying high conservation value forests, also adds work and shifts department priorities.⁸

The requirement to develop specific forest designations also adds complexity to DNR’s forest management. For example, FSC requires DNR to identify “representative sample areas” or lands that are protected in their natural state because they contain under-represented ecological conditions or plant communities. Similarly, SFI requires DNR to identify forests with rare or vulnerable species and take steps to promote habitat diversity and species conservation. These designations come with specific requirements. For example, FSC requires stakeholder participation in discussions related to high conservation value forest designation and management on public land. Staff we interviewed noted that these special designations complicate on-the-ground management because keeping track of and implementing multiple designations is time consuming and difficult, and the designations sometimes create conflict among divisions.

The Department of Natural Resources periodically reviews third-party forest certification standards and their applicability to state-managed forest land.

DNR reviews and comments on proposed revisions to FSC and SFI forest certification standards. According to the department, of particular concern are revisions it deems to be costly, impractical, or confusing to implement, or of limited value or applicability to DNR-administered forest land. For example, FSC is in the process of developing a set of “International Generic Indicators” that would form the basis of revised standards that DNR would need to meet to maintain certification. DNR reviewed the first draft of the proposed indicators and, in 2013, Commissioner Landwehr sent a letter to FSC communicating DNR’s displeasure with them. The letter indicated that the department would need to reevaluate continued FSC forest management certification unless FSC “revamps its whole approach” to the indicators. DNR’s comments on revised

⁸ “High conservation value forest” is a designation for areas that have attributes, defined by FSC, that render the area of particular value for conservation purposes. For example, an area that is critical to a local community’s traditional cultural identity or that contains rare, threatened, or endangered ecosystems is a high conservation value forest according to FSC. An entity seeking FSC certification must identify and maintain or enhance such areas.

draft indicators noted remaining concerns, but also that DNR viewed the revised indicators and approach as an improvement.

Similarly, in 2014 DNR commented on proposed changes to the SFI standards. Among other things, comments highlighted standards that were not clear or objectively auditable, or that might conflict with management goals. For example, DNR commented that a standard related to new restrictions for forest cover-type changes would run counter to forest management plans pursuing changes in forest cover types for reasons of forest health, forest diversity, or climate change.

Certification Costs

Staff said preparing for and participating in the forest certification audits, as well as responding to the auditors' findings, requires a significant commitment of staff time. As mentioned earlier, during a recent SFI certification review, auditors spoke with over 70 DNR staff during an audit. The department spent approximately \$1.62 million on forest certification from fiscal year 2005 through fiscal year 2013. The actual cost varied by year. For example, the total cost for dual certification in fiscal year 2007 was approximately \$147,000 compared to \$276,000 in fiscal year 2011. The difference was due at least in part to the fact that the 2007 audit was an annual surveillance audit, whereas the 2011 audit was a reassessment audit. The department has saved certification costs by conducting FSC and SFI audits simultaneously. In 2011, the Sustainable Forestry Initiative moved from a five-year to a three-year reassessment cycle. This will affect the department's ability to have simultaneous audits in the future.

BEST-PRACTICE GUIDELINES

Best-practice guidelines used by the Forestry Division also contribute to a forest management approach that is consistent with state policy. The Forestry Division requires its foresters to follow best-practice forest management guidelines developed by the Minnesota Forest Resources Council (MFRC). The MFRC is a state council established by the Sustainable Forest Resources Act of 1995 to promote long-term sustainable management of Minnesota's forests.⁹ The Forestry Division has integrated the MFRC guidelines into its planning and timber harvesting procedures.

MFRC Site-Level Forest Management Guidelines

The Sustainable Forest Resources Act directed MFRC to coordinate development of integrated, voluntary timber harvesting and forest management guidelines. According to the act, the guidelines were to "address the water, air, soil, biotic, recreational, and aesthetic resources found in forest ecosystems by focusing on those impacts commonly associated with applying site-level forestry practices."¹⁰

⁹ *Laws of Minnesota* 1995, chapter 220, secs. 78-87, 141, and 142.

¹⁰ *Laws of Minnesota* 1995, chapter 220, sec. 82. The Sustainable Forest Resources Act is codified in *Minnesota Statutes* 2013, chapter 89A.

MFRC published its most recent edition of *Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers* in 2012.¹¹ These forest management guidelines are intended to be used by forest landowners, resource managers, loggers, contractors, and equipment operators to conduct forest management activities while addressing the sustainability of diverse forest resources.

There are two types of timber harvesting and forest management guidelines. “General guidelines” are common to many forest management activities, and “activity-specific guidelines” are unique to specific forest management activities, such as timber harvesting. Both sets of guidelines are closely related and designed to work together. Exhibit 3.6 lists the categories of guidelines for each type of forest management activity. For example, incorporating sustainability into forest management plans is a general planning activity. Among other things, this guideline recommends planning based on site and soil conditions. This includes planning activities to occur when soils are firm, not wet, and when wetlands are frozen; doing so supports equipment. An example of an activity-specific guideline includes the design, construction, and maintenance of forest roads to prevent soil compaction and erosion and to protect water quality and wetlands.

The guidelines are voluntary for most landowners. They are also designed to be flexible. The guidelines provide a menu of options for a variety of landowners. A landowner may decide not to apply all the guidelines. Implementation of the guidelines can be adjusted based on site conditions and management objectives.

The federal government considers the guidelines to be best-management practices. The Northern Research Station of the Federal Forest Service provides information about MFRC’s guidelines on its best-management practices website. Both Forestry staff and staff in other DNR divisions told us they consider the guidelines to be best-management practices.

Use of Guidelines on State-Administered Lands

In 2000, DNR committed to applying the MFRC guidelines to DNR-administered land. In its *Directions 2000: The Strategic Plan*, DNR identified “sustainable forests” as a department priority. According to the report, the department’s commitment to “sustaining healthy and productive forest ecosystems” requires a mix of strategies, one of which is implementing the MFRC site-level guidelines.¹²

¹¹ Minnesota Forest Resources Council, *Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers* (St. Paul, 2012). The council published the original guidelines in 1999.

¹² Minnesota Department of Natural Resources, *Directions 2000: The Strategic Plan* (St. Paul, 2000), 2 and 8.

Exhibit 3.6: Categories of MFRC Voluntary, Site-Level Forest Management Guidelines

General Guidelines for:

Planning Activities

- Considering invasive species
- Identifying goals and objectives
- Conducting a site inventory
- Incorporating sustainability into forest management plans
- Maintaining filter strips
- Managing riparian areas

Operational Activities

- Protecting cultural resources
- Managing equipment, fuel, and lubricants
- Protecting the normal flow of streams and wetlands
- Protecting non-open water wetlands and seasonal ponds
- Managing dry washes in southeastern Minnesota
- Retaining leave trees (live trees)
- Providing coarse woody debris
- Conducting post-operational activities and follow-up visits

Activity-Specific Guidelines for:

- Forest road construction and maintenance
- Timber harvesting
- Mechanical site preparation
- Pesticide use
- Reforestation
- Timber stand improvement
- Fire management
- Forest recreation management
- Forest biomass harvesting
- Brush land biomass harvesting

SOURCE: Minnesota Forest Resources Council (MFRC), *Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers* (St. Paul, 2012), Part 3, iii-iv, 1-2.

We found that the Forestry Division's use of MFRC site-level forest management guidelines contributes to its ability to manage forest resources in a sustainable manner and with regard to multiple uses and interests.

The guidelines support the Forestry Division's ability to manage for both multiple use and sustainable yield for several reasons. First, the policy direction for MFRC's activities is consistent with state policy guiding DNR's state land management. Second, development and revision of the guidelines reflect a range of interests. Third, the guidelines reflect the principles of multiple use and sustainability. In the following section, we discuss these factors, as well as DNR's implementation of the guidelines.

Policy Direction

State statutes contain two statements for forest management policy. One is *Minnesota Statutes*, chapter 89, which provides policy direction to DNR. The policy emphasizes multiple use and sustainable yield principles of forest

management. Both of these principles apply to forest resources, which are broadly defined in statute. Forest resources include timber and other forest crops along with biological diversity, recreation, wildlife habitat, air, water, and soil.

The second statutory policy statement is in the Sustainable Forest Resources Act, which creates and provides direction to MFRC. The council is responsible for developing recommendations to the governor and to federal, state, county, and local governments on forest resource policies and practices that “result in the sustainable management, use, and protection of the state’s forest resources.”¹³ In this context, sustainable means “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”¹⁴ Exhibit 3.7 lists the specific standards identified in the Sustainable Forest Resources Act for MFRC’s forest resource policies and practices.

Both policies are consistent in requiring management of forest resources for a balance of economic, environmental, and social goals over the long term.

Exhibit 3.7: Standards for MFRC-Recommended Forest Management Policies and Practices

According to Minnesota statutes, policies and practices recommended by the Minnesota Forest Resources Council must:

1. acknowledge the interactions of complex sustainable forest resources, multiple ownership patterns, and local to international economic forces;
2. give equal consideration to the long-term economic, ecological, and social needs and limits of the state's forest resources;
3. foster the productivity of the state's forests to provide a diversity of sustainable benefits at site-levels and landscape-levels;
4. enhance the ability of the state's forest resources to provide future benefits and services;
5. foster no net loss of forest land in Minnesota;
6. encourage appropriate mixes of forest cover types and age classes within landscapes to promote biological diversity and viable forest-dependent fish and wildlife habitats;
7. encourage collaboration and coordination with multiple constituencies in planning and managing the state's forest resources; and
8. address the environmental impacts and implement mitigations as recommended in the generic environmental impact statement on timber harvesting.

NOTE: MFRC is the Minnesota Forest Resources Council.

SOURCE: *Minnesota Statutes* 2013, 89A.03, subd. 2.

Multiple and Balanced Interests

MFRC members represent a range of interests in the ownership, use, management, and protection of forest land. The council includes representatives of environmental and conservation organizations; commercial logging; the forest products industry; industrial and nonindustrial, private forest landowners; and county, state, tribal, and federal governments. MFRC membership, as specified in Minnesota statutes, is shown in Exhibit 3.8.

¹³ *Minnesota Statutes* 2013, 89A.03, subd. 2.

¹⁴ *Minnesota Statutes* 2013, 89A.01, subd. 13.

Exhibit 3.8: Requirements for Minnesota Forest Resources Council Membership

Minnesota statutes require governor-appointed members to include:

1. two representatives from organizations representing environmental interests within the state;
2. a representative from an organization representing the interests of management of game species;
3. a representative from a conservation organization;
4. a representative from an association representing forest products industry within the state;
5. a commercial logging contractor active in a forest product association;
6. a representative from a statewide association representing the resort and tourism industry;
7. a faculty or researcher of a Minnesota research or higher educational institution;
8. a representative from an association representing family forest woodlands who is an owner of nonindustrial, private forest land of 40 acres or more;
9. an owner of nonindustrial, private forest land;
10. a representative from the Department of Natural Resources;
11. a county land commissioner who is a member of the Minnesota Association of County Land Commissioners;
12. a representative from the United States Department of Agriculture Forest Service unit with land management responsibility in Minnesota;
13. a representative from a labor organization with membership having an interest in forest resource issues;
14. an individual representing a secondary wood products manufacturing organization; and
15. a chair.

In addition, the Indian Affairs Council appoints one member.

SOURCE: *Minnesota Statutes* 2013, 89A.03, subd. 1, as amended by *Laws of Minnesota* 2014, chapter 289, sec. 32.

The council's process for developing and revising the guidelines is collaborative and involves input from multiple interests. Guideline revisions generally include extensive involvement, review, and comment from nearly 40 organizations representing multiple, and often divergent, views and interests on forest resources and management. For example, organizations involved in the 2012 revision of the guidelines included: contract loggers, timber product producers, county land departments, environmental groups, tribal governments, the United States Forest Service, university natural resource professionals, and Minnesota DNR, among others. Some DNR staff told us they view the guidelines as a good, realistic approach because the guidelines are a negotiated agreement developed with multiple stakeholders around the table.

Since their original publication in 1999, MFRC has revised the guidelines three times. A topic-specific revision added recommendations for biomass harvesting in forest land and brush land. MFRC completed comprehensive revisions of the guidelines in 2005 and 2012. The entire revision process for the 2012 edition of the guidelines took three years to complete.

Multiple Use and Sustainable Yield

MFRC's site-level forest management guidelines are comprehensive. They support the sustainability of many different forest resources and accommodate a wide range of landowner objectives and site conditions. Major forest management activities addressed in the guidelines include timber harvesting, forest road construction, site preparation, pesticide use, reforestation, and timber stand management. The guidelines also provide direction and recommendations for enhancing and protecting six components of a healthy and sustainable forest during timber harvesting and forest management activities. These components are wildlife habitat; riparian areas (transition areas between land and water, such as streams, lakes, and wetlands); historic/cultural resources; forest soil productivity; water quality and wetlands; and visual quality.

The guidelines provide direction on obtaining the economic benefits of timber harvests while minimizing negative effects on other forest resources and increasing multiple uses of forest land. For example, guidelines for restricting the amount of timber harvested from riparian areas protect water quality and provide wildlife habitat. Other guidelines protect forest soil productivity by addressing soil compaction, protect water quality by addressing erosion, provide wildlife habitat for both game and nongame species by preserving and/or providing suitable habitat, and protect cultural resources. Some DNR staff told us the guidelines are a good complement to the principle of multiple use and do not affect the principle of sustained yield.

Some staff from the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources think the guidelines are essential for good forest management and sustainably managing wildlife habitat. Some Fish and Wildlife Division staff commented that the guidelines, in conjunction with subsection forest resource management plans, moved the department to a well-planned management system for the state. While the concerns are not widespread, some staff from the Ecological and Water Resources Division indicated the guidelines do not go as far as they would like in some categories. For example, some of these staff thought the riparian guidelines could be stronger.

DNR Implementation

DNR implements the site-level forest management guidelines in a collaborative manner with input from multiple divisions. The subsection forest resource management plans reference the guidelines and how the guidelines are supposed to be implemented. In addition, interdisciplinary teams use the guidelines in their review of timber stand exam lists in preparation for timber harvests.

Adherence to the guidelines on DNR-administered land is also incorporated into forest management and timber harvesting policies, priorities, and procedures. For example, the department's policy guidance on forest management cites the MFRC forest management guidelines as one of the policy documents used to "guide their forest management actions and decisions."¹⁵ The Forestry

¹⁵ Minnesota Department of Natural Resources, *Interdisciplinary Forest Management Coordination Framework* (St. Paul, 2007), 9-11.

Division's directions and priorities for fiscal year 2014 identify supervising, monitoring, and inspecting all timber harvests for compliance with the MFRC guidelines as priorities for staff that coordinate timber sales.¹⁶

Both the design of DNR's timber harvests and post-harvest inspections of timber harvest activity on state-owned land reflect the guidelines. When implemented in the field as part of a timber harvest, the guidelines help DNR manage forest resources in a sustainable manner. Guidelines related to fallen and dead trees (snags), and leave (nonharvested) trees are part of the timber assessment process when setting up and conducting the sale. The timber sales documents, which incorporate elements of the guidelines, direct DNR field staff on how to use the site-level guidelines as part of the timber harvest.

Both SFI and FSC forest certification audits cite DNR's implementation of the council's site-level guidelines as evidence supporting their certification criteria and forest management objectives. For example, a recent SFI audit report cites the MFRC guidelines as an important factor in protecting water resources. MFRC guidelines are compatible with and complement third-party forest certification. In addition to comments in the SFI and FSC audit reports, some DNR staff told us the state's implementation of the guidelines plays a major role in the department's compliance with certification requirements.

In some instances, the Forestry Division goes beyond the minimum standards in implementing the MFRC forest management guidelines.

As stated earlier, while the MFRC guidelines are voluntary for most forest landowners, DNR mandated their use for management of state-administered forest land. In fact, DNR has exceeded the guidelines established by MFRC. For example, the Forestry Division, in its *Timber Sale and Scaling Manual*, developed and implements rutting standards that are more detailed and measurable than the MFRC rutting guidelines. Rutting is the creation of depressions made by the tires of vehicles, usually under wet conditions. Rutting causes soil compaction, severs roots, and creates soil erosion. Whereas the guidelines use terms like "minimize rutting," the division's standard requires that rutting not exceed specific depths and lengths depending on the nature of the harvest site, such as a wetland versus drier land at a higher elevation.

Implementation Costs

It appears DNR's cost of implementing the guidelines are small compared to its costs for planning and forest certification. Some DNR staff commented on the costs for staff training on the guidelines, some monitoring costs, and the staff time to remain familiar with the guidelines. Foresters in one area office also noted that the guidelines increase the time needed to set up a timber sale. For example, one forester explained that it takes more time to identify the timber sale areas, paint them, mark riparian areas, and identify leave trees.

¹⁶ Minnesota Department of Natural Resources, Division of Forestry, *Direction and Priorities for FY2014* (St. Paul, 2014).

Other DNR costs related to the MFRC guidelines involve some lost revenue associated with guideline implementation. For timber sales with a river or lake, reserves or buffers for riparian areas are set aside and not harvested. However, some DNR staff also told us that the long-term environmental benefits outweigh the small amount of revenue lost when selected trees are left on a site to provide wildlife habitat or to protect water quality.

Chapter 4: Managing Forests for Multiple Uses

There are many uses of state-managed forest resources. Loggers, pulp and paper mill operators, and furniture manufacturers rely upon timber and fiber from them, particularly when private forest landowners are not selling timber. Hunters, hikers, bird watchers, and others enjoy the recreational opportunities provided by public forest land. All citizens benefit from forests' environmental effects, such as cleaner air and water. And forests offer ecological benefits such as habitat for plants and animals that live in forested land. The Forestry Division must manage forest land to balance these economic, recreational, and environmental uses. In Chapter 3, we evaluated three department strategies—subsection forest resource management planning, third-party certification, and use of best-practice guidelines—and concluded that they support the division's ability to manage forest resources for multiple uses.

However, we found that some recent statements of forest management policy and their implementation have increased emphasis on economic uses of forest resources.

Since early 2012, the Department of Natural Resources (DNR) has reiterated its responsibilities for management of school trust land and reconsidered some of its policies related to forest age. Some of these policy statements suggest a change in the balance among economic, recreational, and environmental interests in managing state-administered forest land. In addition, their implementation could challenge the “harmonious and coordinated management of the forest resources” that is part of the multiple-use principle.¹ In the remainder of this chapter, we discuss DNR's actions related to school trust land management and forest age policies.

SCHOOL TRUST LAND MANAGEMENT

In Chapter 1, we outlined the forest management policy for DNR-administered land. While directing the department to manage these lands according to the principles of multiple use and sustained yield, the statute also says that the policy “shall not supersede any existing duty or authority of the commissioner in managing forest lands.”² Among the commissioner's duties is managing school trust land.

¹ *Minnesota Statutes* 2013, 89.001, subd. 9.

² *Minnesota Statutes* 2013, 89.002, subd. 1. Land acquired for specific purposes or that is part of specific units within the state's outdoor recreation system are not covered by this policy. These units include: state parks, state trails, state wildlife management areas, state scientific and natural areas, state water access sites, state historic sites, state rest areas, and state wilderness areas.

School trust land is land that was granted by the federal government to the state for the benefit of schools. By accepting the grant, the state became the trustee of these lands. As trustee, the state must manage the land in the interests of current and future trust beneficiaries.

In 2012, DNR clarified the department's responsibility to manage school trust land to maximize long-term economic returns. In February of that year, the DNR Commissioner issued an operational order about management objectives on school trust land. The order states that when there is an "unresolvable conflict between maximizing long term economic return and protecting natural resources and recreation values, the DNR must give precedence to long term economic return" on school trust land.³ Later in 2012, the Legislature added similar language to state law.⁴

We found that requiring precedence for long-term economic returns on school trust land may create forest management challenges for the Department of Natural Resources.

Changes to management practices on school trust land could affect timber sales on other DNR-administered forest land. In addition, emphasizing economic returns on school trust land might make it difficult for the state to reach other forest management goals. We discuss the potential impact of school trust land management on timber sales and other goals below.

Timber Sales

In the past, the department has integrated management of school trust land with other DNR-administered forest land. In other words, staff did not distinguish school trust land from other land when planning and managing timber sales. The rationale for this approach was that it results in lower administrative costs to the trust fund and is a more effective way to manage forest resources.

If the department continues to manage timber sales without distinguishing among land statuses while giving precedence to economic returns on school trust land, non-school-trust land could be affected. Non-school-trust land would be affected if plans for the land called for different management activities, or activities at different times, than those that would maximize economic return.

One recent issue illustrates how management of school trust land could affect management of other land. The Forestry Division has reduced the recommended harvest age for planted red pine on school trust land to increase economic return. The new policy calls for selecting for potential harvest planted red pine stands that are in whole or in part on school trust land at 60 to 70 years of age. In the original subsection forest resource management plans, the average normal rotation age for red pine is 112 years. The bottom two-thirds of Exhibit 4.1 show examples of planted red pine stands that span school trust and acquired land.

³ Minnesota Department of Natural Resources, Commissioner's Office, Operational Order 121, Management of School Trust Lands, February 23, 2012.

⁴ *Laws of Minnesota* 2012, chapter 249, sec. 4 (b). Codified as *Minnesota Statutes* 2013, 84.027, subd. 18 (b).

Exhibit 4.1: How Focus on Economic Return on School Trust Land Could Affect Other Land

Two stands of natural origin red pine, each on a different land status

- The area Forestry office might manage these stands together and design a final harvest that includes both stands.
- Managing the harvest to maximize economic return on school trust land might mean harvesting the timber on acquired land earlier than was planned.

One stand of planted red pine located on two land statuses

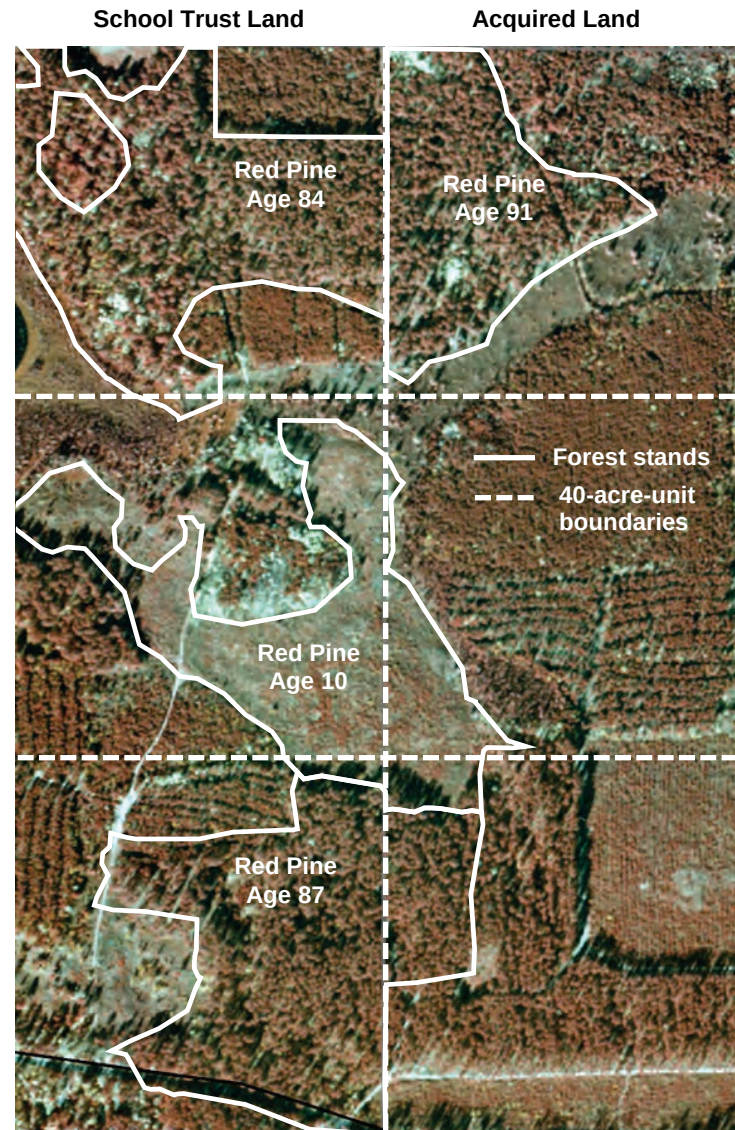
- The Department of Natural Resources has implemented a policy of harvesting planted red pine stands that are in whole or in part on school trust land at the economic rotation age of 60 to 70 years.
- The department adopted this approach to maximize economic return on school trust land.
- Harvesting this stand of planted red pine—including that portion on acquired land—may mean harvesting the pine that is on acquired land at an earlier age than originally planned.

One stand of planted red pine located on two land statuses

- As with the stand of planted red pine immediately above, harvesting this stand of planted red pine—including that portion on acquired land—may mean harvesting the pine that is on acquired land at an earlier age than originally planned.

NOTES: The photograph depicts 240 acres of forest land managed by the Forestry Division's Hibbing Area Office. Half of the acreage is school trust land, half is acquired land. Solid white lines outline stands of trees. A stand is a group of trees of the same type, age, and condition.

SOURCES: Office of the Legislative Auditor, review of Minnesota Department of Natural Resources data.



Harvesting these stands to maximize economic return on school trust land will affect non-school-trust land if the stands would otherwise have been harvested at an older age. If the department chooses to manage all planted red pine stands the same way, without regard to land status, additional non-school-trust land would be affected.⁵

Rather than managing all land statuses as one, the Forestry Division could begin managing forest land with regard to land status. While school trust land must be managed to maximize long-term economic return, the multiple-use principle that is part of the state's forest management policy specifies that the combination of uses that "best meet the needs of the people of the state...[is] not necessarily the combination of uses resulting in the greatest economic return or unit output."⁶

However, the division could lose efficiencies if it begins managing forest land with regard to land status. For example, it would be more costly to design a timber sale if a forester had to mark a line through a stand of trees to indicate a change in land status and harvest prescription, rather than managing the stand as a whole. The resulting sale might also be less marketable. For example, if the number of cords of timber on the resulting sale is small, a logger may be unwilling to bid as much per cord or to bid at all. In addition, according to the Forestry Division, using the same harvest age for tree species regardless of land status maintains natural stand boundaries. It also prevents added complexity to planning, management activities, and data systems.

Other Forest Management Goals

Emphasizing economic returns on school trust land could make it difficult to reach other forest management goals. For example, harvesting young aspen to diversify age classes might benefit wildlife habitat, but harvesting aspen before it is commercially viable might be inconsistent with maximizing long-term economic return. In areas with a lot of school trust land, the department might be unable to achieve wildlife habitat goals if the activities necessary to achieve those goals are inconsistent with maximizing long-term economic returns.

Other goals that could be affected by emphasizing economic returns on school trust land include nontimber goals reflected in specially designated forest land. For example, DNR has established a process for designating "old-growth forest" on DNR-administered land as part of a plan to retain older forests in Minnesota. The features and benefits of old-growth forests asserted by the department are shown in Exhibit 4.2. Since July 1, 2013, DNR cannot designate stands as "old growth" without considering the land status and implications to the trust. If a designation or policy would prohibit long-term economic returns, the permanent

⁵ DNR has not made this decision. According to the department, there are just over 80,000 acres of planted red pine on DNR-administered land. The top third of Exhibit 4.1 shows adjacent stands of natural origin red pine, with one stand on school trust land and one on acquired land. These stands are not affected by the new policy for harvesting planted red pine. However, these stands provide another example of non-school-trust land that could be affected by school trust land management priorities should the division begin harvesting natural origin red pine on school trust land at 60 to 70 years of age.

⁶ *Minnesota Statutes* 2013, 89.001, subd. 9.

school fund must be compensated by land purchase or exchange.⁷ In addition, by July 1, 2018, the permanent school fund must be compensated for school trust land for which long-term economic return is prohibited by already existing designations or policies.⁸ Other designations, such as high conservation value forest, could be similarly affected.

Exhibit 4.2: Benefits of Old-Growth Forests

Old-growth forests provide:

- Benchmarks of natural forest conditions.
- Special habitats for native wildlife and plants.
- Opportunities to enjoy unique recreation and aesthetic experiences.
- Reservoirs of genetic materials and ecological processes.

SOURCE: Minnesota Department of Natural Resources, *DNR's Old-growth Forests Guideline: Implementation Results 2002, Draft Interim Summary Report* (St. Paul, 2002), 3.

Going forward, the department could choose to apply designations that affect revenue generation only to non-school-trust land. However, if the designations are on non-school-trust land that produces marketable timber, they would reduce timber sales revenue, which contributes to division funding.

RECOMMENDATIONS

The Department of Natural Resources (DNR) should clarify how staff are to integrate management objectives for school trust land with management of non-school-trust land.

DNR should provide guidance to staff on prioritizing goals and designations that affect long-term economic returns when school trust land is involved.

DNR needs to provide guidance to staff on how they should manage non-school-trust land that is adjacent to or intermingled with school trust land. The department is supposed to manage school trust land to maximize long-term economic returns to the school trust. While it might be more efficient to manage all forest land under the same principle, statutes direct DNR to manage forest land for multiple uses. Multiple uses might not maximize economic return.

In addition, DNR should determine how it will address other forest management goals that could affect the revenue-generating capacity of forest land. As noted above, the permanent school fund must be compensated for policies and designations that prohibit maximizing long-term economic returns to the trust. It is possible that the Legislature will not appropriate funding to compensate the trust for all such policies and designations. Staff need to know how to address or

⁷ *Minnesota Statutes* 2013, 84.027, subd. 18 (d). Specifically, “[w]hen future designations or policies by the commissioner prohibit the long-term economic return on school trust land, the conflict shall be resolved by compensating the permanent school fund through an exchange or purchase of the lands before designation or application of the policy.”

⁸ *Minnesota Statutes* 2013, 84.027, subd. 18 (b).

modify goals and plans that originated from interdisciplinary work when they are in conflict with management objectives on school trust land.

FOREST AGE POLICIES

Since late 2012, DNR has addressed three policies related to forest age. The department's reviews included interdisciplinary input and stakeholder comments. The resulting policy changes will cause more timber to be available for harvest sooner than would have been the case under the interdisciplinary subsection forest resource management plans in place at the time the policies were reviewed. In addition, the department has implemented two of the changes with an emphasis on offering timber for sale as quickly as possible. These factors contribute to an increased emphasis on economic uses of forest resources.

We discuss these policies—extended-rotation forest, economic rotation age, and lowland conifer old-growth designation—below. The department's approach to designating lowland conifer old-growth forests, the final change we discuss, appears to be less focused on the economic uses of forest resources than the other two changes. It is important to include it in this discussion to provide a balanced assessment of recent forest management policy decisions.

Extended-Rotation Forest Policy

In December 2012, the directors of the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources issued a memorandum to staff indicating that DNR's extended-rotation forest policy would no longer be in effect. DNR adopted the extended-rotation forest policy in 1994 amid concerns about the high level of timber harvest occurring in the state at the time. "Extended rotation" refers to extending the time between harvests to create older forests. Extended-rotation forests can provide biodiversity, corridors connecting old-growth forests, and larger logs than are provided by younger forests. The extended-rotation forest policy called for at least 10 percent of DNR timberlands to be managed as extended-rotation forest.⁹

DNR reviewed the extended-rotation forest policy in response to concerns raised by "stakeholders with an interest in state forest land management."¹⁰ According to the department's report, the review team included staff from the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources. The review team also requested input from a range of stakeholder groups.

The review team recommended moving from the extended-rotation policy to "adaptive management" that is responsive to changes in the amount of older forest and harvest levels in Minnesota. In doing so, the team changed the policy focus from the amount of older forest on public land to the amount of older forest

⁹ Timberland is forest land capable of producing timber of marketable size and volume at the normal harvest age for the cover type.

¹⁰ Minnesota Department of Natural Resources, *Extended Rotation Forest: Policy Review and Recommendations* (St. Paul, 2012), 3.

on all land. The review noted that “older forests on timberlands statewide (*all ownerships*) have been maintained and are generally at or above desired levels for all *DNR-managed* timberland” (emphasis added).¹¹

To achieve the proposed adaptive management approach, the team listed several things that must be in place, including: (1) an up-to-date forest inventory database; (2) the capacity to monitor harvest levels, forest age, and forest conditions; and (3) “trigger points” that would indicate when adaptation might be needed. The memorandum rescinding the extended-rotation forest policy indicated that monitoring would be aided by a software program that was expected to be available by mid-2013.

The fact that DNR reviewed and changed the extended-rotation forest policy does not necessarily mean that its emphasis is shifting to economic uses of forest resources. The amount of older forest in Minnesota’s forests was also a factor behind DNR’s review. However, several circumstances related to implementation of the change indicate such a shift.

First, the directors from the divisions of Forestry, Fish and Wildlife, and Ecological and Water Resources agreed to implement the recommendations from the review quickly to add 30,000 cords to timber sales in fiscal year 2013. In January 2013, the Forestry Division directed area Forestry staff to identify stands to offer for sale in addition to those already planned for fiscal year 2013. Forestry staff and staff from other divisions, who participate in interdisciplinary reviews, were given little notice to accommodate the additional work. The division added additional stands to the fiscal year 2014 workload, and it intends to do the same in 2015.

In addition, the division added these stands using a process that is available for minor adjustments to planned workload. The Forestry Division directed staff to follow the agency’s process for “annual plan additions” to accommodate the former extended-rotation forest stands they identified for harvest. The annual-plan-additions process enables foresters to propose stands for harvest and interdisciplinary review that were not identified during the interdisciplinary planning process. Additions are to be kept to a minimum and, if possible, action on the stands is to be delayed until the next annual exam list. Some staff suggested that annual plan additions resulting from the extended-rotation policy change created challenges for interdisciplinary review.

Finally, DNR implemented the change prior to the monitoring software being in place. Rather than being available in mid-2013, the software program that is supposed to support monitoring became available in late July 2014.

Economic Rotation Age Policy

In response to stakeholder concerns, the Forestry Division reviewed the ages at which it harvests aspen, lowland black spruce, and planted red pine. The review compared the harvest approach being used by the division to practices that

¹¹ *Ibid.*, 8.

“optimize economic return.”¹² In September 2013, the review recommended harvesting planted red pine at an age that maximizes economic return, ranging from 60 to 70 years, rather than the average normal rotation age of 112 years. (For the other two species, there was little difference between typical division practice and optimizing economic return.) The review also recommended implementing this change across all statuses of DNR-administered land, with flexibility to allow for other management priorities.

As discussed above, the department changed its practice for harvesting planted red pine on school trust land. As with its change to the extended-rotation forest policy, the department implemented the change quickly. With less than three months left in the fiscal year, the Forestry Division directed foresters to add eligible stands to their fiscal year 2014 workload “to show some progress towards revising the economic rotation ages for red pine plantations on trust lands.”¹³

Given DNR’s responsibility to manage school trust land to maximize economic returns, the policy change and its expedited implementation on these lands may be justified. However, now DNR is considering whether to apply the economic rotation age policy to planted red pine on non-school-trust land. The sustained yield principle that applies to these lands indicates that forest management “that will best meet the needs of the people of the state...[is] not necessarily the combination of uses resulting in the greatest economic return or unit output.”¹⁴ The Forestry Division has not indicated how it would implement this policy change, should it occur.

Lowland Conifer Old-Growth Designation

In December 2013, DNR proposed a process and criteria to designate lowland conifer stands as “old growth” forest. According to the proposed criteria,

[l]owland conifer stands are...conifer-dominated treed wetlands that occur on mucky mineral or wet organic soils.... [S]tands include black spruce, tamarack, and white cedar cover types....¹⁵

Prior to establishing these criteria, DNR temporarily withheld from harvest approximately 185,000 acres of lowland conifer forest as a pool of stands that might contain lowland conifer old growth. Designating lowland conifer stands as old-growth forests means that some of the acres that had been temporarily withheld from harvest will be permanently withheld under the designation, while others will become available for harvest.

¹² Minnesota Department of Natural Resources, Forestry Division, *Economic Rotation Age Review and Policy Recommendations* (St. Paul, 2013), 3.

¹³ Timber Sales Program Supervisor, DNR Forestry Division, memorandum to Area and Region Timber Program Coordinators, *Trust lands red pine plantation acreage additions to FY 14 annual stand exam lists*, April 4, 2014.

¹⁴ *Minnesota Statutes* 2013, 89.001, subd. 9.

¹⁵ Minnesota Department of Natural Resources, “A Proposed Process and Criteria to Identify and Evaluate Candidate DNR Lowland Conifer Old Growth,” December 2013, 2.

Although offering formerly reserved stands for harvest meets economic uses of forest resources, the department could have gone further in that regard. Department analysis indicated that over half of the reserved acres had potential to be marketed for timber sales. The department has indicated that harvestable stands may be designated as old-growth forest if they meet the criteria, although individuals representing economic uses of forest resources urged DNR to restrict the designation to forest stands that are not commercially viable. In addition, the department has indicated that the lowland conifer old-growth designation process will be implemented through the subsection forest resource management planning process, rather than an alternative process.

RECOMMENDATION

The Department of Natural Resources should accelerate implementation of changes to forest management policies only when it is essential.

Changes to forest management policy may be motivated by different factors. In some cases—perhaps to respond to serious threats to forest health or legislative directives—accelerated implementation of policy change may be needed. For example, as described above, DNR felt the need to show progress generating economic returns on school trust land and quickly began implementing the policy on economic rotation age for planted red pine on those lands. However, expedited change can create challenges for field staff who must implement the change “on the ground.” For this reason, accelerated implementation of forest management policy changes should be used sparingly.

When possible, the department should incorporate changes to forest management policy through the subsection forest resource management planning process. This is the approach the department took for designating lowland conifer old growth. Implementing changes through this mechanism takes advantage of a process that contributes to the department’s ability to manage DNR-administered forest land according to the statutorily prescribed principles of multiple use and sustained yield. At the same time, subsection forest resource management plans last ten years and plan development is staggered, limiting the department’s ability to incorporate policy change in a timely manner across all planning areas.

In some cases, quick implementation may not be essential, but the subsection forest resource management planning cycle may be deemed too drawn out to incorporate desired changes. In these cases, the department should implement changes to forest management policy through a process that allows adequate time for foresters to identify stands for harvest and complete interdisciplinary review with staff in the Fish and Wildlife Division and Ecological and Water Resources Division. The process needs to be sensitive to the work responsibilities of field staff in all three divisions and the efforts these staff make to work together to achieve forest management that reflects diverse uses and sustainability of forest resources.

Chapter 5: Timber Sales

Timber harvest is one of the main forest management activities undertaken by the Department of Natural Resources' (DNR's) Forestry Division. Minnesota statutes allow for the sale of the state's timber to the highest responsible bidder at public auction. If unsold at auction, timber may be offered for private, over-the-counter sale for up to one year.¹ Over the last ten years, loggers have annually harvested an average of approximately 790,000 cords of wood from state-administered forest land.² In this chapter, we describe the timber sale process, discuss some recent policy issues, and provide information about the performance of the timber sales program. We also make recommendations for improvements.

TIMBER SALE PROCESS

There are many steps to the timber sale process. These include designing and appraising the sale, conducting the sale, and supervising harvest. Foresters at area offices administer most of the field work in the timber sales process. They also receive assistance from staff at region offices and the Central Office in St. Paul. This assistance is typically in the form of policy communication or interpretation and managing any conflict that arises between divisions. In the following sections, we describe the steps in the timber sale process and provide examples to illustrate how timber sale policies are implemented.

Sale Design

The timber sale process begins with a list of all the stands that may be considered for forest management activities in the following ten years. As explained in Chapter 3, this list is determined through the department's interdisciplinary subsection forest resource management plan process. Each administrative area has a timber program forester who creates ten annual stand exam lists from those stands on the ten-year list. Foresters may also add stands that need immediate attention to the annual stand list. For example, a forester may add a stand to the list if harvest activities on adjacent land may make the trees on that stand vulnerable to strong winds.

As part of the planning process, each stand on the ten-year list is assigned an expected forest management treatment, or "prescription." These prescriptions may include some form of harvest, prescribed burn, or reinventory, for example. Foresters will examine each stand of trees to determine the final prescription.

When designing prescriptions, foresters must consider subsection forest resource management plan goals and objectives, Minnesota Forest Resource Council guidelines, and DNR's natural heritage database information, among other

¹ *Minnesota Statutes* 2013, 90.101, subd. 1 (2).

² One cord is 128 cubic feet of wood, bark, and air.

things.³ Exhibit 5.1 shows information from a stand exam and prescription for a stand in northeastern Minnesota. The prescription includes considerations of forest management plan goals. The Minnesota Forest Resource Council guidelines are reflected in the prescription's specification of riparian management zones and reservation of live trees.

Exhibit 5.1: Sample Stand Exam and Prescription, Hibbing Area, 2014

Past management practices	Logging, likely around 1920
Present conditions	Mature stand, mostly birch and aspen, with some balsam fir, white spruce, white pine, and white cedar
Forest health	Aspen and balsam have experienced significant blow down, and there is significant standing, dead aspen and balsam fir. There is also standing, dead birch due to birch decline.
Desired future condition	Mixed species of those species on site with an increase in white spruce, white cedar, and white pine
SFRMP goals ^a	Increase white pine, white cedar, and white spruce; retain legacy patches: islands of residual vegetation that include tree species present at older growth stages will be retained
Prescription	Winter harvest with conventional equipment recommended due to large crown trees and the need to disturb heavy mountain maple brush component. There will be a 100-foot riparian management zone adjacent to wetlands, Seven Beavers Lake, and Round Lake. Reserve one well-formed, mature birch every 75 feet. Reserve all white spruce, white pine, and white cedar. Reserve 2-3 live, dead, or cull aspen per acre. Plant, protect, and monitor 330 white pine and 150 white cedar. Potential for prescribed burn.

NOTES: This exhibit includes only selected portions from the prescription worksheet for this stand. It describes prescriptions, or planned forest management activities, from a 2014 stand examination. Foresters conduct a field visit to examine each stand selected for potential management through the subsection forest resource management planning process and determine a detailed management prescription.

^a The SFRMP is the Minnesota Department of Natural Resources' subsection forest resource management plan.

SOURCE: "Stand Silvicultural Prescription Worksheet – Northeast Region" (spreadsheet, Minnesota Department of Natural Resources, Forestry Division, Hibbing Area Office, April 24, 2014).

Both the Division of Fish and Wildlife and the Division of Ecological and Water Resources have an opportunity to review the stands on the list. Staff from these divisions may make comments on the stands and request a joint site visit with a forester on any stands where they may have concerns or guidance related to management activities. For example, staff from the Division of Fish and Wildlife may request that foresters designing a prescription leave a buffer around particular wildlife habitat. The stand list is also reviewed by the state archaeologist who determines whether the stands contain any important cultural resources. The annual list and any added stands are posted to the department's website for a 30-day public review period. As part of the public review period, or in anticipation of it, foresters may interact with parties interested in state forest management. For example, foresters may spend a significant amount of time and effort managing the concerns of lake associations, recreational trail users, or other groups with an interest in an area's forest management.

³ The Natural Heritage Information System contains information about Minnesota's rare plant and animal species, native plant communities, and other rare features.

Appraisals

If a stand exam results in a harvest prescription, the stand is appraised for sale. DNR foresters appraise stands of trees on forest land administered by DNR.⁴ An appraiser estimates the volume of wood within a stand and determines a value for that wood using regional base stumpage prices for each species.⁵ The Forestry Division economist determines base stumpage prices using timber sale data from the past 12 months. Base stumpage prices are used as a starting point to calculate the opening bid price for a timber sale. At this time, the forester also marks the boundaries of the harvest area, trees to be cut, and reserve trees. In 2013, DNR foresters appraised timber on approximately 41,000 acres of forest land.

Generally, appraisers may use their own discretion to make price adjustments plus or minus 30 percent of the base stumpage price to establish the opening bid price. Appraisers make these adjustments based on stand conditions or ease of access. The timber sales manual indicates that in some areas of the state where timber markets are limited, appraisers should price stands at a small fraction of the base stumpage price. For example, in the Aspen Parklands subsection, which includes parts of Marshall and Kittson counties, staff are instructed to appraise sales that can only be accessed on frozen ground at 10 percent of the base stumpage price.

Sales

Once a forester has marked the boundaries of a stand and developed an appraisal, the stand is put up for sale. As Exhibit 5.2 shows, statutes allow for four main types of timber sales.⁶ Forestry Division policy states that at least 90 percent of all volume shall be offered for sale through the auction process. In 1981, the Legislature created intermediate auctions, which are restricted to bidders with fewer than 30 employees, in order to help small timber operators be more competitive in the auction process.

Foresters may conduct regular and intermediate sales by sealed-bid or oral auctions. For both sealed-bid and oral auctions, bidding begins at the appraised price and increases in increments of 1 percent. Oral auctions occur in person, at a predetermined time and location. In sealed bid auctions, potential buyers submit bids by a due date; the winner is determined by the highest bid. The sealed bid amounts are classified as nonpublic information until the winning bid has been decided. The Forestry Division currently follows a general rule that one-third of the auctions are conducted as sealed bid, and two-thirds are conducted as oral bid. Most area offices hold auctions during two periods each year.

⁴ Statutes allow the Commissioner of Natural Resources to designate state appraisers, who are empowered to estimate the volume of wood on a stand, place a value on that wood, and supervise harvest operations. This designation excludes nursery and inventory staff, central and region office staff who are not timber program specialists, and seasonal positions.

⁵ Stumpage is the value of timber as it stands uncut.

⁶ *Minnesota Statutes* 2013, chapter 90.

Exhibit 5.2: Options for Sale of State Timber

	Regular Auction	Intermediate Auction	Private Sale of Unsold Auction Tracts	Informal Sale
Maximum cords ^a	12,000	3,000	12,000	500
Bidder eligibility restrictions	None	Fewer than 30 employees	Depends on type of auction	None
Right to transfer permit	Yes	Yes	No	No
Permit purchase limit per auction	None	- One permit, if fewer than four tracts offered 25% of permits, if four or more tracts offered	None	Four
Down payment (percentage of appraised value)	15%	15%	15%	100%
Maximum permit duration	5 years	5 years	5 years	2 years
Bid guarantee		If final bid exceeds appraised value by more than \$5,000, 15% of total price less down payment		N/A
Security deposit		Full value (sale bid price x appraised quantity) less down payment and bid guarantee, if any ^b		N/A
Additional time		Up to 330 days for removal of cut timber, equipment, and buildings		
Regular extension of expiring permit		One extension of one-year duration		
Interest on extensions ^c		May charge 8% interest		

NOTES: Table does not include special use and product permits that the Minnesota Department of Natural Resources may issue under *Minnesota Statutes* 2013, 90.195. Special fuelwood permits are granted to allow for the personal-use harvesting of dead, down, or diseased trees. Special product permits are intended for the sale of small amounts of tree boughs or earth materials such as gravel or clay.

^a The state's Executive Council may establish rules for timber sales exceeding 12,000 cords. The Department of Natural Resources views this language as a requirement to obtain Executive Council approval for these sales. The Executive Council includes the governor, lieutenant governor, secretary of state, state auditor, state treasurer, and attorney general.

^b A purchaser of state timber may provide security for a cutting block, or harvest area, rather than for all timber covered by the permit. One permit may be made up of multiple cutting blocks.

^c The Commissioner of Natural Resources may grant additional extensions without penalty or interest in the event of a natural disaster or other emergency.

SOURCES: *Minnesota Statutes* 2013, chapter 90 and 9.011, subd. 1.

If stands go unsold at auction, they may be offered for private, over-the-counter sale for up to one year after the public auction.⁷ Statutes also allow for informal timber sales of 500 cords or fewer.⁸ Informal sales occur outside of the formal auction process and are intended to allow flexibility to take advantage of short-term markets or forest management opportunities. For example, foresters may see an opportunity for an informal sale if a blow down occurs and a logger is already harvesting in the area.

In addition to those sales detailed in Exhibit 5.2, statutes allow for special use and special product permits. For example, special fuelwood permits are sold to allow for the personal-use harvesting of dead, down, or diseased trees. Special product permits are used for the sale of small amounts of tree boughs or earth materials such as gravel or clay.

⁷ *Minnesota Statutes* 2013, 90.101, subd. 1 (2).

⁸ *Minnesota Statutes* 2013, 90.191, subd. 1.

Permits

For those who wish to bid on or harvest state timber sales, Minnesota statutes and Forestry Division policies indicate several requirements, such as carrying insurance. Exhibit 5.3 lists the requirements. A purchaser who meets these requirements may be granted a permit to harvest the timber on a particular stand. When loggers purchase a permit to harvest, they pay a 15 percent, nonrefundable down payment.

Exhibit 5.3: Requirements for Timber Permit Purchasers or Operators

Purchaser

Registration	All purchasers must submit a registration form and must meet the specifications of a responsible bidder, as defined in Minnesota statutes: "A person who is financially responsible; demonstrates the judgment, skill, ability, capacity, and integrity requisite and necessary to perform according to the terms of a permit issued under this chapter; and is not currently debarred by another government entity for any cause."
Past Violations	The Department of Natural Resources Forestry Division may prevent potential purchasers from bidding or operating on state timber sales for one to three years if the holder is found guilty of a gross misdemeanor or felony-level criminal trespass, theft, fraud, or antitrust violation.

Operator

Insurance	Permit holders are required by law to carry workers' compensation insurance and provide an insurance certificate. ^a
Training and Safety	The permit holder will designate the person who directs daily harvest operations and certify that he or she has completed a logger training program through the Minnesota Logger Education Program or Wisconsin's equivalent, the Forest Industry Safety and Training Alliance. Permit holders must also provide proof of compliance with industry safety standards, which are covered in both of the training programs listed above.

^a Permit holders who are sole proprietors may be exempt from the requirement to carry workers' compensation insurance. Permit holders may also be exempt from this requirement through a written order from the Commissioner of Commerce.

SOURCES: *Minnesota Statutes* 2013, 90.01, subd. 12; 90.041, subd. 11; 90.145, subd. 1 (b), (c), and (d); and 176.181, subd. 2 (a); and "Timber Sale and Scaling Manual" (electronic document, Minnesota Department of Natural Resources, Forestry Division, St. Paul, 2007).

Specifications

Each timber permit has its own set of specifications for the timeline and harvest restrictions. Although statutes allow for timber harvest permits of up to five years, Forestry Division policy typically allows three-year permits, with the

possibility for extensions.⁹ In addition, many permits require that timber harvests take place only in the winter. Frozen ground restrictions are necessary in some areas in order to prevent damage to roads or soil.

Extensions

Statutes allow two types of extensions to timber permit expiration dates: regular extensions or emergency declarations by the Commissioner of Natural Resources.¹⁰ As Exhibit 5.2 showed, loggers may request one regular extension per permit, and may be charged 8 percent annual interest by DNR. Regular extensions are determined on a case-by-case basis by region office staff who have been delegated authority by the commissioner to grant extensions. Region staff also determine whether regular extensions will be subject to interest charges. Region staff may exempt a regular extension from interest in specific situations, such as a medical hardship or an employee strike. Additionally, the commissioner may declare an emergency extension for multiple permits in the case of a widespread event such as adverse weather conditions or natural disasters. We discuss extensions in more depth below.

Harvest

Prior to harvest, the forester in charge of a sale will visit the stand with the logger to review the prescription and discuss sale specifications in keeping with the Minnesota Forest Resource Council's guidelines. Permit holders notify the Forestry Division timber sale administrator once they are ready to begin harvesting on the site. As shown in Exhibit 5.2, the permit holder must provide a security deposit equaling the full bid value of the permit, minus any previous down payment. The timber sale administrator will supervise harvest operations to varying degrees, depending on the expertise of the logger or the nature of the prescription.

Determining Payment

The Forestry Division uses two primary methods of determining what loggers must pay for the wood they purchase and harvest from a stand: "consumer scale" and "sold on appraised volume."¹¹ Consumer scale is the primary payment method for Forestry Division timber sales. In consumer scale sales, timber permit holders typically pay for the wood based on the weight of the forest products they remove from the site. The volume measurements are conducted by the forest product consumer, usually based on the weight of the products removed from the site.¹²

⁹ *Minnesota Statutes* 2013, 90.151, subd. 1 (b), and "Timber Sale and Scaling Manual" (electronic document, Minnesota Department of Natural Resources, Forestry Division, St. Paul, 2007).

¹⁰ *Minnesota Statutes* 2013, 90.193, and 90.041, subd. 7.

¹¹ Scaling is measuring timber to determine its volume or weight.

¹² The division may also conduct other methods of scaling. For example, the state scaler may conduct physical measurements of harvested wood going to mills that do not have consumer scale agreements with the state.

When a timber sale is sold on appraised volume (SOAV), no scaling is conducted after the harvest. The payment is based on the appraiser's estimate of the volume of wood on the site before it is cut down. In 2013, appraised-volume timber sales made up approximately 10 percent of the total volume of the Forestry Division's timber sales. The Forestry Division generally uses SOAV either for sales that are high-value species, such as quality hardwoods, or for sales that are very small volumes or low values. For greater accuracy on high-value SOAV appraisals, foresters often appraise every tree in the stand individually.

Appraisal Accuracy

The amount of timber harvested may differ from initial appraisals for many reasons. For example, because many years may pass between the appraisal and the harvest, the volume of harvestable timber will change as the trees grow over time. In addition, a natural event, such as a windstorm, may reduce the amount of harvestable wood. Further, for species such as birch and aspen, the weight of harvested timber varies seasonally.

Forestry Division standards for appraisal accuracy depend on the method used to determine the value of the sale. The division's standard for consumer scale appraisals states that for 80 percent of consumer scale timber sales in a fiscal year, the harvested amount must fall within 20 percentage points of the appraiser's estimate. In fiscal year 2013, only 60 percent of consumer scale permits met this standard. However, in the case of consumer scale, the Forestry Division will receive payment for all wood cut on a sale, regardless of the accuracy of initial appraisal.

Appraisal accuracy standards are higher for SOAV sales. For 80 percent of appraised-volume sales, the amount harvested must fall within 10 percentage points of the appraiser's estimate. Appraisal accuracy standards for SOAV sales are higher because the Forestry Division is paid based on the appraised amount, not on the volume of wood harvested.

Although the accuracy standard is higher for SOAV appraisals, the division does not regularly monitor their accuracy. Current Forestry Division policy allows area offices to request a report from SOAV permit holders indicating the volume of timber harvested, which would allow monitoring of appraisal accuracy. The timber sales manual says that requesting one or two reports per appraiser per fiscal year would be adequate to monitor SOAV appraisal accuracy. However, an internal audit conducted by the Department of Natural Resources indicated that the Forestry Division does not regularly monitor the accuracy of SOAV appraisals.¹³

As noted in the internal audit report, timber program management has already identified potential policy improvements to better monitor accuracy on SOAV permits. As of August 2014, the division was developing a new policy for SOAV appraisal monitoring, which prescribes a specific portion of SOAV appraisals to be checked each fiscal year.

¹³ "Internal Audit Closure Report: Timber Sales—Appraisals and Scaling" (electronic document, Minnesota Department of Natural Resources, Internal Audit Section, St. Paul, 2014).

The main impact of appraisal accuracy comes in terms of planning, both for the Forestry Division and for loggers. If appraisals are significantly different from the actual volume of wood removed from harvest sites, the division's assessment of cords offered may not accurately reflect accomplishments. The Forestry Division determines whether it has met the department's target of offering 800,000 cords each year based on appraised volumes for timber sales. However, the sales may yield significantly more or less timber than the appraised amount depending, in part, on the accuracy of initial appraisals.

In contrast, a logger may plan his or her annual harvest based on a sale that was appraised at \$10,000, but the scales may indicate that the logger removed \$15,000 worth of wood from a stand. In this case, the logger may incur cash flow problems, or may not be able to sell the surplus product he or she harvested. Timber harvests completed in fiscal year 2013 resulted in a median 5 percent more volume harvested than was appraised. This means that loggers harvested 5 percent more wood than initial appraisals projected.

When foresters conduct appraisals based on volume for high-value products, they typically appraise each tree before it is cut down. Division staff stated that these appraisals are much more thorough than consumer scale appraisals; there is a greater financial risk with SOAV appraisals. Because the logger pays the division based on the appraisal estimate, the permit holder may be paying much more or less than the actual value of the wood removed from the stand.

Inspections and Regeneration

All timber sales are eligible to be selected for a formal inspection either during harvest or shortly after the harvest is complete. Area supervisors, timber program foresters, region staff, and St. Paul timber staff each have specific requirements for the number of inspections they conduct each year. For example, the number of harvests area supervisors inspect is equal to the number of appraisers, or 10 percent of active sales, whichever is greater.¹⁴ During inspections, foresters review the site in terms of adherence to prescriptions and Minnesota Forest Resource Council guidelines. Exhibit 5.4 lists all the areas foresters may inspect. For example, inspections assess the extent to which loggers adhered to guidelines for condition and placement of roads, invasive species, and visual quality.

After harvest operations are complete, the permit is closed and the harvest site transitions to forest development work within the Forestry Division's silviculture program. Depending on the cover type and desired future conditions of a stand, foresters may seed, plant, or let a site naturally regenerate. Like harvests, regeneration strategies are determined through interdisciplinary coordination based on forest management plan goals and objectives.

¹⁴ This formula determines the number of appraisals that go into the Forestry Division's work plan each year. The number of inspections may equal the number of appraisers, but because the sales are selected randomly, each appraiser may not be subject to an inspection every year.

Exhibit 5.4: Items Checked during Timber Sale Inspections

Riparian management zones	Determine whether loggers followed management guidelines in riparian zones, the area where bodies of water transition to forest land.
Sale boundaries	Determine whether the sale boundaries were clearly and accurately marked.
Condition and placement of roads, landings, and skid trails ^a	Determine whether the size and location of roads, landings, and skid trails are appropriate for the sale. Also check the condition of roads, landings, and skid trails for erosion, rutting, and waste or debris.
Leave trees and snags ^b	Determine whether loggers followed management guidelines for leave tree clumps, scattered leave trees, and snags.
Slash management ^c	Determine how well loggers followed guidelines for slash management.
Utilization ^d	Determine how well loggers followed the Forestry Division's utilization standards.
Prescription	Determine the appropriateness of the prescription, or planned forest management treatments, for the sale.
Invasive species	If invasive species were present on the site, determine whether loggers took measures to lessen the effects of that species.
Scaling on alternate landings ^e	If an alternate landing was used, determine whether wood piles are accurately marked and whether loggers followed proper procedures for moving wood to the landing.
Sale documentation	Determine whether the landing was properly posted. Determine whether documentation of the sale is complete and accurate, including documentation of reasons for any departures from forest management guidelines. Also determine the number of times the supervising forester visited the site during harvest.
Visual quality	Determine whether any portions of the sale are sensitive to forest management guidelines related to visual quality, e.g., areas near campgrounds, public roadways, resorts, etc. Determine whether loggers followed any necessary guidelines for maintaining visual quality.
Overall rating	Determine an overall rating for the timber sale's design and implementation, based on all factors above.

^a Landings are the location where harvested wood is collected before it is removed from the site. Skid trails are access routes cut through the forest for dragging wood from the stump to the landing.

^b Leave trees are trees left standing in an otherwise harvested area, generally for wildlife or regeneration purposes. Snag trees are standing, dead trees, which are sometimes left on a harvest site to provide wildlife habitat.

^c Slash is debris, e.g., tree tops and branches, left on the ground after logging.

^d The Forestry Division sets standards for utilization on each harvest site. Utilization standards determine the size of each type of tree that loggers must remove from a site.

^e Alternate landings may be established on land outside timber sale boundaries if there is not a suitable area within timber sale boundaries, or if locating the landing outside the boundary would greatly increase efficiencies.

SOURCE: "Timber Sale and Scaling Manual" (electronic document, Minnesota Department of Natural Resources, Forestry Division, St. Paul, 2007).

POLICIES

The Forestry Division operates under a wide range of federal, state, agency, and division-level policies. Minnesota statutes, the division's timber sales manual, and the Minnesota Forest Resource Council guidelines are three of the main documents used to provide forest management guidance for Forestry Division offices. While the division is working to improve and adapt policies to meet the changing needs of staff and stakeholders, staff described several policies that may pose challenges or create inefficiencies in state forest management.

Underperforming Loggers

Forestry Division staff indicated that the vast majority of loggers who operate on state forest land comply with guidelines and sale specifications. In order to operate on state forest land, loggers must be supervised by an employee or foreperson who has participated in training courses through either the Minnesota Logger Education Program or the Wisconsin Forest Industry Safety and Training Alliance.

We found that Forestry Division staff have limited ability to bar underperforming loggers from bidding or operating on state timber sales.

While the division may charge damages to a logger who does not comply with permit terms, they cannot prevent that logger from bidding or operating on future sales, no matter how regularly infractions of this kind may occur. Several staff indicated that there are a small number of loggers who require a significantly higher amount of supervision and guidance to ensure that they are adhering to sale specifications and respecting state land.

Currently, the division may prevent a person from bidding on a sale only if he or she has been convicted of criminal trespass, theft, fraud, or antitrust violations. In addition, the division prevents loggers with delinquent payments from bidding until their debt has been paid. The division may also bill loggers for liquidated damages in the event of a breach of permit terms. For example, if the logger damages trees that were reserved from harvest, the division may impose a fine for each damaged tree. However, provisions allowing division staff to bar violators from bidding or operating on state timber sales are limited.

RECOMMENDATION

The Forestry Division should establish appropriate criteria for identifying underperforming loggers who should be barred from operating or bidding on state timber sales.

A Forestry Division representative stated that determining criteria to identify underperforming loggers may be difficult due to the widely varying circumstances of each sale and each logger. For example, a simple “three strikes” policy for loggers who do not comply with sale specifications may be unfair to loggers with a large number of active sales. In other words, it may make sense to penalize a logger who has 3 infractions on 3 active sales, but not to penalize a logger with 3 infractions on 100 active sales.

Instead, the division could determine the most common infractions and assign a specific penalty to each, based on the severity of the infraction. Or the division could penalize loggers with infractions on a predetermined percentage of their active sales. Further, the division could impose increasingly severe penalties for additional infractions. For example, the division could bar loggers from bidding or operating for one year if they meet predetermined criteria for poor performance. The length of time they are prohibited from bidding would

increase if they are reinstated and continue to perform poorly. The division would have to design a process identifying who would monitor compliance, impose sanctions, and review appeals.

Because of the complex nature of the potential infractions and the effect of penalties, the division should consult affected stakeholders when determining criteria. Representatives from both the Forestry Division and an association representing contract loggers indicated willingness to work together to establish workable criteria.

Cord Targets

DNR maintains a goal of offering 800,000 cords of timber annually. The department identified 800,000 cords as an amount that can be offered sustainably from state land over time. The department's *Strategic Conservation Agenda for 2009-2013*, which outlines performance indicators and conservation targets across the department, includes this goal through fiscal year 2013.¹⁵ Although the *Conservation Agenda* has not yet been updated for fiscal year 2014, Forestry Division staff have indicated that the 800,000 cord goal still stands. Area offices are assigned a specific number of acres to examine each year, with the assumption that those acres can produce a certain number of cords.

We found that the Forestry Division's area cord targets can pose challenges for interdisciplinary decision-making.

Some Forestry staff indicated that, when designing a timber harvest, it is unclear when cord goals can or should take precedence over other department forest management goals. In addition, the subsection forest resource management plan goals are based on acreage, not cords, and some staff indicated that it is unclear which metric takes priority.

We heard from some Forestry staff that cord targets do not take precedence over other forest management goals. These staff stated that management priorities center on examining the target number of acres each year; for them, the cord goal was secondary. However, some staff from the Forestry Division, Fish and Wildlife Division, and the Ecological and Water Resources Division had the opposite perception. Staff indicated that differing understandings of forest management priorities can lead to conflict between divisions when determining what action to take on a stand.

A few staff indicated that the cord goal creates the perception that foresters are pushed to sacrifice other forest management goals to meet cord goals. While we found no evidence that foresters are not making sound management choices, the division's emphasis on cord goals may create an incentive for foresters to prioritize forest management activities that produce the highest number of cords. For example, a staff person from the Division of Ecological and Water Resources

¹⁵ "A Strategic Conservation Agenda, 2009-2013" (electronic document, Minnesota Department of Natural Resources, Forestry Division, St. Paul, 2010 Update).

indicated that he might suggest a treatment that would highlight biodiversity features on a stand. However, he indicated that this suggestion may be met with resistance if it prevents foresters from meeting cord goals for their area. Two additional staff mentioned that, in such situations, those who suggest an alternate treatment might be expected to identify “replacement” stands in order to meet cord goals.

Further, subsection forest resource management plans and cord goals are not explicitly connected. Comments from some foresters suggested that the absence of a clear connection between acreage goals and cord goals can complicate their work. For example, one area forester noted that while he may examine all the acres in his area’s stand exam list, he feels more pressure to meet cord goals. In addition, because inventory records can be unreliable, the projected number of cords for a tree stand may not be realistic.

RECOMMENDATION

The Forestry Division should provide clear direction to its staff on the extent to which area cord goals should affect forest management decisions.

Given that managing forest land for economic use is among DNR’s many priorities, the department is justified in maintaining a cord goal and expecting the Forestry Division to monitor progress toward it. We are not recommending that the department or division eliminate cord goals. However, in terms of measuring area offices’ performance, the division should consider clearly prioritizing metrics that indicate whether an area has met management goals that reflect the multiple uses of forest land.

Permit Extensions

As discussed above, statutes allow the Forestry Division to grant regular and special extensions for timber sale permits. Exhibit 5.5 shows that the commissioner has issued several blanket extensions since 2006 for reasons such as abnormally warm winters, abnormally cold winters, or poor timber market conditions.

We found that permit extensions can create inefficiencies in achieving forest management goals and administering timber permits.

Granting multiple extensions to a permit holder may significantly delay planned forest management activities. It might also derail goals to manage forests to achieve diversity of forest ages across the landscape. One area forester indicated that permit holders may receive extensions and then allow the permit to expire without any management having occurred on the stand. Further, another forester in this area explained that loggers may delay work on state timber harvests and instead harvest sales purchased from forest landowners with less flexible extension-granting policies.

Exhibit 5.5: Blanket Extensions, 2006-2014

Year	Reason	Permit Qualifications
2006	Prolonged period of unseasonably warm winter temperatures	Permits restricted to winter-only harvest are eligible for interest-free extensions for following two winters.
2008	Poor market conditions	Expiring permits without a previous regular extension are eligible for a one-year, interest-free regular extension. ^a
2009	Poor market conditions	Expiring permits are eligible for a one-year, interest-free regular extension, regardless of previous regular extensions.
2010	Poor market conditions	Expiring permits are eligible for a one-year extension with 8 percent interest.
2011	Pine County windstorm	Purchasers of salvage timber sales in the area affected by the windstorm are eligible for a two-year, interest-free extension on existing qualified permits.
2011	Prolonged period of above-average winter temperatures and lack of frost	Expiring permits with frozen ground harvest requirements are eligible for a two-year, interest-free extension.
2012	Prolonged period of above-average winter temperatures and below-normal precipitation	Expiring permits are eligible for a one-year extension. Interest-free extensions may be granted to permit holders who were unable to access the stand due to unfrozen ground.
2014	Widespread, below-average winter temperatures and above-normal precipitation	Permits requiring frozen ground conditions for harvest are eligible for a one-year extension with 8 percent interest.

^a DNR granted interest-free extensions with the stipulation that 8 percent interest would be charged on the value of any uncut timber on the stand at the time of the extended expiration date.

SOURCE: Minnesota Department of Natural Resources, Forestry Division memoranda to permit holders, 2006-2014.

In addition to subverting forest management goals, reoffering an unharvested stand for sale might require additional work (for example, re-marking sale boundaries if the paint has faded). Permit holders who delay harvest or do not harvest at all delay or prevent the Forestry Division from receiving timber sales revenue and meeting subsection forest resource management plan goals.

Further, issuing individual regular extensions can lead to increased administrative costs for Central Office and region staff in terms of determining whether to approve requests. While issuing blanket extensions may create administrative efficiencies, harvest conditions can vary greatly among areas and extensions may not be warranted across the entire state. For example, the Commissioner of Natural Resources allowed for an emergency blanket extension in 2014 due to widespread below-average temperatures and above-average snowfall. However, one area forester indicated that the area had a good winter for logging with early access to harvest sites due to frozen ground conditions, and loggers in the area had not complained.

RECOMMENDATIONS

The Forestry Division should determine the costs and benefits of granting extensions to timber sale permit holders.

The Forestry Division should consider developing logger incentives to encourage timely harvests.

The Forestry Division does not conduct regular analysis of the impact of granting timber-sale-permit extensions. While many extensions are subject to 8 percent interest payments from the permit holders, some extensions are interest free. In these cases, the division has no opportunity to recoup the costs of delaying management activities on the stand. In addition to analyzing the impact of extensions, the division should analyze the presumed benefit of extensions for the state's forest products industry.

As discussed above, if many years pass between the initial appraisal and harvest, foresters may need to spend additional time re-marking harvest boundaries if paint has faded. In addition, the division may grant an extension to a logger who has no intention of harvesting the wood. This keeps that stand off the market for other potential buyers who could conduct a harvest to meet management objectives. For these reasons, the division should consider implementing incentives for loggers who receive extensions. For example, a logger who receives an extension could be required to pay a deposit, which would be applied to the final permit invoice if that logger completes the harvest by the end of the extension.

PERFORMANCE

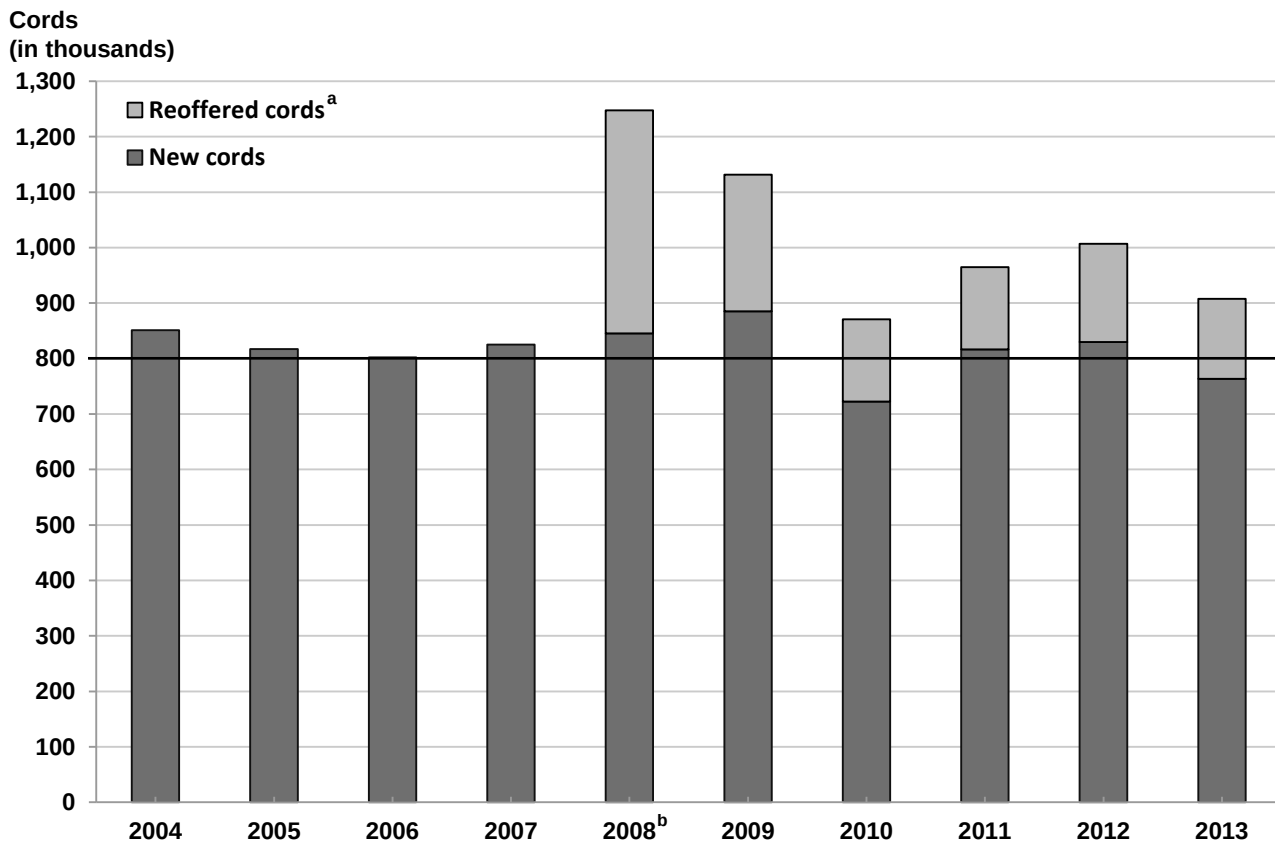
In 2008, Minnesota's forest products industry was the fifth-largest manufacturing sector in the state, when measured by its value-added contribution to gross state product. The Forestry Division's timber sales program represents a significant portion of Minnesota's forest products economy in terms of the amount of forest land managed and cords harvested annually. Overall, the state administers an estimated 24 percent of Minnesota's forest land. DNR has reported that state-administered forest land accounts for around 30 percent of wood harvested across all ownerships.

Cord Targets

As discussed above, the Forestry Division maintains a goal of offering for sale at least 800,000 cords of timber each year. Offering 800,000 cords annually creates a predictable supply of timber for the forest industry. A predictable supply of timber from the public sector is important to the industry because sales by private landowners are unpredictable. As Exhibit 5.6 shows, the division did not reach the 800,000 cord goal in fiscal years 2010 or 2013, in terms of new cords offered. Each year, the division also reoffers a certain number of cords that did not sell in previous years. Since they began tracking reoffered cord data in

2008, the division has reoffered a median of approximately 163,000 additional cords each fiscal year. When reoffered stands are included in the total, the division has offered at least 800,000 cords each fiscal year since 2004. Between 2004 and 2013, the division sold an annual average of approximately 850,000 cords of wood from state-administered forest land.

Exhibit 5.6: Forestry Division Cords Offered for Sale, Fiscal Years 2004-2013



NOTES: The Minnesota Department of Natural Resources maintains a goal of offering 800,000 cords of timber annually. One cord is 128 cubic feet of wood, bark, and air.

^a In 2008, the Forestry Division began tracking reoffered cords that did not sell in previous years.

^b Due to high auction bid-ups and subsequent lagging markets, many loggers forfeited their timber sales in 2007. These forfeited permits were reoffered in 2008, which accounts for the large amount of reoffered cords in that year.

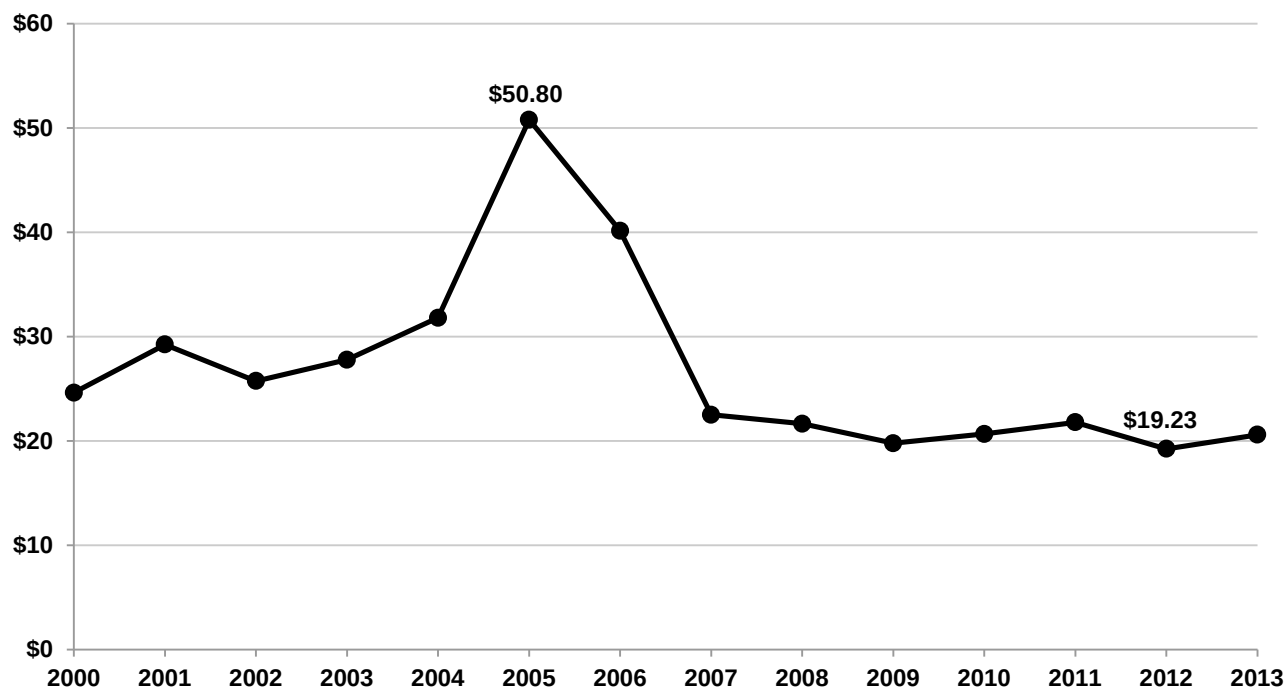
SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources, Forestry Division timber sales program data, received January 13, 2014.

Timber Sale Revenues

Since fiscal year 2000, average per-cord prices ranged from \$50.80 in fiscal year 2005 to a low of \$19.23 in 2012, as Exhibit 5.7 shows. The Forestry Division's gross receipts from timber sales have also varied greatly over the last several

years. Over the last ten years, gross receipts ranged from over \$25 million to just under \$16 million. As several mills across the state have closed in the past decade, demand for Minnesota's timber has dropped markedly. Exhibit 5.8 shows timber sale receipts peaked from 2006-2008 and then dropped significantly. The exhibit also shows a substantial drop in the sell rate for Forestry Division timber over time.¹⁶

Exhibit 5.7: Average Price per Cord for Timber Sold by Forestry Division, Fiscal Years 2000-2013



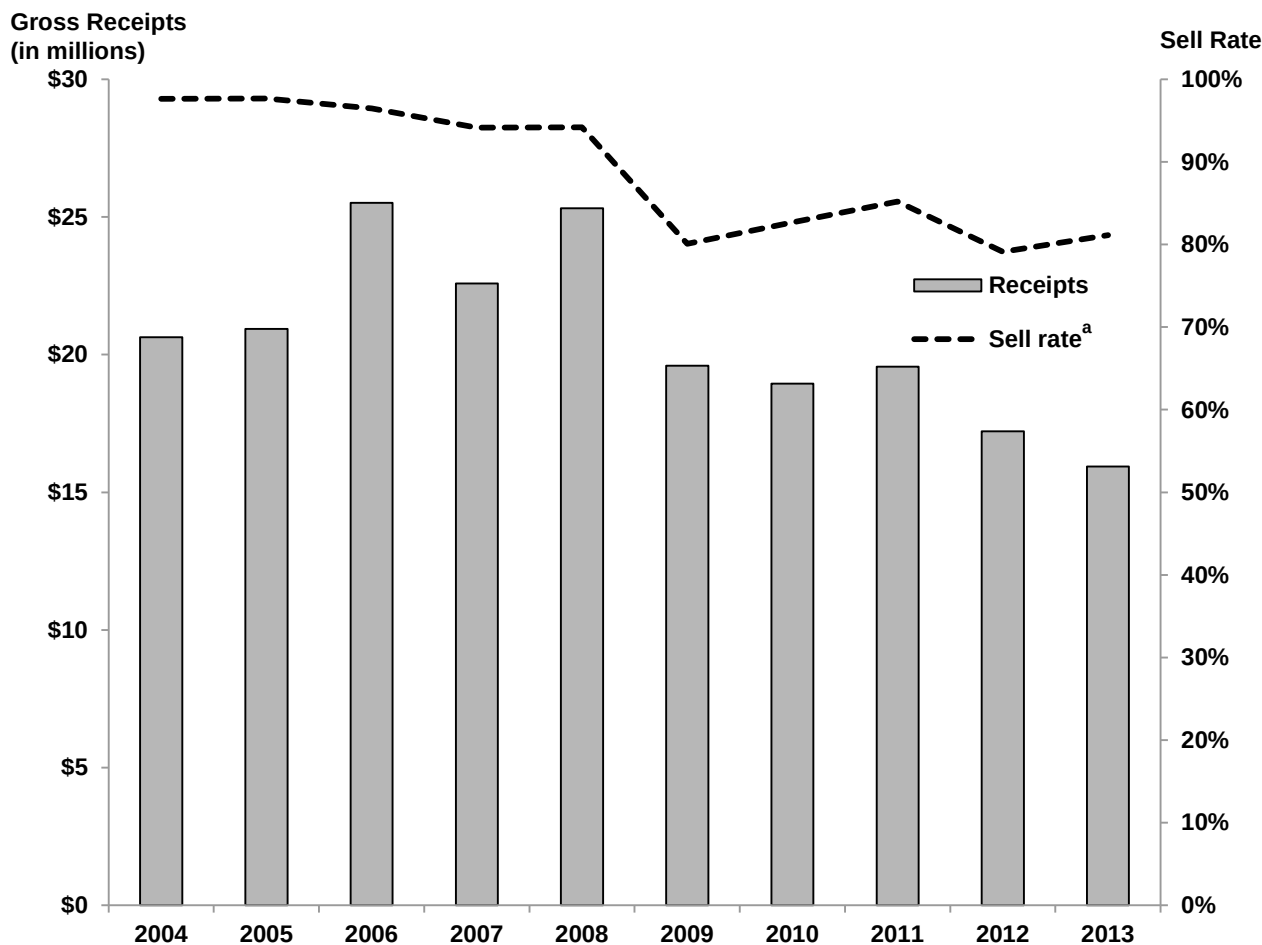
NOTE: These data include prices for products sold in all units of measure converted to cords. Other units of measure include thousand board feet, tons, pieces, and pounds.

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources, Forestry Division timber sales program data, received January 13, 2014.

A reduction in the sell rate poses many challenges in terms of achieving forest management goals. While markets remain strong in many parts of the state, some Forestry Division area offices are struggling to meet management goals. For example, the Two Harbors Area offered over 50,000 cords in fiscal year 2013, but over 40 percent of those cords did not sell. Division staff indicated that this low sell rate is due in part to the Two Harbors Area's distance from potential purchasers.

¹⁶ The sell rate represents the percentage of total cords offered for sale that were sold each year.

Exhibit 5.8: Forestry Division Gross Receipts from Timber Sales and Sell Rates, Fiscal Years 2004-2013



^a The sell rate represents the percentage of total cords offered for sale that were sold for harvest each year.

SOURCE: Office of the Legislative Auditor, analysis of Minnesota Department of Natural Resources, Forestry Division timber sales program data, received August 5, 2014.

Factors Affecting Landowner Comparisons

Some stakeholders in forest management have expressed interest in comparing DNR's profitability to that of other forest land managers.

We found that differences in forest management goals, policies, and land features prevent meaningful comparisons of "profitability" between state forest managers and other land managers.

As we discuss below, many entities across the state manage forest land and sell timber, and they have many similarities and differences. Forestry Division

administrative areas also have many similarities and differences. In fiscal year 2013, revenues per cord varied widely across administrative areas, ranging from \$12.91 per cord in Two Harbors to \$170.85 in Lewiston. Estimated costs per cord also varied widely, ranging from \$14.47 in Warroad to \$173.21 in Lewiston.¹⁷

The differences between forest land managers and the land they manage pose many complications to making a fair comparison of profitability. Many features of management policy and forest land may significantly affect potential economic returns for forest management, for both the Forestry Division and other public and private land managers. We explore many features that may influence the costs and revenues of forest management below.

Forest Management Goals

As discussed in Chapter 1, DNR is tasked with managing the state's forests with multiple uses in mind: social and environmental as well as economic. In order to fulfill its responsibility in managing for multiple uses, the department has instituted a variety of practices that help balance these interests, such as maintaining dual third-party certification and implementing an interdisciplinary planning framework. In balancing these interests, the division may increase costs or forego some amount of revenue in order to maintain the social and environmental uses of state forest land.

In contrast, while for-profit forest management firms are legally required to adhere to some environmental safeguards that may reduce revenues, they are not subject to the statutory requirements of managing for multiple use on state land. Also, when timber prices are low, private landowners may withhold their wood from the market and wait for prices to rise. Public landowners, like the Forestry Division, continue to offer wood when prices are low, sometimes at a loss, in order to meet other objectives. While statewide average stumpage prices have dropped continually since 2006, the public sector's share of total timber harvest has increased each year.

Administrative Framework

The administrative or regulatory framework under which land managers must operate also affects the ability to make fair comparisons of costs and revenues. For example, according to some forest management stakeholders, the United States Forest Service has a more bureaucratic process when compared with other land managers, which can lead to a more expensive process overall. One area forester indicated that the Forest Service's lack of flexibility can lead to inefficiencies for that organization.

The Minnesota Forestry Division also operates under a complex set of rules and regulations. For example, private land managers may select the most highly skilled loggers to operate on their land. In contrast, the Forestry Division has few

¹⁷ The Forestry Division calculated the total cost using fiscal year 2013 data for activities such as time spent on timber sale preparation and design, permit supervision, forest inventory, regeneration surveys, roads and bridges, training, and leave time.

mechanisms to prohibit problem loggers from operating on state land, as discussed earlier. This can significantly increase costs in terms of harvest supervision.

Interdisciplinary Coordination

Coordination among multiple DNR divisions can also affect costs. Some areas of the state contain more rare species or species of special concern than other areas. This may increase costs for coordinating with the Division of Fish and Wildlife or the Division of Ecological and Water Resources. For example, DNR staff indicated that sometimes differences of opinion between divisions about a particular strategy may delay management activities for many years. In contrast, while private land managers may employ wildlife biologists or ecologists, they are not required to follow the same interdisciplinary process.

Staff Experience

Areas with a large number of new staff members may incur higher costs in various aspects of timber management due to staff inexperience. Forestry Division area fact sheets indicated that some areas have experienced higher levels of turnover and retirements than other areas. These areas tend to have younger, less experienced staff, for whom forest management or administrative tasks may take more time. It is reasonable to assume that differences in staff experience could influence costs for other public and private land managers as well.

Proximity to Markets

Distance to the closest major consumer of forest products can greatly affect revenues. The distance that a logger would have to haul the harvested wood to sell to a mill affects the cost to the logger and may influence the amount he or she is willing to bid on a sale. Forestry Division staff indicated that most loggers would not bid on a stand that is more than 100 miles from a mill. A Warroad Area forester indicated that some of the area's forest land is 150 miles from the nearest consumer, which may greatly reduce the amount that consumer is willing to pay to harvest.

Private land managers may strategically purchase land in a location near consumers of forest products. The Forestry Division must continue to manage its forest land, regardless of its distance to forest product consumers.

Tree Species

A land manager's primary tree species may also influence costs and revenues. For example, areas with a higher diversity of forest cover types may have increased costs for appraising and marking sales for harvest. A Little Falls Area forester explained that while timber sales in northern areas of the state are often made up of a single cover type, sales in the Little Falls Area could have ten or more species present in a stand. This forester commented that it can be challenging to maintain this level of biodiversity.

Further, trees principally used for pulpwood are the primary cover type across much of the state. However, some Forestry areas have high-quality hardwoods like oak or maple, which can generate higher revenues. For example, in 2013 the base stumpage price for red oak was nearly \$210 per thousand board feet, compared to just over \$38 per thousand board feet for aspen, a species that may be used as pulpwood.¹⁸

Public and private land managers might make decisions about which tree species to grow based on different objectives. The Forestry Division manages for a variety of tree species throughout the state to meet economic, environmental, or recreational needs. For example, a DNR area forester in the Northwest Region stated that one goal in that area's subsection forest resource management plan is to increase biodiversity by planting more jack pine, which also provides good habitat. However, he indicated that area foresters would typically prefer to plant red pine because it is easier to manage, grows straighter, and has greater longevity than jack pine. A private land manager motivated by profit might favor red pine for these reasons.

Cover types can also greatly influence costs due to the method of determining what loggers must pay for the wood they purchase and harvest from a stand. For example, the sold-on-appraised-volume method is linked to increased costs because foresters often mark and appraise each tree individually to generate an accurate appraisal when dealing with higher-quality wood products. The Lewiston Area, which manages high-quality hardwoods, primarily uses this method for appraisals and payments. The consumer scale payment method, which is the primary method for DNR pulpwood timber sales, requires far less time.

Condition of Timber

The condition of timber on a site may also influence the marketability of a timber sale. For example, stands of trees that are past their ideal harvest age from an economic perspective are less marketable. As another example, the eastern larch beetle infested many of the state's tamarack forests in recent years, making the wood in those forests less marketable.

Ownership Patterns

Ownership patterns may affect costs and revenues for all types of land managers. For example, a Little Falls Area forester noted that the land the area manages is more scattered than some other areas. A scattered ownership pattern requires more time spent determining timber sale boundaries and interacting with adjacent private landowners. DNR is working to consolidate some of its forest land in this area through a land exchange with Kanabec County. The exchange is part of a larger effort, called Strategic Land Asset Management, through which the department hopes to consolidate its ownership and secure access to state land.

¹⁸ These prices are calculated per thousand board feet of sawtimber red oak and aspen. Sawtimber is wood cut from trees with the size and quality appropriate to produce lumber. One board foot equals 144 cubic inches of wood.

In contrast, some Forestry Division areas have more consolidated land ownership patterns, reducing the need for foresters to identify and mark timber sale boundaries. For example, a DNR forester in the Northwest Region noted that the region contains large blocks of state-owned forest land, which reduces the time spent determining timber sale boundaries. In addition, consolidated blocks of state forest land allow foresters to offer larger timber sales, which increases marketability.

Ease of Access

Areas with few well-maintained roadways may incur higher costs than other areas when setting up timber sales due to increased travel time to a harvest site. For example, foresters would incur greater time costs in snowmobiling to harvest sites with limited roadway access as compared with sites that are adjacent to plowed roadways. Further, access issues may influence revenues. For example, bidders may pay less for timber on a site with limited access, since their costs will be higher to build and maintain logging roads.

Many state timber sales are only accessible during winter months when the ground is frozen, in order to prevent site damage. Areas of the state where more summer-accessible sales are available may generate higher revenues. For example, one forester indicated that a particular summer-accessible timber sale sold for \$40,000 more than a comparable winter-accessible sale. However, he indicated that the state's costs are often higher for summer-accessible sales, which are more prone to road damage.

Stands with limited access due to ownership patterns may also require permit holders to negotiate permission to cross private land, making the stand less marketable. In addition, foresters may choose not to appraise stands for which they know the private landowner is unwilling to grant access. For example, a Lewiston Area forester indicated that he may decide not to appraise a stand that is adjacent to a private landowner who is unwilling to grant access to a timber sale through his or her property due to bad past experiences with loggers.

St. Louis County Comparison

Overall, the features described above can vary significantly between public and private forest land managers, as well as among Forestry Division administrative areas. Absent data to control for these differences, they prohibit a fair or accurate comparison of profitability among land managers. In lieu of comparing economic returns among land managers, we compared three Forestry Division area offices with St. Louis County based on metrics other than revenues and expenditures.

Our comparison controls for some of the factors listed above that may complicate comparing measures of profitability. For example, we selected for comparison the Forestry Division areas whose boundaries most closely overlap with St. Louis County: Tower, Hibbing, and Cloquet. This limits the extent to which timber quality or tree species would vary between land managers. In addition, by

comparing cords offered as opposed to cords sold or net revenues, we control for any differences in marketability of timber.

St. Louis County has the state's largest forest land management program of any Minnesota county. Overall, St. Louis County manages nearly 900,000 acres of forest land. The three DNR Forestry areas that most closely overlap St. Louis County manage approximately 680,000 acres of state land in total.

The Forestry Division and St. Louis County have many similarities and differences in their forest land management and timber sales policies, as Exhibit 5.9 shows. For example, both are dual certified and conduct a mix of sealed bid and oral auctions. Both also make use of SOAV and consumer scaling methods.

Exhibit 5.9: Forest Land Management Policies, Forestry Division and St. Louis County

	Forestry Division	St. Louis County
Certification	Dual certified under the Forest Stewardship Council and Sustainable Forestry Initiative	Dual certified under Sustainable Forestry Initiative and International Organization for Standardization-14001
Oral bid auction	Approximately two-thirds of all auctions	Approximately half of all auctions
Sealed bid auction	Approximately one-third of all auctions	Approximately half of all auctions
Intermediate auction or similar	Approximately half of auction volume offered to bidders having no more than 30 employees	None
Consumer scale sales	Approximately 83 percent ^a	Approximately 60 percent
Sold on appraised volume sales	Approximately 10 percent	Approximately 40 percent
Public input process	Formal process	No formal process
Extensions	Regular and special extensions granted with an 8 percent interest payment, or granted interest free under special circumstances	Granted with a payment equaling 4 percent of the value of the remaining unharvested sale area, plus a \$100 fee
Interdisciplinary work	Formal coordination process for incorporating feedback from the Division of Fish and Wildlife and the Division of Ecological and Water Resources	No formal process, but may voluntarily consult with the Department of Natural Resources' wildlife and ecology experts
Best management practices	Follows Minnesota Forest Resource Council Guidelines	Follows Minnesota Forest Resource Council Guidelines

^a The Forestry Division also scales wood for forest product consumers who do not have an established scaling agreement with the state. In addition, the Forestry Division scales wood that should have been harvested but was left on the stump. In fiscal year 2013, state-scaled timber accounted for nearly 8 percent of overall timber volume scaled.

SOURCE: Office of the Legislative Auditor, compilation of information from *Minnesota Statutes* 2013, chapter 90; "Timber Sale and Scaling Manual" (electronic document, Minnesota Department of Natural Resources, Forestry Division, St. Paul, 2007); and Thomas Zeisler, Resource Data Supervisor, St. Louis County Land and Minerals Department, e-mail message to Catherine Reed, Office of the Legislative Auditor, *Request for County Data Related to FTEs and Timber Sales*, April 1, 2014.

However, while county foresters may consult wildlife or environmental experts when designing or conducting a timber sale, county policies do not require the same level of interdisciplinary consultation that occurs within DNR. Further, the county has no formal public input process for forest management planning, while DNR's Forestry Division has a formal process with multiple opportunities for public input.

We found that the efficiency of the Forestry Division's timber sales activity compared favorably with St. Louis County's activity.

We compared three area offices with St. Louis County in terms of new cords offered per full-time equivalent (FTE).¹⁹ This metric serves as a measure of productivity that reflects how much time land managers invest in activities related to timber sales.

In fiscal year 2013, the Tower, Hibbing, and Cloquet areas offered approximately 14,065 new cords of timber per FTE. In calendar year 2013, St. Louis County offered 11,963 new cords of timber per FTE. While this comparison covers only a small snapshot of time in terms of timber sale activities for these agencies, it offers perspective in terms of Forestry Division performance compared to a similar forest land manager.

ALTERNATIVE MANAGEMENT STRATEGIES

DNR relies heavily on timber harvest as its main forest management tool. As shown above, Forestry Division timber sales rates have dropped in recent years. Sell rates also vary greatly across the state. In fiscal year 2013, area timber sales rates ranged from 46 percent to 100 percent of cords offered.

When timber stands go unsold, planned management may be delayed until a buyer is found or until funding is available for alternate treatments. If no funding is available, some timber stands will not receive forest management treatments. In addition, stands may be sold but never harvested. An area forester explained that, in this situation, planned management may be delayed for many years until the stand is reappraised and reoffered for sale. In these situations, DNR does not achieve its desired forest resource management objectives.

The Department of Natural Resources is testing new approaches to accomplish forest management in areas with weak timber markets.

The section below describes two specific projects: the Forest Improvement Contract in the Warroad Area, and the Super Permit Pilot Project in the Two

¹⁹ OLA based calculations for full-time equivalents (FTEs) in each land management organization on hours coded to timber management activities only. We matched time code data as closely as possible between the agencies to create a fair comparison. Activities in the FTE analysis include: timber sale preparation and design, timber scaling, timber permit supervision, and interdisciplinary coordination.

Harbors Area. While these projects differ in timber type, location to markets, and time without forest management, they illustrate how DNR is working to use alternative management strategies to address areas with weak markets.

Forest Improvement Contract

The timber market in far northwestern Minnesota declined as a result of an overall reduction in Minnesota timber markets. The Forest Improvement Contract is located on approximately 115 acres of aspen pulpwood-sized timber mixed with oak, small aspen, and brush in western Kittson County. The area is in the Aspen Parklands ecological subsection and is managed by the Fish and Wildlife Division. Many Fish and Wildlife Division-administered lands in the area are managed through timber sales conducted by the Forestry Division. Wildlife managers in charge of the site are interested in harvesting the aspen and turning the site back to an open forest, a landscape that is consistent with habitat goals and the historical condition of the area.

Staff from the division of Forestry and the division of Fish and Wildlife met with loggers and forest industry representatives to discuss declining timber markets in the area. The primary reasons timber sales were not being purchased in the western half of the Warroad Area in Kittson County included: (1) the timber sales are too far from the markets and the cost of hauling timber is not economical; (2) the remote location increases operating costs for labor, housing, travel, and getting equipment parts and service to the site; (3) the timber can be small in diameter, which is less attractive to loggers; and (4) seasonal operating restrictions limited to frozen conditions reduce interest in some timber sales.

Project Description

The Forest Improvement Contract combines a timber sale permit with a wildlife management forest improvement contract for habitat work. The timber permit will generate revenue for DNR from the sale of marketable timber. The contract bid for forest improvement services represents a cost to DNR. If the Wildlife Section cannot accomplish the landscape treatment with a timber sale, the section will have to pay a contractor to do the work. DNR's strategy was to reduce that cost with some revenue from the timber sale. The Fish and Wildlife Division allocated \$10,000 for the Forest Improvement Contract. Also, rather than allowing the wood to go to waste, the local timber economy would stand to benefit if the timber is harvested, according to some DNR staff.

The Forestry Division posted a combined notice of timber sale and the request for bid for forest improvement services in mid-April 2014. The timber appraisal identified 1,120 cords of aspen pulpwood-sized timber at a price of \$1.85 per cord for an appraised value of \$2,072. The aspen would be harvested, all oak trees three inches in diameter or greater would not be harvested, and all other remaining woody vegetation, including small snags, small aspen, and brush, would be cut or severed to within two feet of the ground. Completion of this work will meet the Fish and Wildlife Division's objectives to maintain the site in an open forest habitat appropriate for deer, grouse, and moose.

DNR received four sealed bids for the Forest Improvement Contract. The bids were opened on May 14, 2014; all of them were higher than DNR was willing to pay. DNR staff will continue to evaluate this alternative strategy and may consider offering it again.

Super Permit Pilot Program

The Super Permit Pilot Program is a new marketing approach using the Forestry Division's timber sales process to provide a larger volume of timber over a longer period of time. The site for this project is the Two Harbors Area in Cook County. Most of the state-administered forest land in this area is school trust land.

The Two Harbors Area has an ongoing issue with low sales of timber offered in Cook County. As a result, the forest has not been managed as specified in forest management plans. When timber stands are not harvested, DNR does not achieve its desired forest management goals. Because of a long track record of unsuccessful timber sales, the Forestry Division identified Cook County as an area needing a different approach in timber sale marketing.

Factors contributing to the lack of timber sales include changes in the economy, distance from forest products markets, low quality of wood offered, and declining infrastructure in the area's local logging industry. The problem with unsuccessful timber sales deteriorated further since the economic recession. Several mills near the Two Harbors Area have closed in recent years. Mill closures in the area increase hauling costs for loggers, which contributes to the lack of timber sales in the area.

The quality of timber offered for sale in the Two Harbors Area is also an issue. For example, a forest management plan covering the Two Harbors Area recommended harvesting "high risk low volume" stands first. This means over-mature trees with declining quality of wood and timber stands with less density would be harvested before other, higher quality timber. If the quality of timber offered is less than that of DNR's competitors, then much of its timber offerings may remain unsold.

Project Description

The Super Permit Pilot Program seeks to address the decline in the amount of timber sold on school trust land through the standard timber sale process. The super permit is designed to attract a logger to the project area by offering more cords of a higher quality of timber from a larger harvest site with a longer time to harvest. The project will achieve the department's forest management goals by encouraging the level of harvest needed to maintain a healthy forest.

The super permit will offer 25,000 to 30,000 cords in a five-year timber sale. Most DNR timber sales offer fewer than 2,000 cords and typically the Forestry Division allows three-year permits. The super permit will offer better quality timber than recommended in the 2006 subsection forest resource management plan. Ideally, the timber harvest sites would be bundled into larger acreages to

help improve efficiency for both the logger and DNR treatment of the landscape after harvest. Access to the site and road construction will be coordinated with a successful bidder.

The bidding process for the super permit will be competitive and a state forester will manage the project. The notice of sale before the auction will be 60 days instead of 30 days to give loggers more time to review and assess the site. DNR estimates that one forester can manage 5,000 cords a year. The size of the project, with a maximum of 30,000 cords, will support one full-time staff person to manage the project.

Because the super permit involves between 25,000 and 30,000 cords, DNR plans to present the super permit proposal to the Executive Council for its approval in mid-2014. As shown earlier in Exhibit 5.2, Minnesota's Executive Council has the authority to establish rules for any timber sales exceeding 12,000 cords.²⁰

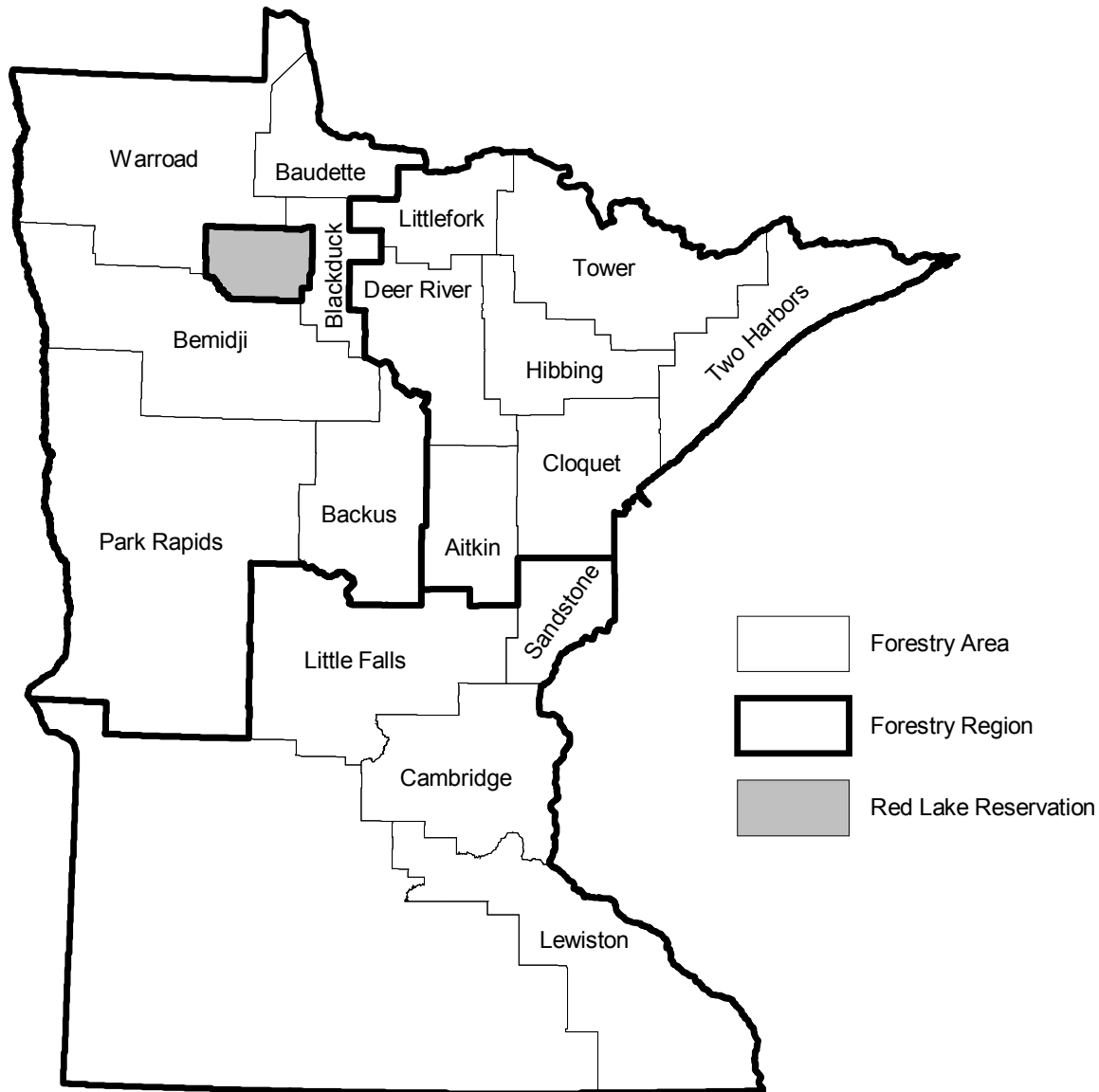
Two Harbors Area foresters selected four tracts of forested land for the project. The department is currently reviewing the selected tracts and creating an inventory of tree species and volume of timber. The super permit is on the Forestry Division's work plan for fiscal year 2015. Preliminary estimates are for a fall 2014 notice of sale and an early winter (2015) auction.

²⁰ *Minnesota Statutes* 2013, 90.031, subd. 4. The Executive Council consists of the governor, lieutenant governor, secretary of state, state auditor, and attorney general.

List of Recommendations

- The Legislature should reassess its approach to funding the Forestry Division's management of state-owned land. (p. 19)
- The Forestry Division should allocate resources to address functional and content shortcomings of the FORIST database. (p. 29)
- The Department of Natural Resources should continue to improve interdisciplinary forest resources management efforts. (p. 35)
- The Department of Natural Resources should prioritize resources to improve monitoring of subsection forest resource management plan implementation. (p. 39)
- The Department of Natural Resources should clarify how staff are to integrate management objectives for school trust land with management of non-school-trust land. (p. 59)
- The Department of Natural Resources should provide guidance to staff on prioritizing goals and designations that affect long-term economic returns when school trust land is involved. (p. 59)
- The Department of Natural Resources should accelerate implementation of changes to forest management policies only when it is essential. (p. 63)
- The Forestry Division should establish appropriate criteria for identifying underperforming loggers who should be barred from operating or bidding on state timber sales. (p. 74)
- The Forestry Division should provide clear direction to its staff on the extent to which area cord goals should affect forest management decisions. (p. 76)
- The Forestry Division should determine the costs and benefits of granting extensions to timber sale permit holders. (p. 78)
- The Forestry Division should consider developing logger incentives to encourage timely harvests. (p. 78)

Appendix A: Forestry Division Regions and Areas, 2013



SOURCE: Office of the Legislative Auditor, review of Minnesota Department of Natural Resources data.

Appendix B: Forestry Division

Area Offices, Selected Information

	Northwest Region				
	Bemidji	Blackduck	Warroad ^a	Baudette	Backus
Total state land (acres)	150,091	157,601	411,697	432,766	133,353
Productive forest (acres)	90,943	61,222	195,440	208,927	88,683
Cords sold (FY 2013)	22,046	14,087	81,225	59,661	30,791
Percentage School Trust Land	78%	21%	5%	<1%	77%
	Northwest Region		Northeast Region		
	Park Rapids ^a		Deer River	Aitkin	Hibbing ^a
Total state land (acres)	127,149		504,323	301,839	184,421
Productive forest (acres)	102,194		262,543	170,649	104,969
Cords sold (FY 2013)	63,122		90,023	75,590	40,127
Percentage School Trust Land	30%		95%	45%	93%
	Northeast Region				
	Tower ^a	Cloquet	Two Harbors	Littlefork ^a	
Total state land (acres)	322,735	175,022	229,176	773,756	
Productive forest (acres)	232,485	100,881	157,015	400,385	
Cords sold (FY 2013)	62,927	34,230	30,515	80,594	
Percentage School Trust Land	87%	66%	96%	71%	
	Central Region				
	Little Falls ^a	Lewiston ^a	Sandstone	Cambridge	
Total state land (acres)	41,035	108,344	215,705	7,157	
Productive forest (acres)	28,944	89,385	154,032	5,280	
Cords sold (FY 2013)	10,864	3,580	26,189	5,970	
Percentage School Trust Land	47%	<1%	19%	28%	

^a Area participated in Office of the Legislative Auditor site-visit interview, March 2014.

SOURCE: Minnesota Department of Natural Resources, Forestry Division area fact sheets, January 2013.

Minnesota Department of Natural Resources

Office of the Commissioner
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August 15, 2014

Mr. James Nobles, Legislative Auditor
Office of the Legislative Auditor
Room 140 Centennial Office Building
685 Cedar Street
St. Paul, Minnesota 55155-1603

Dear Mr. Nobles:

My staff and I appreciate the thorough review of the agency's forest management program your office recently completed. We are pleased to be able to comment on the final version of this document. We find the report accurately depicts our program and identifies the issues we face when performing our forest management activities.

In regards to the report's findings, we appreciate you identifying the challenges our Division of Forestry is facing, including budgetary appropriations that remain below those received in 2008. I should also point out that bonding dollars for reforestation, the main source of funding for this activity, have generally been insufficient to meet our needs in recent years. The report's findings indicate, too, that the technology now in use to support on-the-ground management activities is aging, reducing staff efficiencies as it continues to become more outdated.

An important item emphasized in the report is that the interdisciplinary planning processes taking place among the agency's various divisions are key to sustainably managing our forests for multiple benefits. The report also points out that forest management activities, including timber harvesting, are used in tandem to achieve positive results, including increased economic value, improved wildlife habitat, greater diversity in plant and animal life, and reduced fire risk. The report had good insight in recognizing that while we can, as an agency plan our management activities several years in advance, we must remain flexible to meet immediate needs. We are dealing with the natural world where things like windstorms and wildfires can wipe out acres of trees in a few hours. It is after events like this that we must divert staff from planned activities to respond to these emergency situations.

The department supports all the report's recommendations and will work with our stakeholders and partner organizations to identify how best they can be incorporated into our planning and management activities. Thanks again for the time spent on putting this information together. The report is a good summary of our forest management activities, how effective they are, and how they can be improved to help us meet both the opportunities and challenges we face today and in the years ahead.

Sincerely,

A blue ink signature of Tom Landwehr, Commissioner of the Minnesota Department of Natural Resources.

Tom Landwehr
Commissioner

Forthcoming OLA Evaluations

Managed Care Organizations' Administrative Expenses, 2014
Mineral Taxation, 2015
Minnesota Board of Nursing, 2015
Minnesota Film and TV Board, 2015
MNsure, 2015
Recycling, 2015
State Protections for Workers in Meatpacking Facilities, 2015

Recent OLA Evaluations

Agriculture

Agricultural Commodity Councils, March 2014
"Green Acres" and Agricultural Land Preservation Programs, February 2008
Pesticide Regulation, March 2006

Criminal Justice

Health Services in State Correctional Facilities, February 2014
Law Enforcement's Use of State Databases, February 2013
Public Defender System, February 2010
MINNCOR Industries, February 2009
Substance Abuse Treatment, February 2006

Education, K-12, and Preschool

Special Education, February 2013
K-12 Online Learning, September 2011
Alternative Education Programs, February 2010
Q Comp: Quality Compensation for Teachers, February 2009
Charter Schools, June 2008

Education, Postsecondary

Preventive Maintenance for University of Minnesota Buildings, June 2012
MnSCU System Office, February 2010
MnSCU Occupational Programs, March 2009

Energy

Renewable Energy Development Fund, October 2010
Biofuel Policies and Programs, April 2009
Energy Conservation Improvement Program, January 2005

Environment and Natural Resources

DNR Forest Management, August 2014
Sustainable Forest Incentive Program, November 2013
Conservation Easements, February 2013
Environmental Review and Permitting, March 2011
Natural Resource Land, March 2010
Watershed Management, January 2007

Government Operations

Councils on Asian-Pacific Minnesotans, Black Minnesotans, Chicano/Latino People, and Indian Affairs, March 2014
Helping Communities Recover from Natural Disasters, March 2012
Fiscal Notes, February 2012
Capitol Complex Security, May 2009
County Veterans Service Offices, January 2008

Health

Financial Management of Health Care Programs, February 2008
Nursing Home Inspections, February 2005

Human Services

Medical Assistance Payment Rates for Dental Services, March 2013
State-Operated Human Services, February 2013
Child Protection Screening, February 2012
Civil Commitment of Sex Offenders, March 2011
Medical Nonemergency Transportation, February 2011
Personal Care Assistance, January 2009

Housing and Local Government

Consolidation of Local Governments, April 2012

Jobs, Training, and Labor

State Employee Union Fair Share Fee Calculations, July 2013
Workforce Programs, February 2010
E-Verify, June 2009
Oversight of Workers' Compensation, February 2009
JOBZ Program, February 2008
Misclassification of Employees as Independent Contractors, November 2007

Miscellaneous

The Legacy Amendment, November 2011
Public Libraries, March 2010
Economic Impact of Immigrants, May 2006
Liquor Regulation, March 2006
Gambling Regulation and Oversight, January 2005

Transportation

MnDOT Selection of Pavement Surface for Road Preservation, March 2014
MnDOT Noise Barriers, October 2013
Governance of Transit in the Twin Cities Region, January 2011
State Highways and Bridges, February 2008