

Minnesota Department of Natural Resources Division of Forestry

State Forest Nursery Program Business Plan and Report to the Legislature

Laws 2011, 1st Spec. Sess., Ch. 2, Art. 4, sec. 30

January 15, 2012



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Executive Summary

The Minnesota DNR Division of Forestry operates two state forest nurseries – Badoura and General C.C. Andrews. The nurseries produce native trees and shrubs grown from local seed sources for forest conservation purposes. The State Forest Nursery Program has operated since 1933 producing bareroot seedlings (in contrast to containerized seedlings), and a few years ago celebrated the one-billionth seedling produced. However, the annual volume of seedlings sold has declined steeply in the past 20 or so years, to a current level of about 6.8 million seedlings sold in FY2011.

The seedlings are purchased and used primarily by the DNR Forestry Division to maintain healthy and productive Minnesota state forests. Seed collection and processing, seed source control and documentation, and tree improvement research are additional critical components of the nurseries' efforts to continually provide well-adapted and improved seedlings for new forest plantings. Forest products is one of Minnesota's primary industries. Forests are continually regenerated and actively managed for a wide range of conservation, recreation, and commercial purposes.

The 2011 Legislature directed that new plantings at Badoura Nursery beginning July 1, 2011, could be made for use on public lands or private conservation lands with permanent protection, or for research. This law also provided that excess plant materials could be sold or traded to private wholesale nurseries. (Laws 2011, 1st Sp. Sess., Ch. 2, Art. 4, sec. 30.) The effect will be to halt substantially all sales to private (non-governmental) persons or organizations, phased in over the next three years. Private sales in FY2011 were 40 percent of the nurseries' sales.

The State Forest Nursery Program is directed in statutes (since 1983) to operate on a breakeven basis, with all costs covered by sales revenues. The Nursery Account, through which revenues and expenditures are processed, has had a positive balance above \$600,000 each year for the past 15 fiscal years. Costs must be realigned with revenues when significant changes occur, in order to maintain the account balance. Recent economic and statutory changes require such an adjustment over the next several years.

Business plan summary

The 2011 law also directed the preparation of a financial plan and budget for the state nurseries, including a long term business plan for Badoura and options for the Gen. Andrews Nursery. The DNR has been reducing production operations at the Gen. Andrews Nursery since 2009. The financial plan and budget are presented in the report, covering periods through FY2016.

The department's priorities for the plan include (1) continuity in having a reliable, quality-controlled native seed source for sustaining the state's forests, (2) providing appropriate type and number of seedlings to supply the public and conservation land needs for reforestation and afforestation, (3) conducting necessary research on continuous tree improvement to ensure optimum forest health, and (4) meeting the requirements of statutory changes and their impacts, along with the impacts of a depressed economy, to operate the nursery program on a continued and sustainable breakeven (self-sufficient) basis.

Actions required to ensure continued self-sufficiency of the Nursery Program include: reducing the size of the program operations based on long-term trends and recent sales restrictions, refocusing customer services on government customers over the next several years, reviewing and adjusting seed and seedlings prices and practices, maximizing tree improvement activities within resources, and repurposing Gen. Andrews Nursery for seed production, seed orchard, and non-nursery DNR uses similar to those now in place (ending seedling production after FY2013). Implementing these actions and timely responses to changes in the marketplace will ensure a self-

supporting Nursery Program and maintain a healthy Nursery Account balance based upon the conservative assumptions outlined in this report.

Business Plan Risks, Mitigation Actions, and Opportunities

The risks to the State Forest Nursery Program arise from several sources, but principally from the level of program support within the DNR. Financial projections are based on critical assumptions:

- The department will have the level of funding needed to purchase state nursery products at the level stated in the financial estimates. Even in current year (FY2012), the size of nursery purchases is constrained by budget limitations.
- The department will purchase from the state nursery program at the expected level and not move toward other suppliers. This decision will depend on what is the best silviculture decision.
- The department's conifer purchases from the state nursery program will continue indefinitely and the need will not be as effectively met by containerized seedlings. The nursery program's sales are in large part driven by conifer sales.
- The economy will improve enough to sufficiently increase demand for forest products and generate revenues that the state forestry programs require. The current nationwide economic slump of the past four years shows few signs of improvement.
- The state nursery program would survive a catastrophic event at a single nursery location as a result of good contingency planning. Destructive disease, fire, very heavy wind, excess water events, and other weather conditions are more significant without a backup growing location.

Actions to mitigate risks to future operations and financial viability include:

- Establishing contingency plans for recovery from catastrophic events, including financial backup plan for the Nursery Account:
- Maximizing seedling sales between now and the dates of major change for the two nurseries.
- Closely monitoring seedling sales in relation to estimates presented in this plan and taking pre-emptive actions as needed to increase sales, cut costs, and identify other sources of revenue that can be brought into play in a comparatively short period of time.
- Refocusing customer services and new product development on the needs of the Forestry Division, other DNR divisions, and government customers, in that order, consistent with the language and apparent intention of the 2011 law.
- Preserving and enhancing the seed program and tree improvement program/research activities as foundations of value creation for the future.
- Continuing to build partnerships and cooperative efforts with willing public sector, higher education, and private sector parties to support best practices for sustainable, productive, and healthy forests.

Potential opportunities to sustain and improve Nursery Program finances include experimentation with product lines, focus on seed and tree improvement activities that can generate additional revenues, and a variety of other actions taken by other state nursery programs.

Sources

In preparing this report, Management Analysis and Development division (Minnesota Management and Budget) consultants reviewed past budgets, sales and operations of the State Nursery Program. The consultants also conducted numerous interviews with selected DNR personnel from operations and finance, as well as variety of stakeholders including representatives from the legislature, the Minnesota Landscape and Nursery Association, Soil and Water Conservation Districts, private and public foresters and forest ecologists, a private forest owner, a tree farmer, the University of Minnesota Department of Forestry, and the Tree Improvement Cooperative.

Introduction

This report provides a business plan for the State Forest Nursery Program as directed in Laws 2011, 1st Spec. Sess., Ch. 2, Art. 4, sec. 30 (“2011 Law”).

By January 15, 2012, the commissioner of natural resources shall submit a budget and financial plan for the state nurseries to the chairs and ranking minority members of the house of representatives and senate committees and divisions with jurisdiction over environment and natural resources policy and finance. The plan shall include a long-term business plan to operate the Badoura State Nursery in a manner that is self-sufficient. The plan shall also include options for the General C.C. Andrews State Nursery.

The section of laws noted above also directed a change to the allowable uses of seedlings planted at the Badoura Nursery after June 30, 2011:

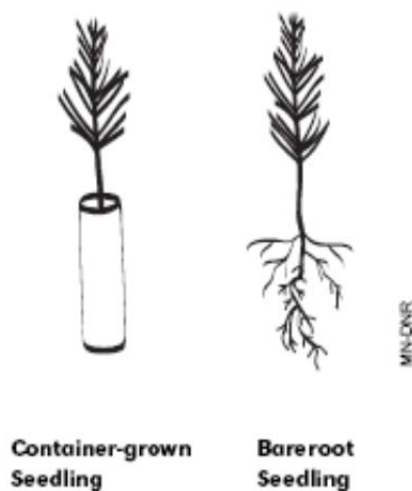
Beginning July 1, 2011, the commissioner of natural resources shall limit all new plantings at the Badoura State Nursery to the planting of stock for research or use on public lands or private conservation lands with permanent protection. Excess plant material may be sold or traded to private wholesale nurseries.

In preparing its response to the Legislative directive, the Department of Natural Resources engaged the Management Analysis & Development Division, Minnesota Management & Budget, to conduct an independent analysis of the State Forest Nursery Program operations and financials. Management Analysis consultants made site visits, interviewed selected stakeholders, and reviewed program operating and financial records. Management Analysis drafted this report for department review and submission to the Legislature.

State Forest Nurseries

The Division of Forestry operates two state forest nurseries – Badoura and General Andrews – that produce native trees and shrubs grown from local seed sources for conservation purposes. The State Forest Nursery Program has been in continuous operation since 1933 producing high quality bareroot seedlings (in contrast to containerized seedlings) to protect the productivity and sustainability of Minnesota forests.

The nursery program practices seed source control and conducts tree improvement activities and research in partnership with academic and industry participants.



Seed source control

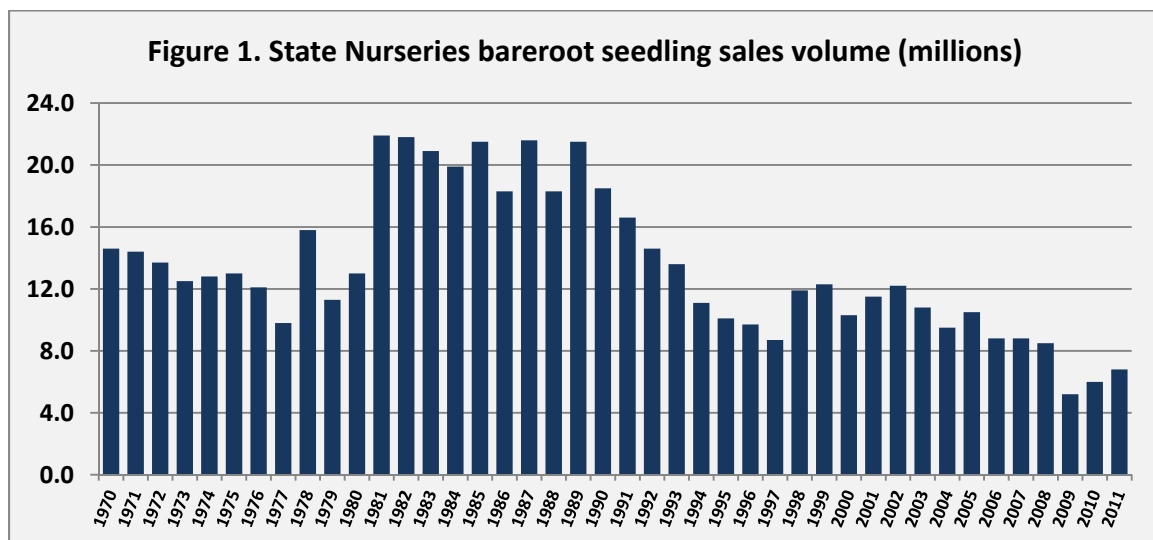
The systematic control and documentation of the native source of seed and seedling products is a distinguishing feature of the state nurseries. Maximum productivity and survivability from seedlings is promoted by assuring uniform seed source control. With careful labeling and documentation, there is greater assurance that seedlings can be planted in the state's various zones where the seed originated. This optimizes the survivability and overall health of the seedlings. No other entity in Minnesota – private or public – operates a statewide seed production facility on this scale.

Tree improvement activities and research

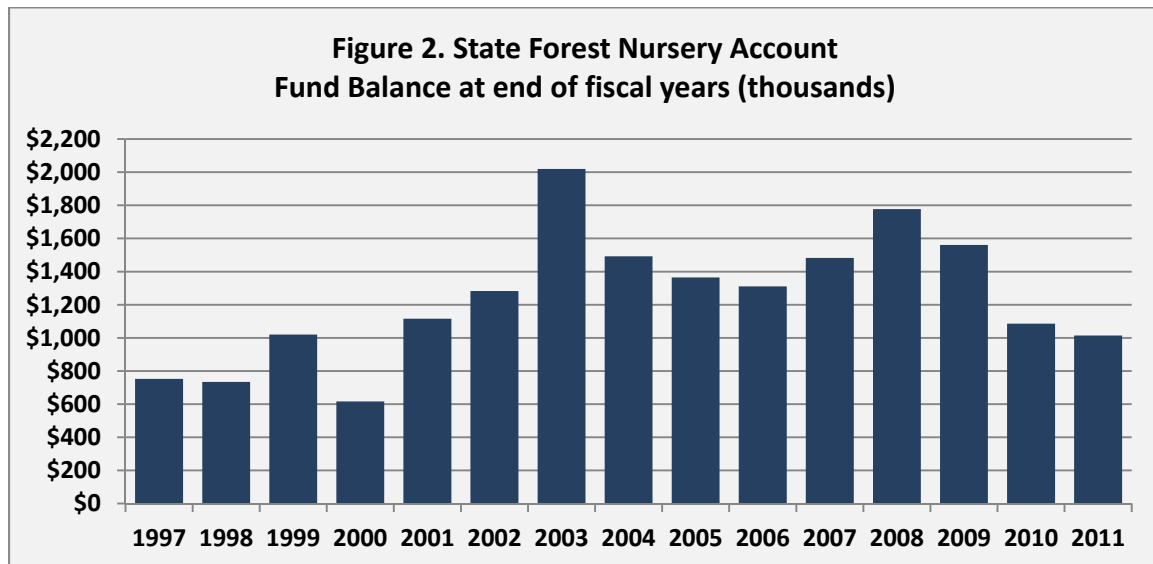
In partnership with the University of Minnesota, the U.S. Forest Service, the timber industry, private nursery organizations, and others, the state nursery program conducts activities to continually improve the genetic quality of seed, seedlings, and trees. Careful monitoring of seed sources, as noted above, and utilization of the best materials to produce high grade progeny, helps promote all of the traits that continually improve yield, disease-resistance, and other desirable features of individual tree species and forests.

The nurseries currently provide stock for sale to both public (governmental) and private entities at a breakeven pricing level (a price that recovers production and infrastructure costs). They are not sold either to make a profit or sold below cost. The largest customer of the state nurseries is the DNR Division of Forestry.

The state nursery program supports statewide programs to maintain and improve forests. The volume of seedlings produced by the nurseries has been very large. The Nursery Program celebrated the harvesting of its one-billionth seedling in 2009. In recent years, the annual volume of bareroot seedlings produced has been declining substantially for a number of reasons including the depressed economy and statutory limitations. These issues will be discussed in more detail later in the report. Sales are shown in Figure 1.



The state nursery program has operated on a breakeven basis since 1984, when the nursery program enterprise fund (Nursery Account) was implemented with startup funding of \$600,000. In the past 15 years of operations, the Nursery Account balance has varied between about \$616,000 and \$2,020,000. The balance, which declined from FY2008 through the end-of-FY2011 to \$1,014,000, is healthy and is projected to increase slightly through FY2016 as program costs decline and the actions in this report are implemented. This will be explained in more detail later in the report. Figure 2 shows the Nursery Account Balance from 1997 to 2011.



Current circumstances affecting the nurseries

The ongoing significant downturn in the economy has depressed the housing market and sales of forest products (and derivatively the harvesting of trees and planting of nursery seedlings). Additionally, statutes (see p. 13) provide constraints on the state nursery operations, including the quantities of seedlings that can be planted and sold and the markets that can be served. The constraints endeavor to balance the DNR role in maintaining, protecting, and regenerating forests in the public interest (as provided in Minnesota Statutes) and the encouragement of private nurseries that provide some of the same and similar nursery products.

Beginning July 1, 2011, all new plantings at the Badoura Nursery were limited to planting of stock for research purposes,¹ or use on public lands,² or use on private conservation lands with permanent protection.³ The 2011 law also provides that excess plant material may be sold or traded to private wholesale nurseries.⁴ The effect of these provisions is to stop substantially all sales to private parties after the Badoura seedlings in the ground on June 30, 2011 are harvested. The time from planting to harvest is typically two or three years, which is therefore the time frame for planning to adjust to the new conditions. Private sales represented about 40 percent of total nursery program sales in FY2011, and in some recent years the portion has been up to about 50 percent.

The combination of an economic slump and legislative actions has elevated concerns about the sustainability of the state nursery operations as currently configured and about the state nursery program's longer-term role in supporting the public interest goals of sustainable Minnesota forests. Although this section of the 2011 law does not mention the Gen. Andrews Nursery, this facility was already in the process of being downsized. These actions were started by the department in FY2009 in anticipation of decreased conservation incentive programs which provided cost-sharing funds to pay for seedlings and reforestation, nursery industry pressures, and decreasing demand for products due to the economic downturn and other market trends.

¹ Planting stock for research is directed to improvement activities. The amount of stock sold is negligible.

² Planting stock for use on public lands, the major allowed use, refers to uses by state (including DNR), local, federal, and tribal units of government – and does not include sales to soil and water conservation districts, which broker seedling sales to private parties.

³“Private lands with permanent protection” is interpreted to mean private lands under a perpetual conservation easement. Programs that could provide permanent protection include the Forest Legacy Program (DNR), Minnesota Forests for the Future Program (DNR), Metro Greenways (DNR) Trout Stream (DNR), Aquatic Management Areas (DNR), Native Prairie Bank (DNR), Wild and Scenic River (DNR), Scientific and Natural Area (DNR), Reinvest in Minnesota (BWSR) – all state-administered programs. Additional lands with permanent protection would be those with some type of federal easement (USFS, NRCS), those with easements from private conservation organizations like the Minnesota Land Trust, the Nature Conservancy, and Ducks Unlimited, as well as some held by local units of government. There are an estimated 12,000 conservation easements in Minnesota covering about 800,000 acres. No estimate of seedling usage was readily available; however, Forest Legacy and Minnesota Forests for the Future easement landowners are involved with reforestation projects, some with state nursery stock, while others probably do not use state nursery seedlings. Only the Nature Conservancy of Lake Co. was identified as a recent customer on a check by the state nursery office. Their orders totaled approximately 420,000 seedlings for the past two years.

⁴ “Excess plant material” is assumed to mean the amount of unsold or unused plant material in the nurseries that the nursery program may have available and elect to sell to private wholesale nurseries.

Brief history and context

The forest tree nurseries provide native tree seed production/processing and seedling production for reforestation,⁵ afforestation,⁶ and silviculture⁷ purposes. Section 89.35 of Minnesota Statutes provides:

The purposes for which trees may be produced, procured, distributed, and planted under sections 89.35 to 89.39 shall include auxiliary forests, woodlots, windbreaks, shelterbelts, erosion control, soil conservation, water conservation, provision of permanent food and cover for wild life, environmental education, and afforestation and reforestation on public or private lands of any kind, but shall not include the raising of fruit for human consumption or planting for purely ornamental purposes. It is hereby declared that all such authorized purposes are in furtherance of the public health, safety, and welfare.

Events leading to establishment of the state forest nurseries

A long series of very destructive forest and community fires, along with the huge harvest of timber resources in the mid and late 19th century, resulted in the creation of predecessors to the Department of Natural Resources and the establishment of forest fire control programs and tree nurseries.

- In 1889, Minnesota timber production topped one billion board feet.
- In 1900, the peak year of white pine lumber harvest, over 2.3 billion board feet were harvested.
- In 1894, the Great Hinckley Fire killed 453 people and destroyed over 4,000 homes in a few hours.
- From 1915 to 1925, the state averaged 1,000 fires burning almost 400,000 acres, each year.
- One fire in 1918, the Cloquet-Moose Lake fire, burned over 200,000 acres and killed more than 430 people.

General C.C. Andrews, a Civil War veteran (Third Minnesota Infantry and later a corps commander), was appointed after the war by President Grant as U.S. Minister to Norway and Sweden. There he developed an interest in scientific forestry and a passion for conservation. In 1895, he became Minnesota's first chief fire warden and later forestry commissioner for the state.

⁵ Reforestation means the process of natural or artificial forest regeneration, including securing seed, growing seedlings, preparing sites, planting seed, planting trees, removing deleterious growth and underbrush and other activities related to forest regeneration. Minn. Stat. §89.01, subd. 11.

⁶ Afforestation is the establishment of a forest or stand of trees in an area where there was no forest.

⁷ Silviculture means the management of forest trees.

Continuing need for reforestation

The annual timber harvest reached nearly 3.7 million cords annually by 1981. The Forest Management Act, requiring reforestation of state land equal to the amount harvested, became effective in 1982.

Fires and weather events continue to destroy forests. Severe storms blew down about 500,000 acres of timber in the Boundary Waters Canoe Area Wilderness in 1999. A fire on the outskirts of Brainerd burned 720 acres and eight structures in 2002. In 2007, the Gunflint Trail Fire destroyed 16,500 acres of forest as well as homes and cabins. In 2011, the Pagami Creek Fire near the Gunflint Trail destroyed 92,000 acres of forest.

In recent decades, the positive role of forest regeneration and improvement has been identified in relation to global climate change, habitat maintenance, species diversity, water and air quality, and other strategic environmental considerations, as well as the economic benefits to the state economy. By some estimates, the need for forest regeneration and expansion are enormous. The economic benefits to Minnesota include timber and stumpage sales revenues from harvests in state forests and taxes paid by the wood products industry, until very recently Minnesota's fourth largest industry. The availability of high quality seed for planting and reliable seedling production capabilities are necessary inputs for forest regeneration, expansion, and improvement.

Badoura Nursery

An interim Reforestation Committee established by the 1927 Legislature recommended the creation of state forest nurseries. The Badoura Nursery was established in 1929, prior to the 1931 authorizing law, to produce native tree planting stock (conifers). The nursery covers 290 acres in Hubbard County.

In May of 1959, the 14,000 acre Badoura fire endangered the Badoura Nursery, and there was extensive damage to production and plantings. Following this fire, the legislature in a special session made willful burning of pine lands a felony. In 1976, the Huntersville-Badoura Fire destroyed nearly 95 percent of a 23,000 acre area, and nearly \$1 million was spent to control the fire. The Badoura Nursery was spared when the wind direction changed, with the fire less than a half-mile from the nursery. In FY2003, Badoura experienced a serious disease outbreak that affected Norway pine (red pine).

The Badoura Nursery currently provides the following:

- Produces and ships over 80 percent of seedlings sold by the State Nursery program
- Houses the State nursery seed extraction and processing facility
- Manages 23 buying stations throughout Minnesota for native tree seed procurement
- Manages the Nursery program's seed and cone account
- Stores and maintains a one to four year inventory of seed for native conifers, valued at over one-half million dollars
- Prepares annual seed shipments for the Forestry Division's aerial seedling program
- Maintains and repairs the fleet of state planting machines each winter
- Prepares annual seeding plans for the State Nursery Program

- Coordinates seedling shipments and schedules tree planting crew deployments for state and county lands

General Andrews Nursery

In 1939, the Civilian Conservation Corps built the General Andrews Nursery and expanded the Badoura Nursery. The General Andrews Nursery covers 266 acres in Pine County.

Currently, the Gen. Andrews Nursery conducts activities and hosts functions that do not occur at the Badoura Nursery. They include:

- Operates the seedling sales program
- Maintains the state's seed orchards for the state forest nursery program
- Operates and maintains the State Tree Improvement greenhouse
- Produces all seedlings shipped to public and private landowners for southeastern Minnesota and the seven-county metropolitan area
- Produces at least 80 percent of the state nursery program's hardwood seedlings
- Houses and utilizes the DNR Forestry Division's seedling storage cooler/freezer
- Performs hulling and cleaning operations for black walnut seed each fall
- Houses the Federal Surplus Equipment Program (U.S. General Services Administration)

Carlos Avery Nursery (closed in 1985)

At one time during the peak of state tree nursery production there were other smaller state forest nurseries. The last one to close was at Carlos Avery Game Refuge. This forest nursery started as a 12-acre experimental nursery in 1936 during the days of the Civilian Conservation Corps. Its operations were transferred from the Division of Game and Fish to the Division of Forestry in 1956. Carlos Avery Nursery stopped growing seedlings in 1975 and then closed (as a distribution center for the Gen. Andrews Nursery) in 1985.

Nursery operations

The nurseries produce conservation grade bareroot seedlings⁸ in large quantities. The forest nursery business has been described as high fixed-cost, high-volume, and low margin. A sufficient volume of sales is required to cover operation costs, whether the business is the state nursery program or private nurseries that produce similar products.

In addition to the seedlings grown, the state forest nurseries purchase and repackage seedlings each year from one or two private-sector growers. These seedlings are used for product line diversification, mainly providing several hardwood species for wildlife shrub packets. If major reforestation tree species are needed, they are typically procured through trades with Wisconsin or Iowa state nurseries.

Infrastructure and process overview

The nursery land is divided into seedling beds, most of them 42 inches wide and 600 feet long. A typical bed of conifer seedlings can produce about 60,000 red pine or jack pine, 50,000 white spruce, or 45,000 to 50,000 white pine. The typical growth period from seed planting to seedling harvest or “lift” is two to three years. The nurseries have irrigation systems, perimeter fencing, and buildings for processing and cold storage of seed and seedlings, as well as offices and auxiliary buildings for equipment and related nursery uses.

The planting, tending, and harvesting processes require staff with necessary skills and experience, some specialized equipment and many person-hours of work. For example, when seedlings are ready for harvest, a lifting crew follows behind a tree lifter vehicle and pulls individual seedlings, shakes the soil from the roots, and places the trees into tubs for transport to the packing building for grading. Seedlings are hand sorted, then placed into boxes for cold storage.

In the spring, orders are filled and shipped out across the state. To prepare for the spring shipping rush, the General Andrews Nursery, for example, processes and stores approximately 1 to 1.5 million seedlings in the fall. The two state nurseries sold and shipped on orders totaling 8 to 10 million seedlings each spring in recent years. An overview of nursery program operations is shown in Figure 4.

Nursery staffing

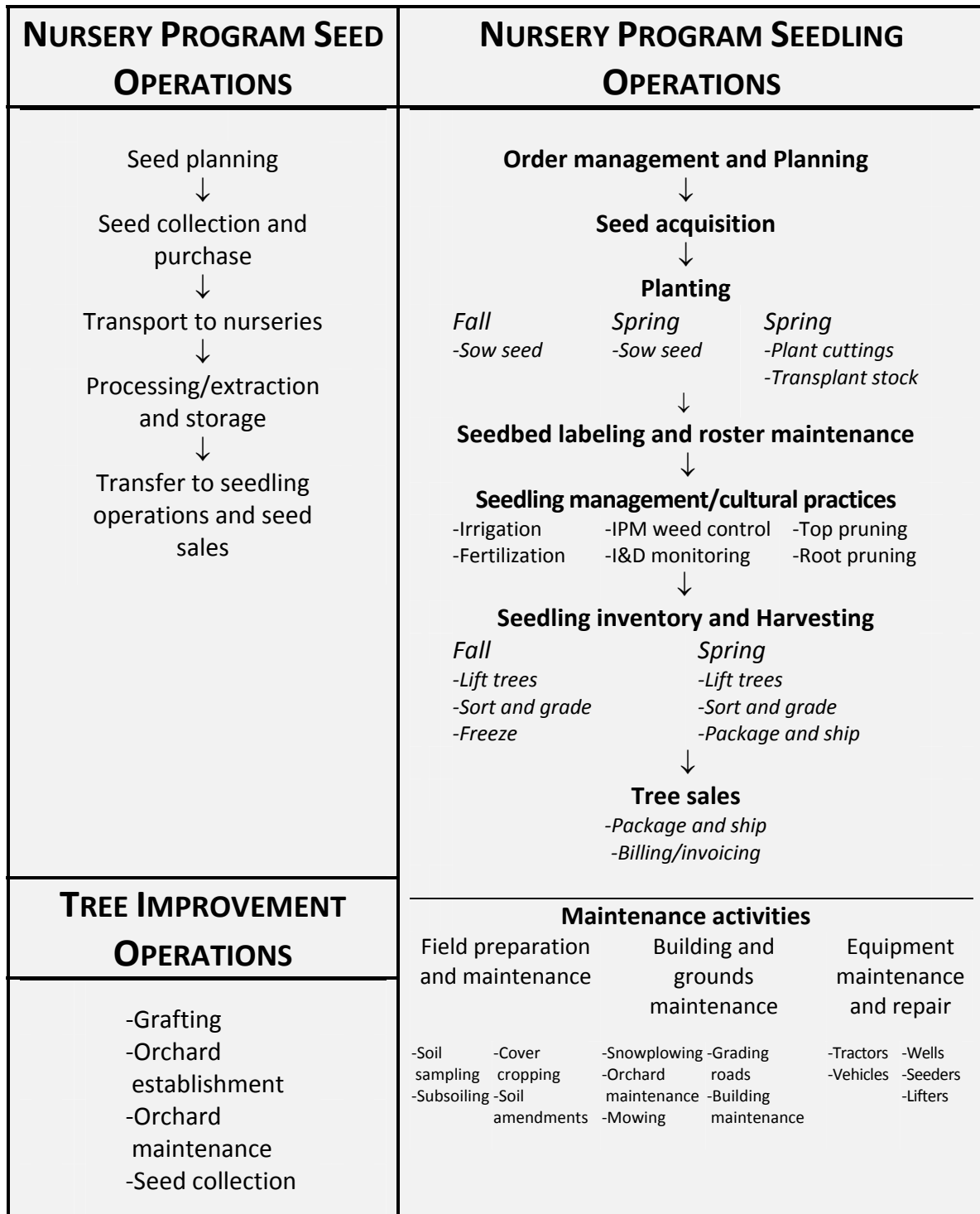
In FY2011, the Nursery Program was staffed with 27.4 full-time equivalent employees.

Figure 3. FY2011 Staffing

	Badoura	Gen. Andrews
Full-time staff (FTE)	4.0	3.9
Part-time staff (FTE)	2.8	2.2
Seasonal staff (FTE)	9.5	5.0

⁸ Conservation grade bareroot seedling are trees or shrubs of a wide size range that meet the requirements for effective hand-planting and seedling machine planting for forest conservation purposes. The typical size range is from 6” to 18” in height. “Graded” bareroot seedlings are identified and separated in specific height ranges within the broader range of size.

Figure 4. Nursery Operations Overview



Seed program

The nursery program's seed operations include planting, collection and purchase, processing and extraction of seeds, and transfer and sales. A snapshot of the volume of seed processed and delivered to meet the needs of 2010 customers is provided in Figure 5. The table also shows 2011 prices and the seed inventory at the end of FY2011.

Figure 5. Seed program details

A. SUPPLY OF SEED (FY2011)				B. DISTRIBUTION OF SEED AMONG USERS (FY2010)					
<u>Species</u>	<u>2011 price per lb.</u>	<u>Inventory end of 2011 (lbs.)</u>	<u>Supply based on avg. use (yrs.)</u>	<u>Forestry (lbs.)</u>	<u>Nursery (lbs.)</u>	<u>Container (lbs.)</u>	<u>County (lbs.)</u>	<u>Federal (lbs.)</u>	<u>Cross-total (lbs.)</u>
Black Spruce	\$250	544	1.27	425	4				
Jack Pine	\$125	259	1.84	140	23	3			
Tamarack	\$500	38	1.28	30	6				
White Cedar	\$100	20	4.00	5	6				
Balsam Fir	\$100	19	4.0 +	1	24				
White Pine	\$115	908	4.0 +	95	75	6			
White Spruce	\$100	410	4.0 +	25	44				
Norway Pine	\$125	<u>874</u>	4.0 +	<u>20</u>	<u>106</u>	<u>19</u>			
		3,073		741	288	28	249	30	1,336

Forestry use based on 5-yr average. County and federal use by species not available.

The inventory of seed at the end of FY2011 was more than 1.5 tons. For several species, this amount was enough for four years or more. For other species, the inventory would cover less than two years of demand. The sale value of the inventory based on the FY2011 prices and the amounts listed totals approximately \$446,000.

The Division of Forestry uses 55 percent of the seed production for regeneration programs on an annual basis, the Nurseries' onsite use is 22 percent, and counties use 19 percent. About two percent was distributed for container growth and two percent to the federal government.

Key operational attributes

Several features of the nursery operations and finances are important for understanding overall nursery operations.

1. **The Nursery Account** was established in 1983 with \$600,000 from the legislature. The enterprise operation requires that revenues must cover costs over time, and budgeting must present a balance of revenues and costs over the upcoming biennium. The account operates on a cash basis. As with other government enterprise funds, there is no expectation that each period will result in a precise balance. Fluctuations and trends up or down are expected. The account balance provides a safety margin to take account of the variability of costs and revenues that are inevitable. The account at the right level allows lead time for the planning and adjustments that are always necessary to keep costs and revenues roughly equalized on a continuing basis.

By statute, the nursery program is required to charge only what it costs to produce the products and services; a profit margin is not allowed. The nursery account balance, then, is designed to stay within a narrow range of variability unless sudden and dramatic circumstances, or longer term trends, throw it greatly out of alignment. If normal types of adjustment to costs and/or revenues are not or cannot be made at those times, the balance is drawn down at an unsustainable rate until suitable changes are made.

2. **Timing of sales revenues and cash receipts, and accounts receivable.** The statement of nursery account status, distinct from the statement of revenues and expenditures (which records sales revenues as they occur), records cash when it is received. Therefore, sales and cash received within a fiscal year do not coincide, as reflected in the accounts receivable end of fiscal year balance. The accounts receivable aging reports show that accounts are generally paid very expeditiously – however, the end-of-fiscal year accounts receivable picture has always showed a sizeable balance that should be considered in interpreting the nursery account balance. A high accounts receivable balance gives a distorted negative picture of the nursery account balance in relation to the recognition of sales.
3. **Lead time from planting to deriving revenues. Tree seedlings** typically require two, three or four years from planting of seed to “lifting of seedlings.” Costs are expended during the in-ground time, but 70 percent of costs are incurred in the final year when the seedlings are harvested and made ready for sale. As a consequence, costs each year are not well matched to the corresponding sales.
4. **Growing more than what has been ordered for contingencies.** Planting for contingencies is an important consideration. In that regard, the state nursery program has both the need and the capacity to plant more than would be required for known orders and confirmed expectations. Private nurseries may not have the same extent of capability, or inclination to plant more from a profit-making point of view, than the state program.

Historically, the state program has been prepared to provide seedling supply for large, generally unpredictable events, and do so “at the last minute.” This can be very important where a very large area has been blown down by wind, for example. For some species that need replacement, quick replanting is necessary or the most cost-effective way to remedy the disaster. Waiting an extra year to replant could require battling regrowth of undesirable vegetation. Natural events including fire, a variety of weather events, and disease can unpredictably impact forest ecology and quick remedial action can be important and cost effective.

If the remedial action requires conservation grade bareroot seedling, then the state nursery program has been able to provide the needed seedlings. In recent years, the state program has purchased and traded seedlings in larger quantities to meet some of these needs, acting as a broker and attempting to provide the same documented quality from other seedling sources as from the state program.

Market and customers

Market conditions and statutory customer boundaries and limitations are critical to the State Forest Nurseries Program. The market segment that the state nurseries occupy is for conservation grade bareroot seedlings (not containerized seedlings). In Minnesota, containerized seedlings are produced by private sector growers. The Forestry Division of the DNR accounted for approximately 60 percent of sales in FY2011. Other buyers have included local units of government (notably counties), soil and water conservation districts (SWCD), private landowners, and private nurseries. Private sector individuals and entities have made up as much as 40 to 50 percent of seedling sales. Other divisions of the DNR also purchase quantities of both bareroot seedlings and containerized seedlings each year for reforestation and afforestation.

Specifications in statutes

Specific authority for sales in specific markets and product types are described in Minn. Stat. §89.37:

- Planting stock may be supplied for use on any lands owned by or subject to an easement or right-of-way held by the state or by any political subdivision of the state.
- Planting stock may be supplied for use in an auxiliary forest owned and maintained by any corporation organized for religious, social, moral, educational, scientific, benevolent, charitable, fraternal, or reformatory purposes and not for profit.
- The nurseries may supply only bareroot seedlings, woody cuttings, and transplant material for use on private land, and such material may be sold in lots of not less than 500. The nurseries may not directly or indirectly supply any other planting stock for use on private lands.
- The nurseries may supply tree planting stock to organized soil and water conservation districts for soil, water, wildlife, and conservation purposes. The soil and water conservation districts are permitted to resell the trees, adding to the price to defray their costs.⁹
- The nurseries may sell native tree seed to licensed, private Minnesota nurseries when supplies from geographically adapted sources are not available from private Minnesota seed dealers.
- The nurseries may sell native trees and shrubs in lots of ten or more to nonprofit groups and local units of government.

Minn. Stat. §89.36, subd. 1, provides an additional boundary on sales volume. A limit of 10 million seedlings sold annually by the state nurseries was enacted in 1997. Following enactment, the law's effect was suspended by the legislature for three years. The restriction went into effect following the suspension. This provision was enacted to support the expansion of private forest nurseries in meeting market needs for tree seedlings.

⁹ The soil and water conservation districts are the only organizations currently allowed to purchase seedlings from the state forest nurseries and resell to the public for conservation purposes. They annually purchase between 250,000–300,000 seedlings.

Most recent statutory limitation: private sales

The most recent statutory change in the 2011 Special Session has further modified the market and customer base.¹⁰ The new language may have created ambiguities that will need to be resolved over time, in relation to the requirements in pre-existing statutes. For the purpose of this business plan, the department has interpreted the new mandate as disallowing sales to private (non-government) entities and persons, except as narrowly defined in the language. Sales to soil and water conservation districts would be disallowed by the 2011 law. The seedlings at Badoura that may be sold to customers without the new statutory restriction would be seedlings in the ground on June 30, 2011. The list of Badoura seedlings by tree type, age, and expected years of availability for sale, is presented in Figure 6a. The last of these seedlings would be sold during FY2015. Seedlings in the ground at Gen. Andrews can be sold to government and nongovernment customers until the nursery discontinues seedling production (effectively, at the end of FY2013). The last plantings at Gen. Andrews were in Fall 2010. Seedlings that would be available for sale from Gen. Andrews in FY2012 total approximately 3.2 million; in FY2013, 1.3 million. After FY2013, remaining seedlings in the ground total 928,000, and could be harvested in FY2014 and FY2015. The list of Gen. Andrews seedlings by tree type, age, and expected years of availability for sale is presented in Figure 6b.

Other trends affecting markets and customers

Decline in state and federal cost-share funding

The continuing economic downturn has had significant impacts in the past several years. In part, this decline was also due to the loss of state and federal cost-share funds that help private landowners pay for seedlings to replant private forest lands. As a consequence, there have been fewer private landowners with funds. In 2009 there was a 40 percent decline in seedling sales due largely to the economic downturn and the loss of cost-share dollars for tree planting. The loss of sales of this magnitude significantly impacts the nursery operations.

Gradual movement toward more use of containerized seedlings

A longer-term trend that affects state nursery sales is the gradual movement in the market, reported by many stakeholders, toward the use of containerized seedlings for reforestation. The movement toward public land planting of container seedlings on state lands began in the late 1980s as they provided a smaller, drought-resistant, easier to plant seedling for the shallow and rocky soils of northeastern Minnesota forests. County land departments have gravitated toward containerized seedlings primarily due to significantly lower prices offered by Canadian seedling producers.

¹⁰ Beginning July 1, 2011, the commissioner of natural resources shall limit all new plantings at the Badoura State Nursery to the planting of stock for research or use on public lands or private conservation lands with permanent protection. Excess plant material may be sold or traded to private wholesale nurseries. (Laws 2011, 1st Spec. Sess., Ch. 2, Art. 4, sec. 30.)

Both bareroot and containerized seedlings are available at high quality.¹¹ Many of the private sector nurseries that produce seedlings for reforestation in the Midwest are greenhouse operations that produce containerized seedlings. These are predominantly conifer (pine and spruce) seedlings. Nearly all private sector produced deciduous (hardwood) seedlings such as oak, walnut, maple and shrub species – that are used for reforestation and wildlife habitat establishment on public and private lands – are bareroot seedlings.

The DNR, by far the largest customer of the nurseries, utilizes the state nursery program for bareroot seedling needs and private nurseries for containerized seedlings. Silviculture considerations, comparative costs, funding availability, and other factors favor one type or the other. Customer preferences regarding the mix of the two types of seedlings are an important factor in the state nursery program's sales level. The use of containers for production of quality conifer seedlings is more widely accepted and practiced than the use of containers for production of quality hardwood seedlings.

The state nurseries are the largest producer of conservation grade bareroot planting stock in Minnesota. Bareroot stock is required for mechanized planting operations used broadly in Minnesota on public and private lands. Its advantages generally include relative low cost, ease of planting and regeneration success. But producing bareroot stock requires multi-year financial commitments with a low return. Bareroot private nurseries in Minnesota are not expanding and one of the larger ones left the business in recent years.

¹¹ An advantage of bareroot seedlings from a public lands perspective has been that the state nursery program can typically guarantee seedling availability every year for all needs. Every year three age classes of seedlings have been available. Another advantage of the state nursery program products (especially for specific native seed sources) has been that they don't have to be ordered in advance under contract as required by private sector growers. Public land agencies often need seedlings very quickly to respond to environmental calamities. The state nursery program has provided the most cost effective solutions in these types of circumstances.

Figure 6a. Badoura Nursery – number of seedlings in the ground on June 30, 2011¹²

Age¹³	SPECIES	2012	2013	2014	2015
2-0	Norway Pine	650,000	640,000		
3-0	Norway Pine	1,210,000	1,200,000	900,000	
2-2	Norway Pine	100,000	140,000	140,000	100,000
2-0	White Pine	200,000	200,000		
3-0	White Pine	520,000	400,000	500,000	
2-2	White Pine	56,000	105,000	100,000	100,000
2-0	Jack Pine	350,000	250,000		
2-0	Jack Pine Improved ¹⁴	550,000	650,000		
3-0	White Spruce	660,000	700,000	700,000	
2-2	White Spruce	80,000	140,000	100,000	100,000
2-0	White Spruce Improved	500,000	600,000		
3-0	White Spruce Improved	300,000	200,000	300,000	
2-0	Black Spruce	120,000			
2-2	Black Spruce	12,000			
2-0	Black Spruce Improved		120,000		
3-0	Balsam Fir	80,000	80,000	80,000	
2-2	Balsam Fir	15,000	20,000	20,000	20,000
2-0	Tamarack	200,000	160,000		
3-0	White Cedar	15,000	90,000	60,000	
2-2	White Cedar	12,000	18,000	20,000	20,000
3-0	Red Cedar			20,000	
2-0	N. Red Oak	80,000	60,000		
2-0	Bur Oak	60,000	100,000		
2-0	Mixed Oak	24,000	24,000		
1-0	Paper Birch	30,000			
2-0	Paper Birch	10,000	10,000		
1-0	Cottonwood	32,000			
2-0	Sugar Maple	7,000			
2-0	Silver Maple		60,000		
1-0	Basswood	5,000			
2-0	Basswood		10,000		
1-0	Wild Plum	10,000			
2-0	Wild Plum	10,000	20,000		
1-0	Red Osier Dogwood	20,000			
2-0	Red Osier Dogwood		20,000		
1-0	Pincherry	1,000			
2-0	Pincherry		20,000		
2-0	High Bush Cranberry		30,000		
2-0	Nannyberry		10,000		
	TOTAL	5,919,000	6,077,000	2,940,000	340,000

¹² Seed was sown in Fall 2010 and Spring 2011, and the resulting seedlings will be available for sales to public and private landowners in sale years 2012, 2013, 2014, and 2015.

¹³ Seedling age in years at harvest. If the second number is more than 0, seedling was transplanted.

¹⁴ Improved seedlings are developed to be genetically superior to the “woods run” version. A small premium on price is typically added.

Figure 6b. Gen. Andrews Nursery – number of seedlings in the ground currently¹⁵

Age¹⁶	SPECIES	2012	2013	2014	2015
3-0	Norway Pine	685,000	180,000		
2-2	Norway Pine	120,000	45,000	60,000	
3-0	White Pine	200,000	100,000	200,000	
2-2	White Pine	75,000	45,000	50,000	50,000
2-0	Jack Pine	200,000			
3-0	White Spruce	500,000	60,000	150,000	
2-2	White Spruce	110,000	50,000	20,000	40,000
3-0	White Spruce Improved ¹⁷	180,000		150,000	
2-2	Black Spruce	11,000			30,000
3-0	Balsam Fur	56,000	20,000	20,000	
2-2	Balsam Fur	20,000	18,000	10,000	10,000
3-0	White Cedar	50,000		30,000	
2-2	White Cedar	7,500	10,000	10,000	10,000
3-0	Red Cedar	40,000			
2-2	Red Cedar		4,300	5,000	
2-0	N. Red Oak	160,000	250,000		
2-0	White Oak	125,000	50,000		
2-0	Bur Oak	60,000	50,000		
2-0	Mixed Oak	80,000	60,000		
2-0	Swamp White Oak	26,000	40,000		
2-0	Pin Oak	16,000	25,000	10,000	
2-0	Paper Birch	2,000	20,000		
2-0	Yellow Birch	575	20,000		
1-0	Hybrid Poplar	20,000			
2-0	Sugar Maple	5,000			
2-0	Silver Maple	90,000			
3-0	Red Maple	30,000	5,700		
1-0	Black Walnut	175,000			
1-0	Butternut	14,000			
2-0	Black Cherry	5,900	40,000		
3-0	Shagbark Hickory	1,000		8,000	
3-0	Bitternut Hickory	24,000	3,000	10,000	
2-0	Wild Plum	30,000	30,000		
2-0	Red Osier Dogwood	6,600			
2-0	Gray Dogwood	1,000	15,000	40,000	
2-0	Ninebark	8,000	15,300		
2-0	Chokeberry	5,750	25,000		
3-0	High Bush Cranberry	500	10,000		
2-0	Nannyberry	4,800	25,000		
2-0	Hazelnut		22,000		
2-0	Mountain Ash		15,000		
2-0	Black Elderberry	8,000	15,000		
3-0	Winterberry		10,000		
2-0	Juneberry		15,000		
2-0	Bog Birch		15,000		
2-0/3-0	Misc. Shrubs		500		
	TOTAL	3,153,625	1,308,800	788,000	140,000

¹⁵ Seedlings in the ground at Gen. Andrews (last planted in Fall 2010) can be sold to government and nongovernment customers until the nursery is closed for seedling production.

¹⁶ Seedling age in years at harvest. If the second number is more than 0, seedling was transplanted.

¹⁷ Improved seedlings are developed to be genetically superior to the “woods run” version. A small premium on price is typically added.

Business plan

The business plan provides a baseline assessment, estimation of future operations under stated assumptions, a plan for transition to a smaller program, an assessment of options for the future of the Gen. Andrews Nursery, and a review of risks and opportunities from the anticipated changes described in the plan.

Overview of vision and business plan actions

The business plan vision is to sustain the State Forest Nursery Program as a key component of the DNR infrastructure to carry out the DNR statutory mission for forest conservation and reforestation. The department's priorities for the plan include (1) continuity in having a reliable, quality-controlled native seed source for sustaining the state's forests, (2) providing appropriate type and number of seedlings to supply the public and conservation land needs for reforestation and afforestation, (3) conducting necessary research on continuous tree improvement to ensure optimum forest health, and (4) meeting the requirements of statutory changes and their impacts, along with the impacts of a depressed economy, to operate the nursery program on a continued and sustainable breakeven (self-sufficient) basis.

The plan to ensure an economically self-supporting State Forest Nursery Program would require undertaking the actions noted below and continued Forestry Division purchases based on conservative historical assumptions. Viability could be further supported by more timely price increases to reflect changes in marketplace conditions and increased costs, modest increases in new revenue generation from the list of potential opportunities noted below, and modest increases in Forestry Division purchases.

It is important to note also that the projected increase in the Nursery Account balance from FY2012 to FY2014 is primarily based on reduction in program costs associated with the ending of seedling production at the Gen. Andrews Nursery and increased capture of accounts receivable. A slight increase and leveling of the Nursery Account balance in FY2015 and FY2016 is projected as a result of savings from reduced operations and price increases in FY2014 and FY2016 that offset reduced sales volumes and normal increases in the cost of wages and other expenses of operation at the Badoura Nursery.

Strategies and actions to carry out the business plan

The actions required to ensure continued self-sufficiency of the Nursery Program are described in the next three pages. They include: reducing the size of the program operations based on long-term trends and recent sales restrictions, refocusing customer services on government customers over the next several years, reviewing and potentially adjusting seed and seedlings pricing practices, maximizing tree improvement activities within resources, and repurposing Gen. Andrews Nursery (discontinuing seedling

production after FY2013) for seed production, seed orchard, and non-nursery DNR uses similar to those now in place.

1. Reduce the size of the State Forest Nursery Program operations based on long-term trends in demand for conservation grade bareroot seedlings and recent statutory restrictions on sales.
 - Discontinue tree seedling production at Gen. Andrews Nursery (planting and harvesting) by FY2014 and repurpose the land and facilities.
 - Transfer tree seedling production operations to Badoura by FY2014.
 - Reduce total program staffing by approximately 40 percent (FY2010 to FY2014) principally by transfer to other Forestry or department responsibilities.
 - Reduce total program expenditures by approximately 31 percent (FY2010 to FY2014).
2. Refocus customer services and sales efforts on DNR and other state and local government agency customers in anticipation of the changes occurring over the next four years. In the shorter-term, market to potential customers to maximize revenues from sales of seedlings in the ground on June 30, 2011.
 - Between FY2011 and the events of (1) Gen. Andrews closure, and (2) Badoura sales statutory limitations taking full effect, continue to promote sales to all traditional types of customers in order to build the Nursery Account balance.
 - Starting immediately, use department/division/program resources to improve targeted communications to government customers.
 - As soon as practical, refocus service and product improvement efforts, product lines, and specialized packages or other nursery products, on the needs of government (customers in the DNR, state agencies, and units of local government).
 - Maintain informational support to private landowners for effective practices, as program resources allow.
3. Conduct a seedling and seed pricing study, including for improved products, to ensure that prices are sufficient to maintain a self-sustaining nursery operation.
 - To the extent necessary, move prices closer to market rates.
 - Conduct a pricing study annually and make timely adjustments.
 - Evaluate the need to raise prices every two years instead of every four years.
4. Increase seedling prices by 6 percent in FY2014 and in FY2016. The size of the increases assume that the Forestry Division demand will continue at 1,460,000 seedlings each year and that total public sector demand will continue at approximately 3.5 million. The Forestry Division demand assumption is considered to be conservative because purchases for the last four years have averaged about 1.9 million seedlings per year. Future experience may indicate the size of increases should change.

5. Maximize value to the department and stakeholders from seed/seedling/tree improvement by expanding activities, investigating new markets, and increasing revenues to benefit the nursery program.
 - Place additional resources in tree improvement efforts (seed and seedling) at Badoura and the repurposed Gen. Andrews.
 - Assess the market for, and value to the DNR mission, and program revenues, of providing additional lines of nursery products that the private market is unable or unwilling to provide but for which the public purpose allows a commitment of resources. Dedicate a portion of available nursery seed beds to experimentation including nontraditional plantings for seed gathering/extraction and product improvements.
 - Determine how to appropriately charge for improved seed and seedlings to enhance revenues, and ensure recovery of the incremental revenues for the program's purposes including further improvement activities.
6. Repurpose Gen. Andrews seed beds for seed orchard and seed production to support efficient seed supply and improvement activities that benefit Badoura and other seed purchasers, and to utilize existing costly infrastructure (for example, perimeter fencing and irrigation system). Transfer responsibilities for onsite facilities other than those needed for seed orchard and production, tree improvement, and greenhouse operations to other DNR operational uses outside the nursery program.
 - Make use of existing infrastructure.
 - Find best use in terms of product lines.
 - Don't foreclose some amount of experimental uses for improved seed and trees that are not strictly seed orchard.
 - Keep the cooler building for nursery program uses through FY2013, after which the cooler building becomes the responsibility of the Forestry Division.
 - Account for transition requirements. Equipment and other materials from Gen. Andrews will be transferred to Badoura. Figure 7 shows items, expected timing, nature of the costs and other assistance required. Other items may be added.

Figure 7. Transition items, timing, and type of costs.

Item	Timing	Type of cost
Field equipment, lifters, etc.	Nov. 2013 or Spring 2014 Allow time for final prep of the fields	Transportation
Walnut huller	2012	Transportation
Packing materials and associated equipment	2013, after the last lift	Transportation and related costs
Tree sales records and files	After invoicing and billing, probably 2014	Transportation
Computer files and equipment	After invoicing and billing, probably 2014	Transportation, other administrative assistance
Management records that require retention, such as water use, pesticide application, etc.	To be determined. Some of the records may need to be kept on-site	Transportation and onsite storage as needed

-
7. Ensure sustained program viability and continued breakeven operations by increasing revenues within statutory limitations, reducing costs through process efficiencies and adoption of best practices, and expanding product lines consistent with statutes.
- Refocus communications and service efforts on DNR and government customers along with the largest organizations with permanent conservation easements (consistent with the recent statutory directive).
 - Adapt cost structure to lower overall demand and new restrictions on sales to private individuals and industry.
 - Add new lines of products to improve and sell, focus on improved products.
 - Maximize benefits to the Nursery program from tree improvement activities and seed sales for public and private customers.
 - At Badoura, focus on process efficiencies and cost reductions.

Risks and opportunities

Critical risks to future revenues

The Forestry Division accounted for about 60 percent of the Nursery sales in FY2011. If private sales had been excluded, the division would have accounted for 80 percent. If the same percentages hold for years after the transition to Badoura, then risks to that revenue stream are paramount for the Nursery Program's future.

Several assumptions reflected in the financial estimates are critical to this analysis. These assumptions may or may not hold true, and contingency plans will have to be developed to address potential shortfalls.

- **Department funding availability:** The analysis assumes that the department will have the level of funding needed to purchase state nursery products at the level stated in the financial estimates. Even in current (FY2012) year, the size of nursery purchases is constrained by budget limitations.
- **Purchase priorities related to silviculture needs:** The analysis assumes that the department will purchase from the state nursery program at the expected level and not move toward other suppliers. This decision will depend on what is the best silviculture decision. The department uses more containerized seedlings over time; the state nursery produces only bareroot seedlings.
- **Reliance on revenues from conifer sales:** The nursery program's sales are in large part driven by conifer sales. The analysis assumes that the department's conifer purchases from the state nursery program will continue indefinitely and that the need will not be as effectively met by containerized seedlings. The program, if it produced only hardwoods, would probably not be viable. The private market has very large capacity to meet the market's needs for containerized conifer seedlings. The current position of the department is that the nursery program will not move into containerized seedling production. Among the reasons are the size of needed investment and the very large capabilities of the current private market.
- **Fluctuations in the economy that drive housing and timber sales:** The economic slump that has enveloped the nation for the past four years shows few signs of improvement. The analysis assumes that the economy will improve enough to sufficiently increase demand for forest products and generate revenues that the state forestry programs require. The chain of relationships is close between the housing and wood products markets, the need for afforestation and reforestation, and the demand for nursery seedlings. In the down economy, the effects also include lower available state and federal cost-share money available to private forest owners.

Related operational risks

- **The breakeven imperative:** The analysis assumes that the program will be able to remain viable indefinitely through adaptive management with a requirement in statutes to fully recover production costs. Statutes require that the nursery program be “self-sustaining” (operate at a breakeven level of revenues and costs over time). The tree nursery business is a high fixed-cost, high-volume, low margin business. The state nursery program has very significant restrictions on sales volumes and potential customers. The program therefore must stay competitive as its production levels drop from overall market conditions (currently the worst in decades) and other types of demand fluctuations. The combination of poor economic conditions in the market and the disappearance over a few years of a historically large market segment (sales to private parties, which accounted for about 40 percent of total sales in FY2011), puts the program on a difficult trajectory.
- **Shift to one location of production:** The analysis assumes that the state nursery program would survive a catastrophic event if it were to occur at a single nursery location as a result of good contingency planning. Any of several types of natural disasters can significantly reduce the amount of seedlings available for sale. Destructive disease, fire, very heavy wind, excess water events, and other weather conditions are more significant without a backup growing location. Particularly because the period from planting to availability for sale is most often two or three years, the risks of single-location disaster are larger. Whether or not alternative sources could cover the need in a timely way, the potential for the state nursery program to take a very heavy financial blow is greatly increased with one location.

Risk Mitigation

These actions should be considered to mitigate some of the risks for future operations and financial viability of the State Forest Nursery Program.

1. Reduce single nursery location risks pre-emptively to the extent practical, and establish contingency plans for recovery from possible plant disease, fire, and weather catastrophes. Include financial backup plans so that the Nursery Account would not be overwhelmed.
2. Maximize seedling sales between now and the dates of major change for the two nurseries. Every usual avenue of marketing, publicity, and communications should be pushed within the short time frame. If other types of promotions are possible, they should be explored. The objective would be to build the Nursery Account balance before about 40 percent of current sales (to private parties) are lost permanently in a few years.
3. Monitor seedling sales in relation to the operating and financial estimates presented in this plan. If strong differences begin to emerge, take pre-emptive actions to increase sales, cut costs, or identify other sources of revenue that can be brought into play in a comparatively short period of time. This might include other nursery products.

4. Refocus customer services and new product development on the needs of the Forestry Division, other DNR divisions, and government customers, in that order, consistent with the language and apparent intention of the 2011 law. Broaden the assessment of products that may provide great value in the future and support the programs.
5. At Badoura Nursery, identify further process efficiencies and best practices to reduce costs and increase productivity. Examples may be continuous improvement activities, Kaizen exercises, etc.
6. Preserve and enhance the seed program and tree improvement program/research activities as foundations of value creation for the future.
7. Assess, as practical, the prospective and/or actual impacts of relaxed seed source control that may be a feature of reduced access to seed source controlled seedlings in the marketplace.
8. Assess, informally and as practical, the capacity and performance of private nurseries to fulfill the needs of private landowners and others for the types, quality, and quantities of bareroot seedlings formerly supplied (as of FY2014) by the state forest nurseries. Provide support to the private nursery industry, as resources allow, to help attain best practices for seed source control and related practices that meet the needs of private purchasers.
9. Continue support to private landowners for best silvicultural practices through education and access to state and federal cost-share funds.
10. Continue to build partnerships and cooperative efforts with willing public sector, higher education, and private sector parties to support best practices for sustainable, productive, and healthy forests.

Potential opportunities

Sources contacted during the development of this business plan had a variety of ideas about potential opportunities that may provide additional revenues to the nursery program. Additional ideas concerned additions to the tree improvement research and related activities that could be undertaken by the nursery program. The ideas would require additional research to determine their revenue potential and feasibility. They are presented here without additional evaluation.

Potential opportunities for additional revenues

1. Identify new markets for spent cones. For example, sell spent cones to the potpourri market. Because they are kiln dried, they can be sent to other countries for processing.
2. Design a boiler that burns spent cones for fuel.

3. Establish a gene conservation repository for the seed sources. Share the results with private nurseries through a cooperative.
4. Identify equipment needs and handle specialized small, custom seed cleaning jobs.
5. Work on plans for new initiatives that emphasize conservation objectives.
6. Change the law to allow private growers to purchase tree seedlings from the nursery program to resell as Christmas trees or larger stock. More generally, remove laws that prohibit growers from reselling DNR seedlings. This relieves growers from germinating all the seedlings that they sell.
7. Focus additional efforts to supply tree and shrub seed to other nurseries.
8. Establish (statutorily) a surcharge on seedling sales to help fund conservation objectives such as control of invasive species and disease. See Wisconsin Statutes §28.06 (2m).

Actions that other states are taking with respect to state nurseries

- Wisconsin is likely to close one nursery because orders are down.
- Iowa is maintaining its single nursery.
- Colorado state nursery may begin selling into the Dakotas – selling into a multi-state area.
- Illinois turned nurseries into prairie plants and hardwoods nearly 20 years ago.
- North Carolina's Christmas tree industry formed a cooperative with the DNR to reopen a state facility to germinate and grow seedlings for local Christmas tree growers. They found that purchases on the open market were of unknown quality and cost too much. The growers lobbied their legislature to change the law to allow this.

Potential opportunities to advance research and tree improvement

1. Work with partners to develop new technology to improve germination rates.
2. Establish a center for gene conservation. Maintain Minnesota's "old world" varieties.
3. Expand outreach programs related to the value of seed source control. Consider whether there is a further role to enforce provenance control. The educational message is something like this: "it may survive, but it won't thrive."

Financial plan and budget

By statute, the state nursery program is required to operate at a break-even level (also referred to as self-sufficiency) within the structure of a government enterprise fund. Revenues must cover all costs. The nursery program fund balance carries over from year to year, shows the ups and downs of the yearly net of revenues and costs, and provides the primary measure of achievement of the balance over time. Because costs must be covered by sales revenues, the significant loss of revenues at any time requires a realignment of the nursery program cost structure.

The department's priorities include (1) continuity in having a reliable, quality-controlled native seed source for sustaining the state's forests, (2) providing appropriate type and number of seedlings to supply the public and conservation land needs for reforestation and afforestation, (3) conducting necessary research on continuous tree improvement to ensure optimum forest health, and (4) meeting the requirements of statutory changes and their impacts, along with the impacts of a depressed economy, to operate the nursery program on a continued and sustainable breakeven (self-sufficient) basis.

Actions required to ensure continued self-sufficiency of the Nursery Program include reducing the size of the program operations based on long-term trends and recent sales restrictions; refocusing customer services on government customers over the next several years; reviewing and adjusting seed and seedlings prices and practices; maximizing tree improvement activities within resources; and repurposing Gen. Andrews Nursery for seed production, seed orchard, and non-nursery DNR uses similar to those now in place (ending seedling production after FY2013).

Budget detail

A detailed budget that breaks down numbers in the following pro forma financial statements and operational estimates has been prepared and is available upon request.

Assumptions

The historical and projected nursery program financials from FY2009 to FY2016 incorporate a number of assumptions:

- Price increases for sales of nursery seedlings in FY2014 and FY2016 based on historical price increases over time. This is a conservative assumption because price increases have generally not occurred on a frequent basis but instead have recently been every four years. Implementing price increases that are more sensitive to the timing of cost increases and changes in market conditions would improve financials.
- Increases for staff costs and operating and capital expenses at the nurseries based on historical annual increases.
- Total sales estimates based on the FY2012 Forestry Division order of 1,460,000 seedlings that reflect the depressed economic conditions. This is a conservative assumption because Forestry Division purchases alone for the four previous years

averaged about 1.9 million seedlings per year, and it does not account for increases as the economy improves.

Break even

- Program expenditures and staffing levels have and are projected to decline as sales are reduced in response to legislative requirements limiting sales levels and termination of sales to the private sector. The nursery program operations, in response to legislative changes limiting its customers and number of seedlings sold, has and continues to make program adjustments to achieve a break-even status.
- A reconfigured nursery program will continue to be self-supporting during the projected period through FY2016. The Nursery Account balance will grow during FY2013 to FY2016. These financials are based on Badoura-only seedling production activities and staff, expected increases in wages and operating costs, increases in seedling prices of 6% in FY2014 and 6% in FY2016, Forestry Division purchases of 1,460,000 annually and total sales of 3.5 million annually, and reductions in the end of year accounts receivable balances as private sales diminish each year.

Public and Private Sector Sales

- Although private sales have remained fairly constant at 2.3 million; public sector sales are much more variable. Projections of public sector sales for FY2012 – FY2015 will be critical in maintaining program integrity.
- Sales of seedlings from Badoura to the DNR Forestry Division are projected forward for this budget analysis using the current Forestry Division order of 1,460,000 seedlings for FY2012 through FY2016. The estimate is conservative because Forestry Division purchases for the four previous years averaged about 1.9 million seedlings per year.
- Sales to the private sector are scheduled to be phased out over the period of FY2012 – FY2015 in a manner that optimizes costs, revenues and operational efficiencies (all FY2015 (340,000) sales to the private sector will be from Badoura).

Operation Configuration and Related Expenses

- All nursery seedling operations are assumed to be at Badoura. Decisions and their financial implications regarding the status of the cooler, greenhouse and tree improvement program (i.e., grafting) – currently located at Gen. Andrews – are not reflected in these financials.
- Agency direct expenses (starting in FY2010), attention to accounts receivable (FY2009-FY2011), and adjustments to the program revenue line (FY2009 and FY2010) have had a significant impact on the percent change in the Forest Nursery account. Two price increases, reduced operations and staffing, and actions to reduce end of year accounts receivable balances, coupled with the transition to government-only sales by FY2016, result in an increase in the Forest Nursery Account balance for the projected period of FY2012 to FY2016,
- The projected operational costs for the program (excluding the above) are based on a program budget of \$1.5 million. Costs for supplies and expenses, equipment and

capital improvements, and other costs and adjustments were prorated on the same percentage basis and based on the actual values for these cost components in FY2012.

- Annual increases of 4% for wages and 1% in operating and capital expenses are assumed for each plan year FY2012 to FY2016.
- Funds for the grant to the Tree Improvement Cooperative are included in the projected operating budgets.
- Transition costs related to staffing level changes have not been incorporated into this spreadsheet.

Financial summary and budget, with endnotes

The spreadsheet on the following two pages steps through, year by year, the transition to a single seedling production site at the Badoura Nursery. Historical information for the past three years and projections through FY2016 are provided. The data for future years includes (1) estimates of seedling and seed sales volumes, (2) revenues and expenditures, (3) the Nursery Account balances of cash received and expenditures, accounts receivable (assumption), and (4) staffing.

The financial summary shows the financial effects and implications of the discontinuation of seedling production at Gen. Andrews Nursery by the end of FY2013 and the cessation of seedling sales to private sector purchasers (see the statute for exact requirements) by the end of FY2015.

The financial/budget summary is contained in the section of Revenues and Expenditures for each fiscal year, including the net balances. The Nursery Account operates on a cash basis (revenues recognized when payment is actually received and expenses when paid), so is different from the financial/budget summary figures. The accounts receivable balance at the end of each year shows the amount of revenues earned but for which payments have not yet been received.

The spreadsheet pages are meant to be displayed side-by-side. Endnotes on the two pages after the spreadsheet provide important information about assumptions and calculations. Additional details about several operational changes and their financial implications are also noted.

-----*HISTORICAL*-----

	FY2009	FY2010	FY2011
Revenues and Expenditures			
Revenues			
Sales[1]	\$2,567,403	\$1,724,351	\$2,228,620
Seedling Sales	\$2,331,897	\$1,481,308	\$1,957,090
Seed Sales	\$235,506	\$243,043	\$271,530
Other revenues and other adjustments[2]	(\$221,100)	(\$165,433)	\$1,417
Total revenues	\$2,346,303	\$1,558,918	\$2,230,037
Expenditures[3]			
Salary and other compensation [4]	\$1,563,618	\$1,449,062	\$1,359,474
Supplies and expenses [5]	\$475,736	\$320,029	\$380,841
Equipment and capital improvements [6]	\$194,449	\$144,685	\$139,747
Other costs and adjustments[7]	\$33,537	\$250,902	\$216,983
Total expenditures	\$2,267,340	\$2,164,678	\$2,097,045
Revenues minus expenditures	\$78,963	(\$605,760)	\$132,992
Forest Nursery Account (cash basis)			
Balance start of FY	\$1,777,360	\$1,561,089	\$1,085,540
Cash receipts during FY[8] [9]	\$2,051,070	\$1,689,129	\$2,025,262
Expenditures during FY [10]	<u>\$2,267,340</u>	<u>\$2,164,678</u>	<u>\$2,097,045</u>
Balance end of fiscal year	\$1,561,089	\$1,085,540	\$1,013,759
Net change for FY	(\$216,271)	(\$475,549)	(\$71,781)
Percent change for FY	-12%	-30%	-7%
Accounts Receivable			
A/R start of fiscal year	\$424,195	\$719,428	\$35,436
A/R end of fiscal year[11]	\$719,428	\$35,436	\$240,211
Net change in receivables	\$295,233	(\$683,992)	\$204,775
Percent change in receivables	70%	-95%	578%
Seedling sales volume			
Public sales (government)	2,843,150	3,678,195	4,516,425
Private sales (non-government)	<u>2,377,950</u>	<u>2,349,295</u>	<u>2,290,075</u>
Total seedling sales volume[12][13]	5,221,100	6,027,490	6,806,500
Percent change from previous FY	-38%	15.4%	12.9%
Personnel by Nursery location[14]			
Badoura			
Full-time staff (FTE)	3	3	4
Part-time staff (FTE)	4	3.7	2.8
Seasonal staff (FTE)	8.1	9.5	9.5
Gen. Andrews			
Full-time staff (FTE)	5	4	3.9
Part-time staff (FTE)	3.2	3.3	2.2
Seasonal staff (FTE)	5.5	5.3	5
Nursery program staffing totals	28.8	28.8	27.4

-- PROJECTED (based on facts and assumptions: next two pages) -----

FY2012	FY2013	FY2014	FY2015	FY2016
Revenues and Expenditures				
\$1,905,500	\$1,994,275	\$1,863,641	\$1,494,136	\$1,465,138
\$1,655,500	\$1,744,275	\$1,603,641	\$1,234,136	\$1,195,138
\$250,000	\$250,000	\$260,000	\$260,000	\$270,000
\$4,047	\$4,047	\$4,047	\$4,047	\$4,047
\$1,909,547	\$1,998,322	\$1,867,688	\$1,498,183	\$1,469,185
\$1,149,273	\$1,188,994	\$1,036,520	\$999,055	\$1,032,953
\$310,841	\$313,949	\$249,864	\$252,363	\$254,886
\$139,747	\$141,144	\$98,801	\$98,988	\$98,990
\$124,000	\$124,000	\$80,951	\$76,272	\$76,272
<u>\$1,723,861</u>	<u>\$1,768,088</u>	<u>\$1,466,136</u>	<u>\$1,426,678</u>	<u>\$1,463,101</u>
\$185,686	\$230,234	\$401,551	\$71,506	\$6,084
Forest Nursery Account (cash basis)				
\$1,013,759	\$1,164,753	\$1,360,294	\$1,738,949	\$1,805,326
\$1,874,855	\$1,963,629	\$1,844,791	\$1,493,055	\$1,469,185
<u>\$1,723,861</u>	<u>\$1,768,088</u>	<u>\$1,466,136</u>	<u>\$1,426,678</u>	<u>\$1,463,101</u>
\$1,164,753	\$1,360,294	\$1,738,949	\$1,805,326	\$1,811,410
\$150,994	\$195,542	\$378,654	\$66,377	\$6,084
15%	17%	28%	4%	0%
Accounts Receivable				
\$240,211	\$34,692	\$34,692	\$22,897	\$5,128
\$34,692	\$34,692	\$22,897	\$5,128	\$0
(\$205,519)	\$0	(\$11,795)	(\$17,769)	(\$5,128)
-86%	0%	-34%	-78%	-100%
Seedling sales volume				
3,200,000	3,500,000	3,500,000	3,500,000	3,500,000
<u>2,300,000</u>	<u>2,300,000</u>	<u>1,518,000</u>	<u>340,000</u>	<u>0</u>
5,500,000	5,800,000	5,018,000	3,840,000	3,500,000
-19.2%	5.5%	-13.5%	-23.5%	-8.9%
Personnel by Nursery location				
		Limited private sales	Limited private sales	No private sales
4	4	5	4	4
2.8	2.8	2.8	2.8	2.8
9.5	9.5	9.5	9.5	9.5
		No seedling production	No seedling production	No seedling production
3	3			
2.2	2.2	.5	.5	.5
5	5			
26.5	26.5	17.8	16.8	16.8

Notes to the preceding table

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- [1] **Sales.** FY2009 – FY2011 sales (actual) are based on an average price of .266/seedling (price includes value-added services: pruning, painting, bundling, etc.) plus annual seed sales of approximately \$200,000. FY2012 – FY2016 estimated sales assume an average seedling price \$.315 for the Division of Forestry – which included value-added services that the division typically buys. The estimate also includes sales at an average seedling price of \$.296 for all purchasers, and \$200,000 in seed sales. The sales figures reflect the Forestry Division’s FY2012 purchase of 1,460,000 seedlings (as of Nov. 30, 2011) and the same amount each year after that. The 6% increases will raise prices for the Forestry Division to \$.334 (FY2014) and \$.354 (FY2016). For all other purchases, the prices would be \$.314 (FY2014) and \$.332 (FY2016). The higher prices for the Forestry Division are based on additional services provided. The price increases, which are consistent with the pattern of price increases in FY2008 and FY2012, may not be needed if actual experience is better than projected.
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- [2] **Other revenues and other adjustments.** Other revenues represent interest earned on the account. The amount varied from \$39,015 in FY2009 to \$4,047 in FY2011. For FY2012 –FY2016, other revenue is assumed to be the same as in FY2011. Other adjustments for FY2009 - FY2011 varied from (\$260,115) to (\$2,630). Adjustments are assumed to be zero for FY2012 - FY2016.
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- [3] **Costs/expenditures.** Costs (and Expenditures) for FY2012 have been budgeted and are based on program costs for FY2011, except for known reductions in salaries, supplies and other adjustments. Estimated costs (and expenditures) for FY2013-FY2016 reflect reductions in staffing levels on the salaries line, and have been reduced on a pro rata basis for all other categories.
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- [4] **Wages and other compensation.** For FY2013 to FY2016, this line assumes a 4% annual increase in wages and a 1% annual decrease in “other compensation” as employee levels are reduced. The 4% increase is based on MMB methodology which uses step increases that are typically 3.5% plus increases in insurance costs.
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- [5] **Supplies and expenses.** For FY2012 to FY2016, the reductions of this cost reflect the transition to one location, reduced operations, and reduced staffing. This line item assumes a 1% increase in the cost for each planned year.
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- [6] **Equipment and capital improvements.** A 30% decrease in capital equipment needs is assumed in FY2014 when Gen. Andrews discontinues seedling production activities. This line item assumes a 1% cost increase for each of FY2015 and FY2016.
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- [7] **Other costs and adjustments.** In FY2009, Other costs and adjustments included DNR agency indirect costs. Beginning in FY2010, the DNR began assessing divisions for direct costs. The Forestry Division allocates a portion of its agency direct costs to the Nursery program. The amount in FY2010 was approximately \$194,000. In FY2012, this item was recalculated and set at \$124,000. The allocation applies to all DNR divisions and is based on a formula that takes into account the budget, staffing levels, and other costs. This item has been reduced on a pro rata basis for FY2013 to FY2016, based on declining staffing levels. The costs for general meetings between the division, the nursery, and the commissioner's office are immaterial and are not reflected in the financials.
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- [8] **Nursery Account Balance breakeven.** The program is required to be self-sufficient in the Nursery Fund. The breakeven point would be a perfect balance between revenues (that is, cash receipts) and costs incurred in the program each fiscal year. Self-sufficiency means that the Nursery Fund balance includes all revenues and costs, and the balance is not depleted but maintained at a reasonable level for business purposes over time. In the future years for which estimates are shown, the fund balance grows slightly year by year. Overall, the sales declines are accompanied by expenditure declines in approximate balance. The fund balance at the end of FY2016 is projected to be \$1,811,410, based on available information and assumptions noted. Additional information in Note 7 above.
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- [9] **Miscellaneous adjustment affecting the Nursery Account balance.** A payment of \$200,000 received on June 30, 2010 (FY2009) was for FY2010 sales. The payment was recorded correctly from an accounting and control point of view but mismatches revenues and expenditures for both periods. If the payment had been received and credited in FY2010, cash receipts for FY 2009 would have been \$1,851,070 (instead of \$2,051,070) and FY2010 cash receipts would have been \$1,889,129 (instead of \$1,689,129). The changes exactly offset each other, but the FY2010 net change to the Nursery Account balance would be from (\$475,549) to (\$275,549) and the FY 2009 net change would be from (\$216,271) to (\$416,271).
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- [10] **Tree Improvement Cooperative funding.** Funding for the Tree Improvement Cooperative is a component of the expenditures for FY2009 – FY2016.
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- [11] **Accounts receivable.** The Nursery program accounts receivable balance varies over the historical years, from a high of \$719,428 in FY2009 to a low of \$35,000 in FY2010. Collection practices were improved during this period. The accounts receivable balance typically grows in the spring, notably from private sector sales. The relatively high balance at the end of FY2011 (\$240,211) was largely due to the state government shutdown and changeover to the SWIFT accounting system. The receivables have returned to a lower level. It is assumed that the balances will decline from \$35,000 to near zero as private sales are discontinued.
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- [12] **Badoura private sales.** FY2012 and FY2013 private sales from both nurseries are estimated by the program manager to be approximately 2.3 million seedlings, based on historical averages from FY2009 through FY2011. At this time, future demand by the private (non-government) market is difficult to estimate. After FY2013, private sales will come solely from Badoura as Gen. Andrews supply is exhausted. Private sales volume FY2014 is estimated at approximately two-thirds FY2013 sales, and would be further reduced to 340,000 in FY2015. FY2015 is the last year that seedlings planted at Badoura would be sold to the private sector, in accord with the requirements of the 2011 statute. Government sales FY2012 are expected to decline from 4.5 million to 3.2 million, based on orders received through Nov. 20, 2011. For FY2013 to FY2016, sales to government are estimated by the program manager to increase slightly and level off at approximately 3.5 million. Also in accord with the 2011 statute, excess plant material from Badoura may be sold or traded to private wholesale nurseries. Wholesalers typically repackage, grade and/or sort seedlings. Looking ahead, the Nursery would make excess available to private wholesale nurseries after confirming that all public (governmental) needs have been met, that such sales would fully recover costs, and that all private nursery wholesalers would have access to the supplies of excess plant materials.
-
- [13] **Gen. Andrews Nursery seedling production.** The last seedling plantings at Gen. Andrews occurred in Fall 2010. No further seedling production (transplanting or lifting) is anticipated at this nursery after FY2013. Badoura Nursery would be the sole location of seedling production.
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- [14] **Nursery Program staffing level changes.** Total Nursery Program staffing levels for FY2012 and FY2013 are anticipated to remain the same as in FY2011, in order to prepare, lift, and sell a similar number of seedlings. Staff at the Gen. Andrews Nursery, it is assumed, would be relocated within the Division of Forestry or other divisions of the DNR. The 0.5 FTE shown at Gen. Andrews in FY2014 to FY2016 is a full-time equivalent shared with the Division of Forestry. The Nursery Program responsibilities (0.5 FTE) are for seed orchard and seed production, tree improvement, and greenhouse activities.
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Options for the General Andrews Nursery

The DNR last planted seedlings at Gen. Andrews Nursery in Fall 2010. The last of those seedlings would be harvested in FY2013. Actions to downsize Gen. Andrews Nursery were started by the department in FY2009 in anticipation of decreased conservation incentive programs which provided cost-sharing funds to pay for seedlings and reforestation, nursery industry pressures, and decreasing demand for products due to the economic downturn and other market trends. The statutory directive for this business plan¹⁸ directed the DNR to “include options for the General C. C. Andrews State Nursery.”

Background

Gen. Andrews Nursery includes 51 fields that range from 2.0 to 2.7 acres each. The total of these fields available for planting is 122 acres. The remaining acreage (about half of the total acreage) is occupied by windbreaks, stool beds, roads, structures, fence lines, and wooded areas. Other spaces are used by the U.S. General Services Administration to park equipment, for two organic dump sites, and as a location for a collection of old equipment.

Options

The options include lease (long-term or short-term) or sale of the property, conversion of the property to alternative DNR (non-nursery) uses, and repurposing to seed orchard/seed production or return to state forest land. All of the options assume the discontinuation of DNR tree seedling production at the Gen. Andrews Nursery at the end of FY2013. Following is a high level review of a range of potentially realistic options for the General Andrews Nursery.

Private Seedling or agricultural operations – long-term lease

This option envisions continued use of the 51 seedling beds, irrigation and related infrastructure as a nursery operation by the private sector under a long-term lease of five years (or up to 10 with an extension, as allowed in current law). The assets potentially available for this or a related forestry purpose include:

- 240 acres inside a fenced area; 20 acres outside; and
- Forestry related building structures (i.e., green house, shop building, 10-stall and 2-stall garages, machine shed, office building, packing building, pole shed, fertilizer building, pump house).

¹⁸ Laws 2011, 1st Special Session, Chapter 2, Article 4, Sec. 30

Not included in this list of assets is the cooler/freezer which is located at Gen. Andrews. This asset was purchased by the Forestry Division and is primarily used for cool storage of its purchased seedlings, which is not expected to change. Seedlings that are lifted in the fall need to be stored over the winter until spring when they are planted. This asset will continue to be needed by the Division for the state forests and is also used by other DNR entities, such as the Wildlife Management Areas for storage of their stock.

The long-term lease option would provide the lessee with a level of certainty in considering and undertaking major improvements required by their specific use. However, in some circumstances, even 10 years may be too short a time frame to cover startup costs and reasonably assure profits. For a tree seedling business, it is unlikely that a lease of this duration would be acceptable from a business perspective. Many other business factors having to do with the specific conditions of the property would have to be evaluated further to assess the potential for longer-term rental for specific agricultural purposes.

A benefit of this lease option is that it would provide the DNR with revenues to offset current costs and also continue DNR ownership of this site for mission-specific, natural resource-related objectives in the future.

A private seedling operation would need to be bound to comply with various requirements placed on all DNR acreage, such as that related to insect and disease management practices to avoid the risk of transferring disease.

A preliminary assessment of the interest in this option by calls to selected private nursery stakeholders was not promising. With the depressed overall demand for seedlings, and for other reasons, this option was not viable.

Private agricultural operations – short-term lease

This option envisions continued use of the prepared beds, irrigation and related infrastructure for short-term agricultural purposes. Most agricultural crops, unlike tree seedlings, are annual.

A short-term lease, with the ability to secure lease extensions, would allow the lessee to experiment to determine the suitability of the land for their particular crop. As with seedlings, agricultural crops must be regularly rotated and fields allowed to lie fallow to allow the soil rejuvenate. Proper crop selection would be important because the soil at General Andrews is extremely sandy and lacks many nutrients that certain crops require. The soil may require further analysis for particular uses. As noted under the long-term lease private seedling option, an agricultural lessee would also be required to comply with DNR insect and disease management practices.

A benefit of this option, in addition to revenue generation, is that the DNR could choose to relatively quickly repurpose the site if there were a major calamity to the state forest system that could not be addressed by existing sources of seedlings. In the best circumstances, the return to previous use would likely take three years.

Nursery program storage and distribution center

This option would have Gen. Andrews Nursery continue to be a storage and distribution location for the eastern part of the state, with control of the cooler building transferred from the Nursery Program to the Forestry Division after FY2013. Some activities could be accomplished by staff members from Badoura who travel to Gen. Andrews, rather than maintaining a permanent staff at Gen. Andrews for this seasonal work. The storage and distribution location would be the responsibility of the Division of Forestry (most storage in the facility is for the division). Seedling packing would be done at Badoura, and the only needed labor at Gen. Andrews would be for loading and unloading trucks that make deliveries.

Permanent removal from all DNR uses – sale of the property

This option envisions the sale of the nursery land and facility assets to an interested buyer. The site contains groomed fields, irrigation, and support equipment and facilities for growing seedlings and could be readily utilized as a private seedling operation. When this option was raised with several individuals knowledgeable about this business, including some in the industry, the results did not seem promising. Three explanations illustrate the difficulties. The current market for seedlings does not warrant an expansion of seedling capacity for existing producers. Acquisition of a producing site distant from current seedling operations would not support cost-efficient operations. The soil at Gen. Andrews is comparatively sterile and would require greater amounts of fertilizer and longer periods of lying fallow between crop cycles than other sites.

The Gen. Andrews Nursery site has infrastructure that has been adapted and upgraded for a variety of DNR uses and could potentially be useful to another party. There are 14 buildings on the site, of which 8 have electricity. Replacement cost of the buildings was estimated at \$5.64 million by DNR Management Resources (2009). Heating is supplied by a buried natural gas pipeline. A new office septic system was installed in 2004. The packing building roof was replaced with 40-year warranted fiberglass shingles in 2005. A standalone State Land Freezer building, built in 2008 adjacent to the packing building, is owned and maintained by the Forestry Division. An attached greenhouse, used to culture grafted stock for improved seed tree orchards, had its heating system replaced with high efficiency natural gas boilers in 2009. The shop is a fully equipped repair facility with vehicle hoist, chain hoist, welding and machining capabilities.

Current DNR and related uses and functions would need to be relocated. The Forestry Division Federal Excess Property Program is housed at Gen. Andrews Nursery. Storage for equipment is provided near the main building complex. Fire equipment storage is provided for the Sandstone Forestry Area. Nursery buildings provide roofed winter storage fire slip-on units, a 3-ton fire truck, and a travel trailer used as a portable helitac (helicopter support) office at the Sandstone airport during fire seasons. Gen. Andrews offices currently house the DNR Enforcement Division's District 10 Supervisor as well as providing short-term storage for enforcement vehicles (boats, trailers, snowmobiles, four-wheelers) and space for secured storage of evidence. Classroom space provides the location for training courses of various kinds.

If the Gen. Andrews Nursery property were sold, the motorized equipment, which is considered “fleet”, would be returned to the DNR fleet program for reassignment to Badoura Nursery or elsewhere in the department. Depending on the timing of sale, some portion of the growing stock and seed would be sold in the normal course of business. The nursery is located on land acquired by the state. All revenue from a sale of the land would be deposited in the DNR land acquisition account (Minn. Stat. §94.16).

Co-located DNR (non-nursery) uses

This option envisions increased use of the facilities at Gen. Andrews for co-locating other DNR program assets, coupled with use of 25 to 30 percent of the fields to maintain and support superior Minnesota forest genetics.

The facilities at Gen. Andrews are multi-use, ranging from garages and office space, to a machine shed and storage, all within a fenced area. Moreover, this site offers additional acreage for increased co-location opportunities. Currently, some of the nursery facilities are being used at different times of the year for storage. DNR Enforcement, Parks & Trails, and Sandstone Forestry use storage space on site for boats, vehicles and other equipment.

The DNR’s Facility Analysis Map (2008) described the Gen. Andrews Nursery as a potentially good central location for several nearby sites, including the DNR-owned trails site at Moose Lake and the DNR offices at Sandstone and Hinckley, which are both leased. At a meeting of regional directors in the Fall of 2011, this scenario was suggested as one of the ideas for which the DNR ought to seek legislative funding. Gen. Andrews is located just off Interstate 35. Eight miles to the north is Moose Lake. Sandstone and Hinckley are respectively 15 and 25 miles to the south. DNR’s Northeast Regional Office is approximately 75 miles northwest in Grand Rapids.

The nursery offers an accessible and suitable location for co-locating other neighboring DNR programs, staff and equipment, as well as space needed for additional requirements. The DNR also maintains a helicopter and the site – because it is fenced – could be ideal for a helicopter base, which is used by the Forestry Fire Program or for aerial fire suppression. Another advantage co-location offers to the DNR is the opportunity to reduce operating expenses by offering common or shared administrative support, communications and reception services to programs located “under one roof.”

If this becomes a co-located facility, some acreage may be used to build additional structures and related infrastructure. If staffing and programs from the surrounding area are located at Gen. Andrews, additional parking space is likely to be required and may be built. Decisions about additional infrastructure have not been made.

Seed and Tree Improvement Program

A central goal of the State Forest Nursery Program and the Tree Improvement Program is to economically produce forest regeneration material of the highest genetic and biologic quality in the quantity needed for environmental programs.

Consistent with this goal is the maintenance and enhancement of Minnesota tree seed genetics. All contacted stakeholders appear to agree this is a high priority. Existing State Nursery program investment in experienced personnel, a tree improvement program, fields, irrigation, greenhouse, fence and related assets could be used to support the cultivation and production of superior seeds for Minnesota forests.

Seed production and seed orchards (orchard production) would each take five or six fields totaling 25 to 33 acres. The remaining available field space inside the fence line would be about 90 acres.

Seed Production

The seed production area would be for high-volume production of seeds for state and other public forests. The purpose of a seed production area is to produce – in one location – a variety of seed of acceptable quality in sufficient volumes to meet the needs of Minnesota's state forests, supplemented as needed by citizen seed and cone collectors.

Under this option, five or more fields would be used to produce seeds from priority species located in state forests, including red pine, white pine, black spruce, white spruce and jack pine.

Seed Orchards

The seed orchard purpose is to grow superior trees for their seeds, by identifying, grafting, cultivating, and collecting seeds from trees possessing superior genetics. Seed orchards of grafted trees have the capacity to begin producing superior seed in the second or third growing season, instead of waiting possibly decades. Species for the orchard will be selected by the DNR based on needs from public sector customers. Orchard practices would be informed by research being conducted by the Tree Improvement Cooperative. The DNR would determine as the production and orchards areas develop whether to expand to more of the remaining 39-41 fields within the fence line.

Other alternatives for this remaining acreage could include returning a portion to state forest, planting rye to maintain soil nutrients and reduce soil erosion, and planting small amounts of other conservation materials. Some land could remain inactive.

Timing of seed production and seed orchards implementation

An important consideration if conversion to seed orchard/seed production is favored as the long-term use for Gen. Andrews Nursery is the timing. For example, grafting for a seed orchard is labor intensive and takes place over a period of time, so earliest practical

start would likely be most useful. It would be very beneficial to begin the effort with existing staff before the major changes occur. Nursery staffing at Gen. Andrews is estimated to be minimal at the end of FY2013.

Preliminary cost estimate for seed orchard and seed production

A preliminary estimate of annual operating costs for the Seed Program, in addition to 0.5 FTE staffing, are \$11,500 - \$16,500 for heating/cooling and operation of the greenhouse, pots for planting grafting rootstock, potting mix, fertilizer, pesticides, fuel to operate irrigation, and related equipment and transportation expenses.

Other research activities

At least 35 to 40 acres inside the Gen. Andrews fenced area could be available for other purposes, including additional research activities. Candidates for using the available space for research purposes could include the University of Minnesota or other divisions of the DNR such as Ecological Services, Parks & Trails, and others.

Conclusions about long-term options for General Andrews Nursery

The department's priorities include (1) continuity in having a reliable, quality-controlled native seed source for sustaining the state's forests, (2) providing appropriate type and number of seedlings to supply the public and conservation land needs for reforestation and afforestation, (3) conducting necessary research on continuous tree improvement to ensure optimum forest health, and (4) meeting the requirements of statutory changes and their impacts, along with the impacts of a depressed economy, to operate the nursery program on a continued and sustainable breakeven (self-sufficient) basis.

Actions required to ensure continued self-sufficiency of the Nursery Program include: reducing the size of the program operations based on long-term trends and recent sales restrictions, refocusing customer services on government customers over the next several years, reviewing and potentially adjusting seed and seedlings prices and practices, maximizing tree improvement activities within resources, and repurposing Gen. Andrews Nursery after ending seedling production at the end of FY2013.

Consistent with this business plan, the most important role for the Gen. Andrews site for the long-term, would be (1) for seed orchard and seed production as well as tree improvement research, requiring very minimal nursery program staffing (estimated at 0.5 FTE on a sustained basis), and (2) for DNR non-nursery alternative uses as referenced in the co-located uses section above. The facilities will continue to have substantial value to the DNR for a range of purposes. Additional uses can be identified as additional information about space available is made known.

DATE: 1/13/12

LEGISLATIVE REPORT – Cost of Preparation

NAME OF LEGISLATIVE REPORT – State Forest Nursery Budget and Financial Plan

Based on: _____

Minnesota Statute Reference: Minnesota Laws 2011, 1st Spec. Sess., Ch. 2, Art. 4, sec. 30

Prepared by: Andrew Arends, Department of Natural Resources, Division of Forestry

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Description of Cost	Further explanation if necessary	Amount
Staff Time	251 hours @ \$50/hr, incl fringe	\$12,550
Contract with Management, Analysis, and Development		\$42,750
Duplication Cost (includes paper)	nominal	
Other:		
TOTAL TO PREPARE REPORT (Note: Right click on amount cell and choose update to complete)		\$55,300