

**Beltrami County  
Natural Resource Management**

**Forest Management  
Plan 2018**

**August 2018**



## ACKNOWLEDGEMENTS

Beltrami County's Forest Management Plan is essential toward ensuring the viability of the county's forest land for the long-term. Without the commitment of a large group of people dedicated to this process, this plan would not be possible. The Natural Resource Management Department wishes to thank the following people individually for their support throughout this process, as well as generally thank all the citizens and partners who have shown an interest in a healthy and productive Beltrami County Forest.

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# BELTRAMI COUNTY FOREST MANAGEMENT PLAN 2018

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# BELTRAMI COUNTY FOREST MANAGEMENT PLAN 2018

Beltrami County Natural Resource Management (NRM) Department Mission Statement:

*Responsibly manage the tax-forfeited and County-owned lands in Beltrami County in a sustainable manner that benefits the citizens of the County. The department is committed to a sustainable harvest and multiple use management of its lands. It also recognizes the impacts its activities can have on aesthetics, wildlife, riparian areas, cultural resources, soils, recreation, and water quality.*

## SECTION 1: INTRODUCTION

### 1.1 SCOPE AND PURPOSE

Beltrami County has been actively involved in the management of county forest land since the mid-1950s. Throughout that time, forest managers have worked diligently to harvest the forest at sustainable levels. This plan covers the long-term management of approximately 147,500 acres of county forest land under the management control of the NRM Department.

The plan serves the following purposes:

- Continue defining the vision for tax-forfeited and Beltrami County-owned lands.
- Outline the desired future condition (DFC), which describes the intended results from implementing a management plan, on a 50-year planning basis and based on the “Guiding Principles” listed in Section 1.2.
- Document policies and strategies the NRM Department uses to achieve the DFC and guide staff in decision making.
- Inform the public about the management of the county’s forest lands.
- Maintaining third party forest certification. This independent certification is important for meeting the expectations of the public and the needs of the timber products market.



In keeping with the mission statement, the NRM Department provides a variety of benefits and services from county managed lands. Beltrami County forests are working forests and through active management, Beltrami County is able to:

- Invest in the forest development (site preparation, tree planting, bud capping, release);
- Source traditional and non-timber forest products (firewood, biomass, balsam boughs, maple sap);
- Ensure functioning ecosystems that support wildlife habitat, protection of rare, threatened, and endangered species, biodiversity, and watershed quality; and
- Construct and maintain infrastructure (recreational trails, county parks).

While every attempt has been made to include relevant planning level information in a single document, not everything can be included. Additional information is housed within NRM databases, electronic and printed records, and policy manuals. This data is a critical component of the planning process, and represents the most updated form of information for planning and future updates to this long-range plan.

## 1.2 PROCESS

This 2018 Beltrami County Forest Management Plan was drafted by NRM staff and brought to the County Board for review on June 5, 2018. The County Board established a 30-day comment period and the draft version was sent to stakeholders for input and comments (see Appendix C regarding the comment process). Based on the feedback from stakeholders, a final version of the plan was presented to the County Board on August 7, 2018 for approval and adoption.

The final draft of the plan utilized information from the following:

- The “Guiding Principles” outlined in the original Forest Management Plan from 2007:
  - Sustainable Harvest and Long-Term Forest Health;
  - Managed Multiple Use;
  - Balanced Environmental, Social, and Economic Values;
  - Financial Sustainability; and
  - Third Party Certification.
- Updated electronic inventory of the county forest.
- In-depth review of the current management of the forest.
- Vision and goals for county forest management.
- Identification of the current management structure as it relates to achieving the county’s forest management vision.
- DFC identified in the 2017 North Central Landscape Plan via a public input process.
- Computerized model that identifies harvest levels by species to achieve the DFC.



This 2018 Forest Management Plan updates and revises the 2007 Forest Management Plan. Adoption of this plan does not entirely make the previous plan obsolete. The Ecosystem Unit Analysis from pages 45 – 70 remains pertinent. This plan is a companion document to the existing Recreational Trails Plan and Recreational Facilities Plan.

## 1.3 SUSTAINABLE FOREST MANAGEMENT POLICY

On May 2, 2006, the County Board approved the Sustainable Forest Management Policy (LD-P1) and Statement of Operational Commitments, which provide additional detail and support for these policies.

The following objectives and their subsequent policies provide planning-level guidance to NRM staff in setting specific operational policy and identifies key opportunities and challenges that need to be addressed to help achieve the county’s vision.

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As the manager of county managed lands in Beltrami County, the NRM Department operates on a commercial basis and is required to ensure that an optimal financial return is attained from the use of the forest lands managed by the department. At the same time, the NRM Department also has a duty to the people of the county to maintain the recreational and other social values of the forest resource and to protect the long-term sustainability of the resource. Sustainable forest management is about striking a balance between economic, social, and environmental values in a manner that protects all of these values over time.

The NRM Department is committed to the principles of sustainable forest management and will manage the lands in accordance with those principles. We will utilize the sustainable forest management system (SFMS) that will help us achieve our goals and be environmentally appropriate, socially beneficial, and economically viable. Through our SFMS we commit to:

- Protect the integrity and longevity of forest lands under our management.
- Comply with all applicable laws, regulations, and voluntary guidelines.
- Recognize and respect the rights of Indigenous Peoples.
- Maintain third party certification to the Sustainable Forest Management principles.
- Plan and conduct forest management activities in a manner that:
  - Protects and maintains biodiversity across the forest ecosystem;
  - Prevents damage and protects forest health and productivity;
  - Minimizes chemical use;
  - Protects the integrity of riparian areas;
  - Minimizes aesthetic impact;
  - Protects threatened and endangered species and their habitat;
  - Conserves areas with special attributes such as cultural, ecological, geological, economic or social attributes; and
  - Promotes efficient utilization.
- Promote and incorporate applied research and technology to improve sustainable forest management.
- Enhance public recreation values by providing opportunities for dispersed recreation on county lands.
- Provide public education on forest ecology, sustainable forest management, and the economic value of forests.
- Solicit public input on forest management plans, policies, and county performance.
- Communicate our performance to the county board, employees, the public, and other stakeholders.
- Ensure the capability of our employees and field operators to perform their responsibilities with the highest degree of professionalism.
- Continually improve performance of the SFMS through regular reviews and audits.



#### 1.4 THIRD PARTY CERTIFICATION

The forest land management of Beltrami County has been dually certified since 2009 as “well-managed” in accordance with the standards of the Forest Stewardship Council® (FSC®) and the Sustainable Forest Initiative® (SFI®). In May, 2018, the Beltrami County Board approved the NRM Department to move forward under one forest certifying body, SFI®. This will take effect October 1, 2018.

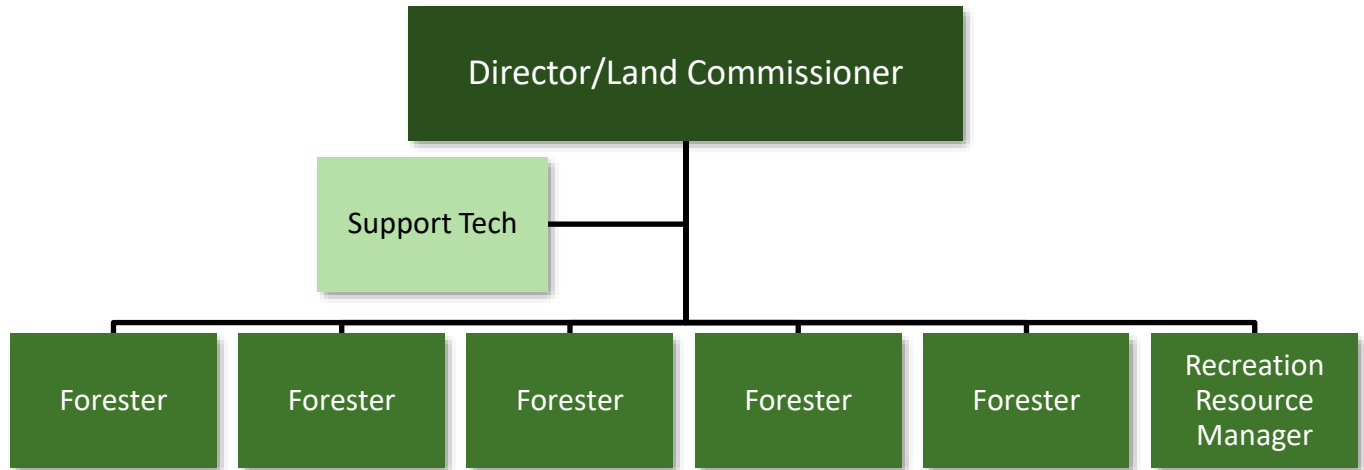
Maintaining third party certification communicates to the public, suppliers, purchasers, and other regional forest managers that Beltrami County has achieved a high standard in sustainable forest management practices.

# SECTION 2: CONTEXT

## 2.1 MANAGEMENT CONTEXT

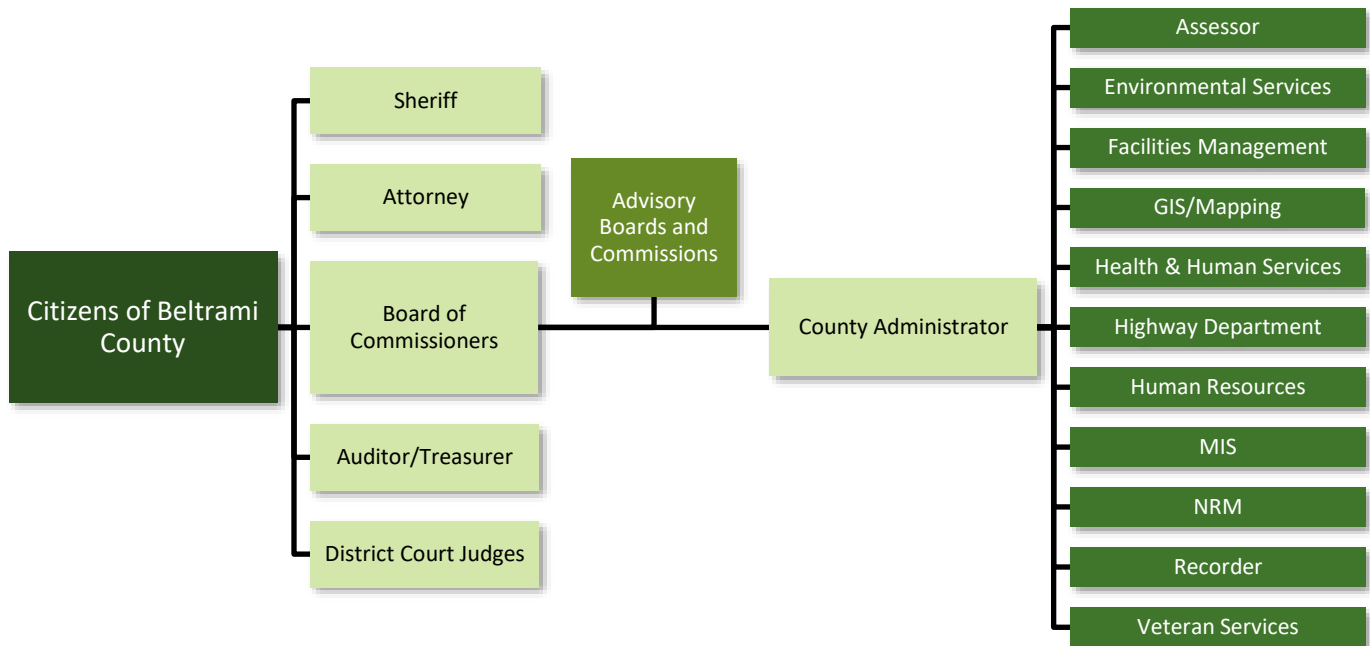
The NRM Department staffing consists of a Director/Land Commissioner, five foresters, a recreation resource manager, and a support tech.

**FIGURE 2-1: NRM ORGANIZATION CHART**



The department is part of the overall county management framework, overseen by the County Board of Commissioners and County Administrator. More information about these entities and general county operation can be found at the county’s website at [www.co.beltrami.mn.us](http://www.co.beltrami.mn.us).

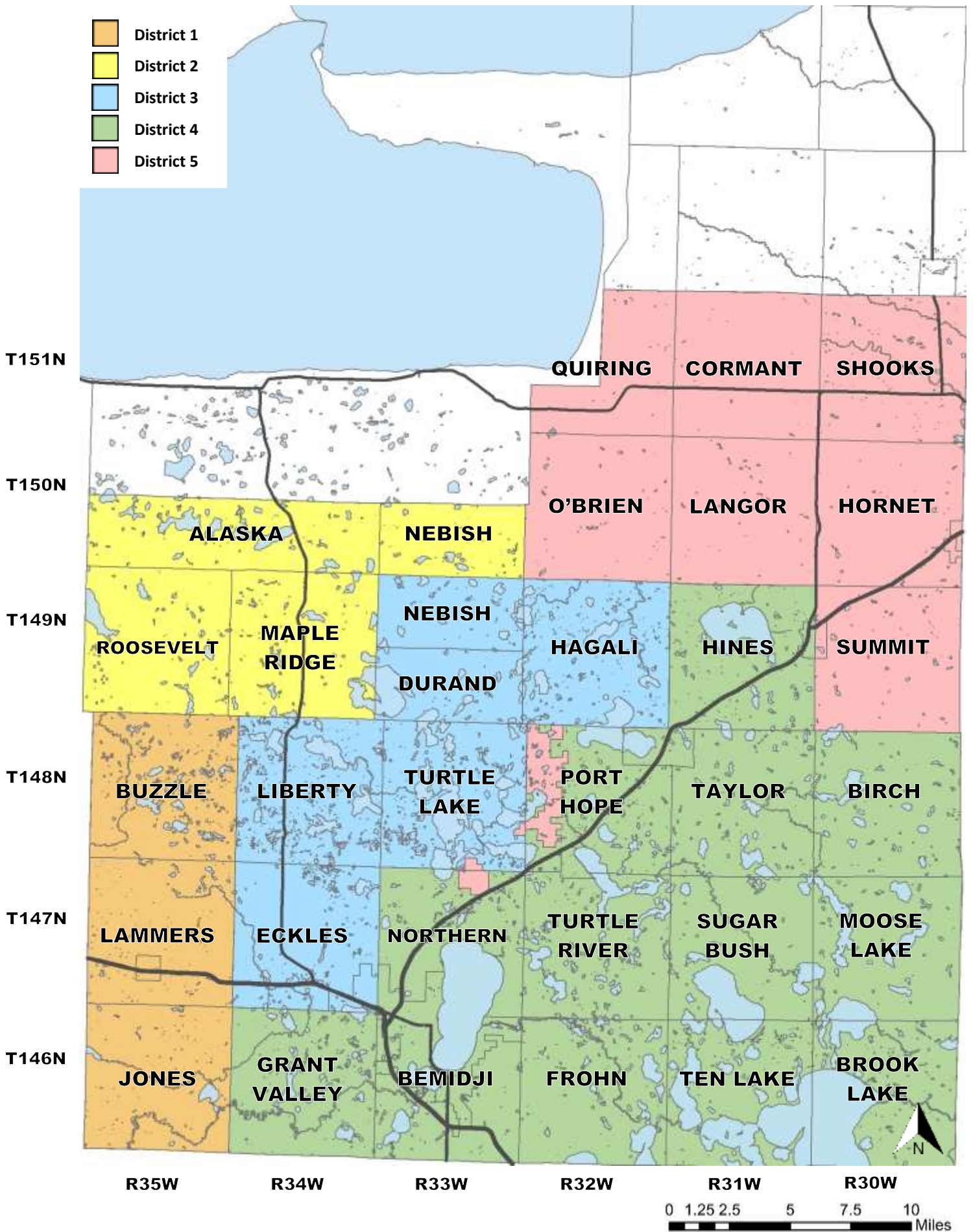
**FIGURE 2-2: BELTRAMI COUNTY ORGANIZATION CHART**



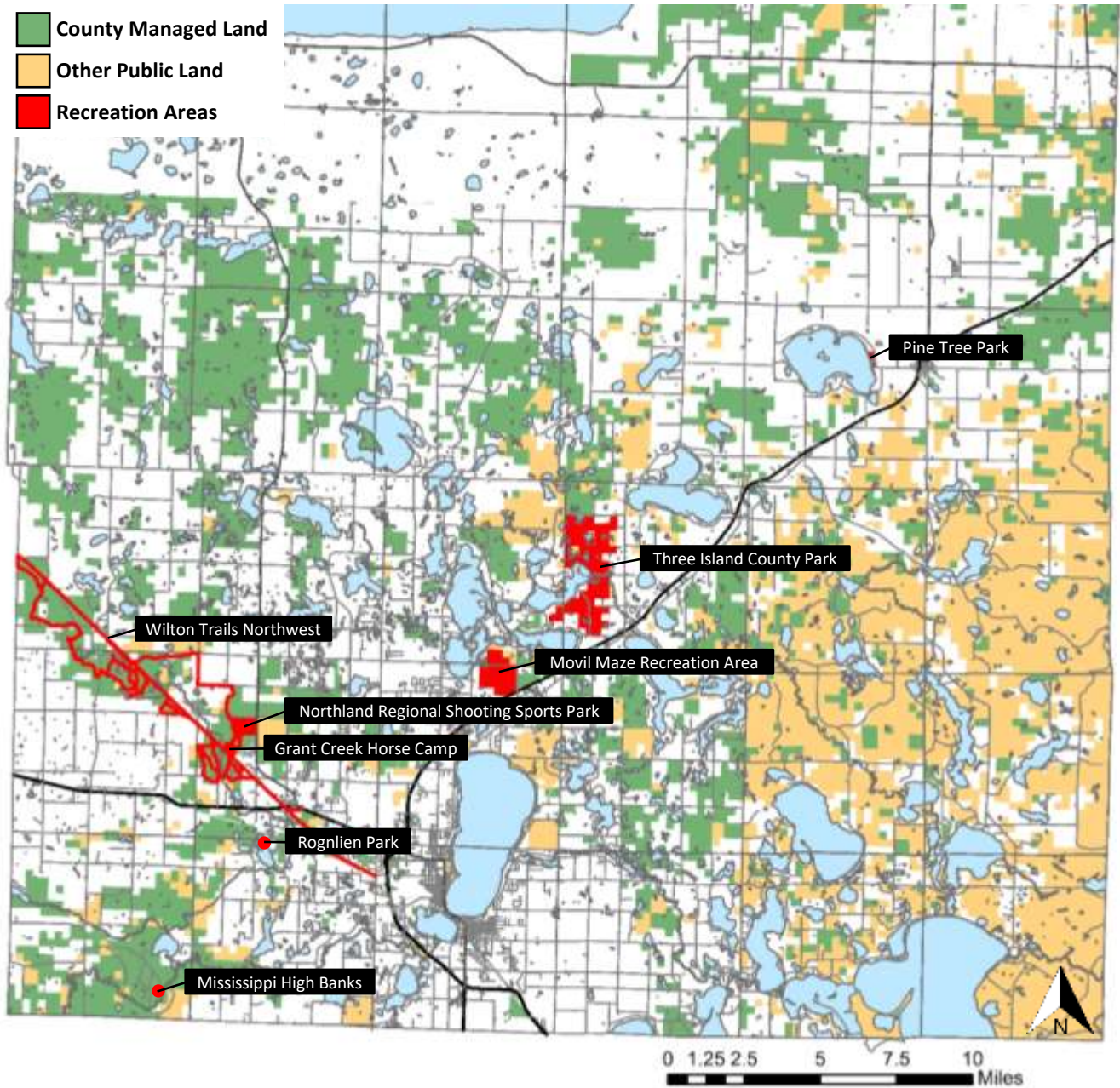
Each forester is assigned a specific area of duty, called a district (Map 2-1). Currently there are five districts, with one district including the designated park and recreation areas. These districts are subject to change due to workload responsibilities. A recreation resource manager is responsible for the management of recreational uses and facilities in parks/recreation areas (Map 2-2).



**MAP 2-1: BELTRAMI COUNTY FOREST DISTRICTS**

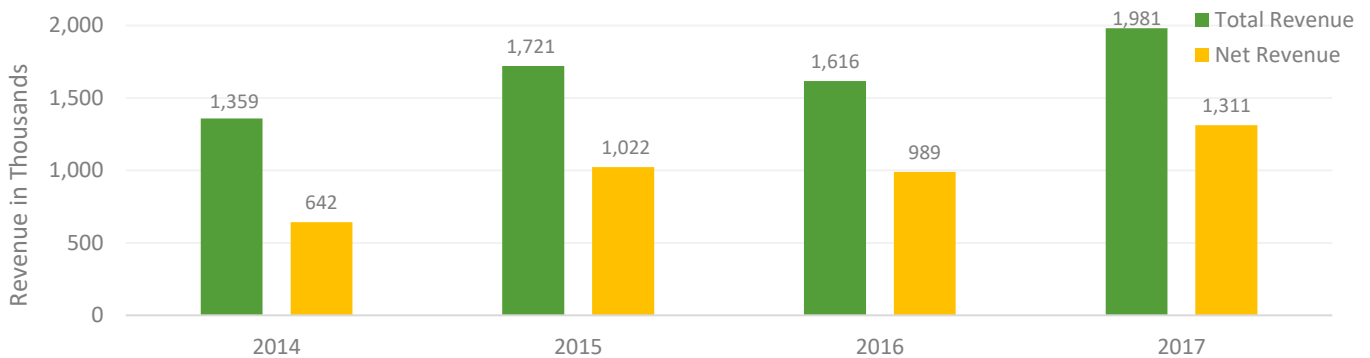


**MAP 2-2: BELTRAMI COUNTY RECREATION AREAS**



**GENERATED REVENUE:** The following chart shows the revenue generated from timber (timber sales and related permits) and non-timber products (leases, easements, and land sales) on county managed land.

**CHART 2-1: REVENUES GENERATED FROM BELTRAMI COUNTY MANAGED LANDS; 2014-2017**



The monies generated on tax-forfeited lands are used locally and help toward the betterment of Beltrami County.

**TABLE 2-1: BELTRAMI COUNTY NET PROCEEDS ALLOCATION; 2014-2017**

|                    | 2014                | 2015                  | 2016                | 2017                  |
|--------------------|---------------------|-----------------------|---------------------|-----------------------|
| General Revenue    | \$153,993.25        | \$237,177.24          | \$221,555.28        | \$294,503.17          |
| School Districts   | \$153,993.25        | \$237,177.24          | \$221,555.28        | \$294,503.17          |
| County Development | \$96,245.78         | \$178,905.24          | \$173,090.07        | \$200,000.00          |
| County Parks       | \$96,245.78         | \$148,235.77          | \$138,472.05        | \$184,064.48          |
| Timber Development | \$64,163.85         | \$102,231.57          | \$123,635.75        | \$191,142.08          |
| Townships          | \$76,996.62         | \$118,588.62          | \$110,777.64        | \$147,251.59          |
| <b>Total</b>       | <b>\$641,638.53</b> | <b>\$1,022,315.68</b> | <b>\$989,086.07</b> | <b>\$1,311,464.49</b> |

## 2.2 SOCIO-ECONOMIC CONTEXT

**DEMOGRAPHICS:** The population of Minnesota grew by 4.1 percent between 2010 and 2016. Beltrami County’s population increased from 44,442 to 46,106, a rate of 3.7 percent, over that same period.

While population growth in Beltrami has been increasing, it has not been uniform throughout the county. The increasing prominence of the City of Bemidji is a result of it becoming a major regional center.

**ECONOMIC DEVELOPMENT:** The North Central Landscape Plan (2017) has identified a significant economic impact to the area from forestry and forest management. On the industry side alone, the impact is estimated to be approximately \$808 million in economic outputs and nearly 3,000 jobs in 2015. This industry includes local sawmill operations, as well as the larger regional timber product manufacturers such as Cass Forest Products, Norbord, Packaging Corporation of America – Boise, PotlatchDeltic, and UPM Blandin.

**TRENDS IN NATURAL RESOURCE MANAGEMENT:** Because of the growth and development in Beltrami County, several trends can be identified that may affect the NRM Department and the forest resource. The current trends are listed here; others may be present on a smaller scale or develop over time:

- Population growth and development increases pressure to provide revenues from tax-forfeited lands.
- Market trends indicate a need for more consistent sources of saw timber and pulpwood, as well as third party certified timber.
- Increasing pressure on public lands for recreational uses.
- Development adjacent to forest land affects the variety of silvicultural techniques and other forest management strategies that can be applied.
- Recreational opportunities, clean water, and clean environment values are an important part of the “quality of place”.



## 2.3 OWNERSHIP CONTEXT

Beltrami County lands are abundant, but distributed among a variety of different ownership jurisdictions. This checkerboard ownership includes cities, state, federal, tribal, and private ownership. Approximately 75% of the land in Beltrami County is non-taxable or publicly owned. The following table identifies the managing agencies:

**TABLE 2-2: BELTRAMI COUNTY PUBLIC LAND MANAGED ACRES**

| <b>Managing Agency</b> | <b>Total Acres</b> |
|------------------------|--------------------|
| County                 | 151,607            |
| State                  | 555,166            |
| Tribal/United States   | 387,358            |
| <b>Total</b>           | <b>1,094,131</b>   |

The major public land managers include Beltrami County (includes tax-forfeited land), MN DNR, Chippewa National Forest, Red Lake Nation, and Leech Lake Band of Ojibwe.

## 2.4 ECOLOGICAL CONTEXT

The following information provided in this section is from the *Field Guide to the Native Plant Communities of Minnesota: The Laurentian Mixed Forest Province (MN DNR, 2003)*.

All areas of the state have been categorized within a national system, the Ecological Classification System, which categorizes areas on several levels, from large landscape provinces, to broadly defined sections, down to specific native plant communities (NPC).

With its location in northcentral Minnesota, Beltrami County forests lie mostly in the Laurentian Mixed Forest Province. The Laurentian Mixed Forest Province is characterized by broad areas of conifer forest, mixed hardwood, conifer bogs, and swamps. The current composition of the county's forest is largely pine and aspen, with a mix of other northern hardwood species. A considerable amount of lakes and wetlands has produced a cross-section of lowland, non-merchantable timber stands.

Provinces are further divided into Sections, which are units defined by the "origin of glacial deposits, regional elevation, distribution of plants, and regional climate." The Northern Minnesota Drift and Lake Plains Section covers most of southern Beltrami County, which includes much of the county's forest land. A small portion of the county's forests are located farther north in the Northern Minnesota and Ontario Peatlands Section.

Sections are again divided into subsections based on "glacial deposition processes, surface bedrock formations, local climate, topographic relief, and the distribution of plants, especially trees". The majority of the area south of Red Lake is located within the Chippewa Plains Subsection while the northern portion of the county is located in the Agassiz Lowlands Subsection.

Please see the 2007 Beltrami County Forest Management Plan pages 45-70 for further information regarding the ecology of the region.

## 2.5 PLAN CONTEXT

**STATE LANDSCAPE PLAN:** The Minnesota Forest Resources Council (MFRC) provides assessment and coordination functions for public forest managers in six regions across the state, with Beltrami County located within their designated North Central Landscape region. MFRC’s “*North Central Landscape Plan: A Regional Plan to Guide Sustainable Forest Management (2017)*” provides a base of information for forest managers in the region to work from.

Beltrami County, along with Aitkin, Becker, Cass, Clearwater, Crow Wing, Hubbard, Itasca, Mahnomen, and Polk counties, serves on a regional forest resource committee for the North Central Landscape. Beltrami County forests benefit from the committee by drawing upon the knowledge, resources, and research of the larger group, which in turn benefits the larger forest system. This committee is a key part of the county’s collaborative strategy.

The following summary is drawn from the MFRC’s “*North Central Landscape Conditions & Trends Report*”.

**TABLE 2-3: ESTIMATED FOREST LAND IN THE NORTH CENTRAL LANDSCAPE; 1977, 1990, 2003 & 2015**

| Land Cover         | 1977 Acres       | 1990 Acres       | 2003 Acres       | 2015 Acres       |
|--------------------|------------------|------------------|------------------|------------------|
| Forestland         | 5,005,046        | 4,980,891        | 4,850,333        | 4,944,190        |
| Non-forestland     | 3,147,708        | 3,217,005        | 3,216,548        | 3,120,876        |
| <b>Total</b>       | <b>8,152,754</b> | <b>8,197,896</b> | <b>8,066,881</b> | <b>8,065,066</b> |
| Percent Forestland | 61.4%            | 60.8%            | 60.1%            | 61.3%            |

Table 2-4 reflects a slightly declining base of forest cover within the North Central Landscape over the last 40 years.

**SUSTAINABLE FOREST MANAGEMENT COOPERATIVE:** The Minnesota Counties Sustainable Forest Cooperative (MCSFC), formed in 2005, collectively manages 610,000 acres of certified forest lands located in four counties: Beltrami, Carlton, Crow Wing, and Koochiching. Annually through certification audits, the Cooperative demonstrates sustainable management of the forest lands against international standards and criteria set by the MFRC-Forest Management Guidelines. The Cooperative’s procedures addressing legal, social, and environmental concerns are evaluated after each audit and adjusted accordingly to meet the measures of certification.

**RECREATIONAL TRAILS PLAN:** Adopted April 18, 2006, the Recreational Trails Plan focuses on the development of a system of designated trails specifically for motorized and non-motorized recreational uses. Recreational trails are covered in Section 6.1.

**RECREATIONAL FACILITIES PLAN:** Adopted January 8, 2008, the Recreational Facilities Plan identifies specific plans and implementation methods for each park and recreational area within the NRM system. Included in this plan are forest management and Legacy Area guidelines for Three Island County Park and Movil Maze Recreation Area. These guidelines are outlined in Section 3.4.

# SECTION 3: RESOURCE DESCRIPTION

## 3.1 FOREST COVER CHARACTERISTICS

Beltrami County manages approximately 147,500 acres, of which, there are over 100,000 acres of commercial forest. A key concept in forest management is the forest stand, which is a group of trees uniform enough in composition to be managed as a unit. Forest stands are often described by the dominant tree species. Because each species has unique growth habits, (e.g., shade tolerance, regeneration strategies, etc.) management objectives and silvicultural systems vary with forest cover type (Table 3-1: General Forest Management Objectives by Forest Cover Type).

**TABLE 3-1: GENERAL FOREST MANAGEMENT OBJECTIVES BY FOREST COVER TYPE**

| Forest Cover Type      | Inv. Code | Rotation Age (years) | Silviculture System      | General Management Objectives for Beltrami County Forest Cover Types (see Appendix A for definitions)  |
|------------------------|-----------|----------------------|--------------------------|--|
| Ash, Lowland Hardwoods | 1,9       | 100<br>ERF 125       | Uneven-age and even-aged | Use of group and selection harvest systems to mimic gap dynamics, and promote tree/stand health to promote growth on quality trees. Shelter wood and seed tree harvest systems to favor regeneration of site-adapted species.  |
| Aspen                  | 12        | 45<br>ERF 60         | Even-age                 | Clearcut harvest to favor prompt and full regeneration to a new aspen stand. Clear cuts with variable tree and clump retention to promote other species within the stand, to favor wildlife species, and to protect aesthetics.  |
| Birch                  | 13        | 50<br>ERF 65         | Even-age                 | Clearcut harvest to favor prompt and full regeneration to a new birch stand. Harvests with variable tree and clump retention to promote birch regeneration and other species within the stand, to favor wildlife species, and to protect aesthetics  |
| Balm of Gilead         | 14        | 45<br>ERF 60         | Even-age                 | Clearcut harvest to favor prompt and full regeneration to a new Balm of Gilead stand. Clear cuts with variable tree and clump retention to promote other species within the stand, to favor wildlife species, and to protect aesthetics.   |
| Northern Hardwoods     | 20        | 100<br>ERF 125       | Even and Uneven-age      | Stands which are uneven-aged, or which have tree health conditions, which would allow shifting the stand toward an uneven-aged condition, may be managed with group selection harvests and intermediate thins. Other stands may be managed even aged with seed tree or shelter wood harvests to regenerate the entire stand. |
| Oak                    | 30        | 100<br>ERF 125       | Even and Uneven-age      | Stands which are uneven-aged, or which have tree health conditions, which would allow shifting the stand toward an uneven-aged condition, may be managed with group selection harvests and intermediate thins. Other stands may be managed even aged with seed tree or shelter wood harvests to regenerate the entire stand. |
| Red Pine               | 52        | 100<br>ERF 170       | Even-age                 | Perform first thins on 30 year old stands to reduce basal area, promote growth, and provide future access; thin at (+ or -) 10-year intervals thereafter until rotation age. At rotation age, clearcut harvest and plant red pine or seed tree harvest to promote natural regeneration of red pine stand.                    |
| Jack Pine              | 53        | 50<br>ERF 65         | Even-age                 | Clearcut harvest at rotation age to regenerate jack pine by planting or natural regeneration.  |
| White Spruce           | 61        | 60<br>ERF 75         | Even-age                 | Clearcut harvest at rotation age to regenerate white spruce by planting.   |
| Balsam Fir             | 62        | 50<br>ERF 60         | Even-age                 | Balsam fir is a secondary species typically entering forest stands in mid-life and becoming the primary species after most of the initial species (such as aspen) have died from natural causes. Management in balsam fir stands will shift stand succession back to the primary species.                                    |
| Black Spruce           | 71        | 100<br>ERF 130       | Even-age                 | Clearcut, strip clearcut, or seed tree harvest at rotation age to regenerate black spruce by planting, natural or aerial seeding.  |
| Tamarack               | 72        | 60<br>ERF 105        | Even-age                 | Clearcut, strip clearcut, or seed tree harvest at rotation age to regenerate tamarack by planting, natural or aerial seeding.  |

Forest Cover Type - the type and inventory code number (e.g. 12=Aspen). Cover types are defined by the predominant species in the forest stand.

Rotation Age - the age when forest stands are considered mature and ready for a regeneration harvest.

ERF (Extended Rotation Forest) - areas that receive special management consideration and/or are managed on a longer rotation.

**SILVICULTURAL STRATEGY:** Based on the vision presented in this plan, there is an expectation that NRM foresters will continue to utilize the best treatments and technology to manage the forest. Wide varieties of options are available today, some of which are similar but much improved compared to the past. For instance, clearcutting is still a preferred technique to regenerate shade intolerant forest cover types even though it looks nothing like it did in the past. Often, these total stand harvests are now modified to reduce the size of the harvest area, leave residual trees, or be selective about the species harvested.

Continuous professional development and training will be sought to ensure the best knowledge and technology is used to achieve a healthy and productive forest.

### 3.2 COMMERCIAL STANDS

Forest stands are further classified by the age of the dominant trees in the stand. Generally, age class distributions are studied in 10-year increments. Sustainable forestry programs seek to maintain a balance of age classes of all major forest cover types in the landscape. Balanced age class distributions contribute to the sustainability of timber yield for forest products and to the ecological complexity of a landscape in support of wildlife habitat. (Table 3-2: County Acres of Commercial Forest by Age Class of Primary Stand Forest Cover Type; 2018).

Notable within the county’s age class distribution include significant numbers of:

- Aspen and red pine acres in the 0-40 year old age classes;
- Northern hardwoods in the 70-100 year old age classes; and
- Jack pine acres in the 0-20 year old age classes.

**TABLE 3-2: COUNTY ACRES OF COMMERCIAL FOREST BY AGE CLASS OF PRIMARY FOREST COVER TYPE; 2018**

| Forest Cover Type  | 0-10          | 11-20         | 21-30         | 31-40         | 41-50        | 51-60        | 61-70        | 71-80        | 81-90        | 91-100       | 101-110      | 111-120      | 120+         | Total          |
|--------------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|
| Ash                | 62            | 34            | 55            | 64            | 166          | 269          | 400          | 368          | 616          | 375          | 347          | 395          | 613          | 3,764          |
| Lowland Hardwoods  | 418           | 31            | 93            | 96            | 0            | 236          | 126          | 189          | 306          | 120          | 353          | 130          | 369          | 2,467          |
| Aspen              | 10,492        | 11,458        | 13,871        | 9,617         | 3,529        | 2,203        | 1,702        | 1,357        | 435          | 75           | 3            | 14           | 248          | 55,004         |
| Birch              | 116           | 44            | 40            | 11            | 46           | 120          | 159          | 186          | 201          | 64           | 21           | 0            | 0            | 1,008          |
| Balm of Gilead     | 205           | 803           | 468           | 150           | 11           | 46           | 20           | 19           | 49           | 0            | 0            | 0            | 0            | 1,771          |
| Northern Hardwoods | 451           | 59            | 86            | 166           | 105          | 413          | 405          | 1,542        | 1,923        | 2,916        | 548          | 177          | 162          | 8,953          |
| Oak                | 21            | 70            | 39            | 23            | 7            | 95           | 54           | 97           | 275          | 128          | 69           | 26           | 0            | 904            |
| White Pine         | 16            | 140           | 26            | 0             | 0            | 0            | 30           | 5            | 30           | 38           | 28           | 40           | 98           | 451            |
| Red Pine           | 1,330         | 2,585         | 3,250         | 2,212         | 71           | 802          | 263          | 223          | 576          | 820          | 741          | 406          | 228          | 13,507         |
| Jack Pine          | 1,680         | 1,070         | 484           | 651           | 650          | 340          | 257          | 255          | 48           | 0            | 11           | 0            | 6            | 5,452          |
| White Spruce       | 88            | 378           | 290           | 141           | 41           | 59           | 1            | 13           | 22           | 0            | 0            | 0            | 0            | 1,033          |
| Balsam Fir         | 40            | 56            | 59            | 82            | 139          | 447          | 270          | 256          | 76           | 90           | 6            | 5            | 49           | 1,575          |
| Black Spruce       | 118           | 131           | 132           | 102           | 216          | 171          | 242          | 323          | 348          | 423          | 371          | 433          | 537          | 3,547          |
| Tamarack           | 303           | 308           | 204           | 248           | 487          | 488          | 366          | 344          | 679          | 412          | 451          | 480          | 367          | 5,137          |
| <b>Total</b>       | <b>15,340</b> | <b>17,167</b> | <b>19,097</b> | <b>13,563</b> | <b>5,468</b> | <b>5,689</b> | <b>4,295</b> | <b>5,177</b> | <b>5,584</b> | <b>5,461</b> | <b>2,949</b> | <b>2,106</b> | <b>2,677</b> | <b>104,573</b> |

### 3.3 NON-COMMERCIAL STANDS

There are a number of forest cover types not considered commercial. Some forest cover types, such as lowland brush, are not regarded as a commercial cover type as they are not capable of producing

merchantable harvestable timber while others, such as white cedar, have commercial value but do not have any stands under consideration for treatment during the 50-year planning horizon.

These non-commercial stands vary widely in site capability and characteristics. Management alternatives are either undesirable or not well understood and require further consideration. Until such time, it is recommended these stands be unmanaged, except as needed to provide wildlife habitat, mitigate special threats, or as new market opportunities arise.

**TABLE 3-3: ACREAGE OF NON-COMMERCIAL COVER TYPES; 2018**

| Cover Type           | Acres  | Cover Type             | Acres         |
|----------------------|--------|------------------------|---------------|
| 73 White Cedar       | 6,330  | 90 Unknown             | 452           |
| 75 Stagnant Spruce   | 143    | 91 Agriculture         | 541           |
| 76 Stagnant Tamarack | 146    | 92 Industrial Develop  | 1,134         |
| 77 Stagnant Cedar    | 462    | 93 Recreation Develop  | 227           |
| 82 Cutover area      | 1,323  | 94 Roads               | 569           |
| 83 Lowland Grass     | 3,756  | 96 Permanent Water     | 1,874         |
| 84 Upland Grass      | 840    | 97 Non-permanent Water | 8,018         |
| 85 Lowland Brush     | 12,435 | 98 Marsh               | 6,260         |
| 86 Upland Brush      | 128    | <b>Total</b>           | <b>44,638</b> |

### 3.4 FOREST MANAGEMENT WITHIN CONSERVATION AREAS

Within county forest land, there are areas that merit special consideration for management purposes. Some areas are geared for recreational use while others have natural attributes that makes them particularly suited for a specific management purpose. These areas are described here briefly:

#### **BOG LAKE WHITE PINE REGENERATION STUDY AREA**

- **Size:** 53 Acres
- **Forest Cover Types:** White pine
- **Description:** Occasional forest management activities have created younger age classes of aspen and the majority of the mature white pine was reserved. The land is mostly used by local residents for hunting and recreational activities.
- **Management:** Use silvicultural techniques suitable for white pine management. *No final harvest.*

#### **CLEARWATER RIVER**

- **Size:** 4 Acres
- **Forest Cover Types:** Jack pine
- **Description:** This site is located along the banks of the Clearwater River, which is a designated trout stream. Adjacent stand was harvested in 1994 and regenerated to jack pine.
- **Management:** Understory white pine may be pruned and thinned to provide a healthy white pine cover type. *No final harvest.*

#### **EVENWOLL RED AND WHITE PINE**

- **Size:** 23 Acres
- **Forest Cover Types:** Red pine and northern hardwoods



- **Description:** There is a snowmobile/ATV trail running through the stand.
- **Management:** This site will be maintained as a white pine cover type. Appropriate pruning and thinning regimes will be implemented to maintain a healthy white pine stand. *No final harvest.*

#### GRANGE ROAD PINE REGENERATION STUDY AREA

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- **Size:** 53 Acres
- **Forest Cover Types:** White pine and aspen
- **Description:** Occasional forest management activities have created younger age classes of aspen and the majority of the mature white pine was reserved. The land is mostly used by local residents for hunting and recreational activities.
- **Management:** Use silvicultural techniques suitable for white pine management. *No final harvest.*

#### GRENN LAKE WHITE PINE REGENERATION STUDY AREA

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- **Size:** 75 Acres
- **Forest Cover Types:** White pine, northern hardwoods, and aspen
- **Description:** Mature white pine scattered throughout with two main clusters of white pine to the north and south. Occasional forest management activities have created younger age classes of aspen with the majority of the mature white pine reserved. The main trail into this area crosses private land, limiting public access, but the county holds a forest management easement for timber access. The land is used by local residents for hunting and recreational activities.
- **Management:** Use silvicultural techniques appropriate for white pine management.

#### LAKE ERICK WILDLIFE RECREATION AREA

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- **Size:** 1,687 Acres
- **Forest Cover Types:** Birch, northern hardwoods, red pine, aspen, balsam fir, jack pine, black spruce, tamarack, white pine, and ash
- **Description:** The main access is from MN Highway 89 up to Lake Erick primitive boat landing. Terrain is rolling with scattered wetlands. The area is bordered by two lakes and a wildlife management area. Several recreational trails cross the forest and onto adjoining private lands.
- **Management:** Use silvicultural techniques appropriate for each forest cover type. Management options will be considered in conjunction with the recreational activities that may be affected or improved.

#### PINEWOOD WHITE PINE MANAGEMENT 1

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- **Size:** 21 Acres
- **Forest Cover Types:** White pine
- **Description:** Located along the banks of the Clearwater River, which is a designated trout stream.
- **Management:** Understory white pine may be pruned and thinned to provide a healthy white pine cover type. *No final harvest.*

## PINEWOOD WHITE PINE MANAGEMENT 2

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- **Size:** 17 Acres
- **Forest Cover Types:** White pine
- **Description:** This is a white pine plantation approximately 27 years old in 2018. A snowmobile/ATV trail runs through the conservation area.
- **Management:** Understory white pine may be pruned and thinned to provide a healthy white pine cover type. *No final harvest.*

## PINEWOOD WHITE PINE MANAGEMENT 3

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- **Size:** 3 Acres
- **Forest Cover Types:** Red pine
- **Description:** Approximately 90-year old stand bordering the Clearwater River.
- **Management:** Understory white pine may be pruned and thinned to provide a healthy white pine cover type. *There will be no final harvest,* which will maintain shade for the trout stream and prevent erosion.

## PINEWOOD WHITE PINE MANAGEMENT 4

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- **Size:** 5 Acres
- **Forest Cover Types:** White pine
- **Description:** This site was regenerated to white pine in 2006. Previously this was a jack pine stand harvested during a jack pine budworm outbreak.
- **Management:** This site will be maintained as a white pine cover type. Appropriate pruning and thinning regimes will be implemented to maintain a healthy white pine stand. *No final harvest.*

## PUPOSKY LAKE OLD GROWTH SITE

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- **Size:** 317 Acres
- **Forest Cover Types:** Northern hardwoods, lowlands hardwoods, tamarack, black spruce, and ash
- **Description:** This area contains a 237-acre island in Puposky Lake and two 40-acre parcels to the southwest (80 acres of the original site were transferred to the MN DNR during a land exchange in 2015).
- **Management:** Stands in Section 35 will be managed on extended rotation. *No harvesting will occur on the island.*

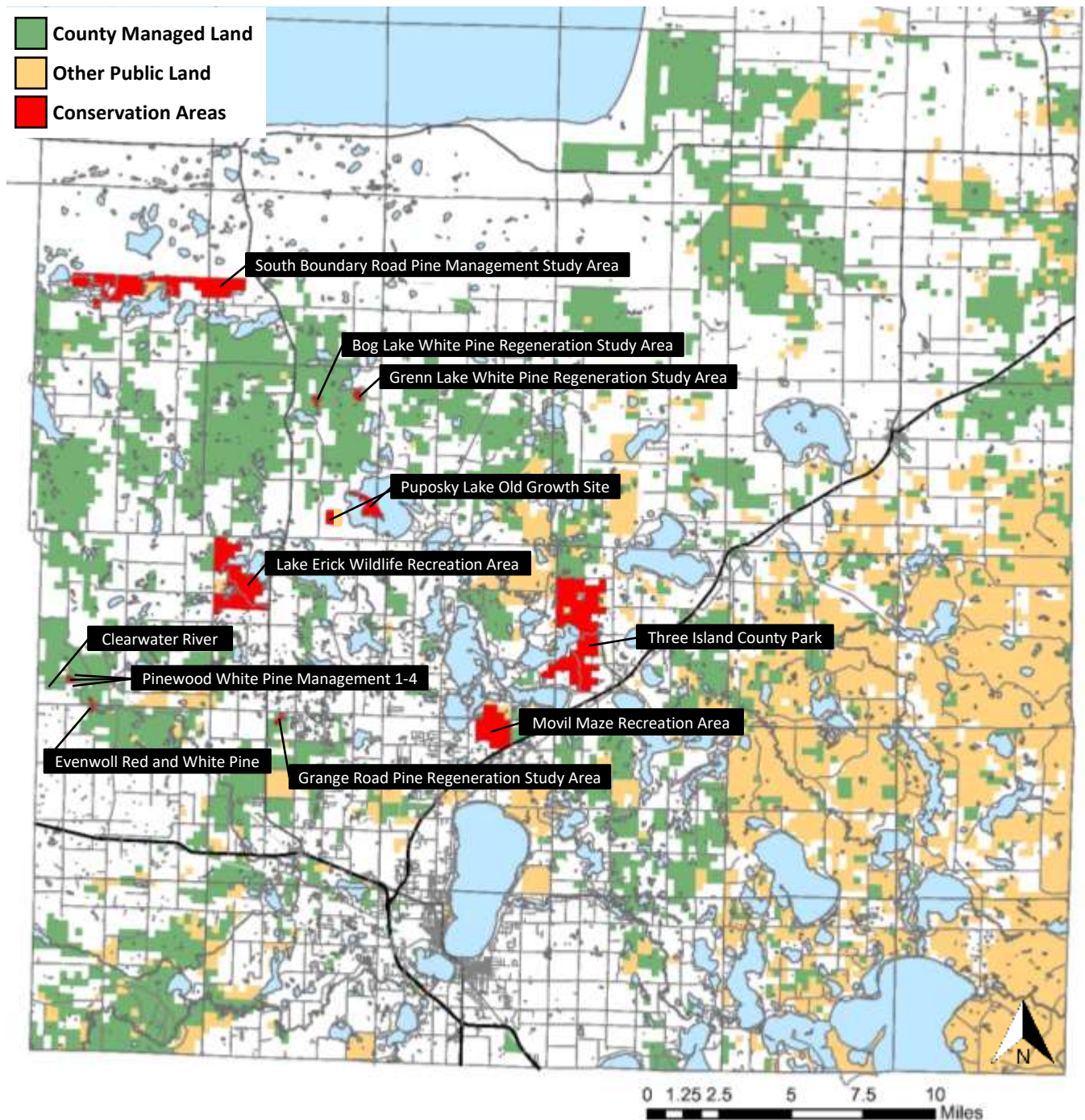
## SOUTH BOUNDARY ROAD PINE MANAGEMENT STUDY AREA

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- **Size:** 2,086 acres
- **Forest Cover Types:** Aspen, northern hardwoods, white pine, red pine, oak, ash, birch, tamarack, and cedar

- **Description:** This area borders the south boundary of the Red Lake Reservation, west of MN Highway 89. There is a white pine regeneration area to help establish white pine as a dominant pine within this ecosystem.
- **Management:** Stands will be thinned to perpetuate and encourage large red and white pine trees. The main objective is to encourage the perpetuation of mature white and red pine by the use of extended rotation, reforestation, and special reserve areas. Final harvest will be based on perpetuating the long-term white and red pine cover types.

**MAP 3-1: CONSERVATION AREAS**



### 3.5 FOREST MANAGEMENT WITHIN THREE ISLAND COUNTY PARK AND MOVIL MAZE RECREATION AREA

Three Island County Park and Movil Maze Recreation Area provide excellent outdoor recreational opportunities. They will retain their importance as prime recreational areas, but will continue to be managed as forest land under special guidelines described below.

#### *THREE ISLAND COUNTY PARK*

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- **Size:** 2,915 Acres
- **Forest Cover Types:** Aspen, northern hardwoods, pine, and lowland conifers
- **Description:** Located at the confluence of Three Island Lake and Turtle River, Three Island County Park is the largest park within the NRM system. There is an enclosed shelter, picnic area, vault toilets, boat launch, and a network of trails diverging in all directions.
- **Management:** Forest management and all development activities will identify, enhance, and protect to the greatest extent possible the waterways, historic dam site, trail system, developed areas, identified cultural resources and natural heritage elements. Harvests will be 15 acres or less in size and minimum of five years between adjacent harvest units. See below for Legacy Area management guidelines. The northern portion of Three Island Park is included in the Three Island Grouse Management Area, which also includes other tax-forfeited lands north of the park.

#### *MOVIL MAZE RECREATION AREA*

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- **Size:** 913 Acres
- **Forest Cover Types:** Aspen, northern hardwoods, pine, and lowland conifers
- **Description:** Due to the proximity to Bemidji, this day-use facility receives a lot of recreational activity year round. It has been predominantly known for its cross country skiing, but more recently a heightened interest in mountain biking has emerged. With over 7 miles of single-track trails and a challenge area, this facility is being utilized by mountain bikers throughout the region.
- **Management:** Forest management and all development activities will identify, enhance, and protect to the greatest extent possible the trail system and developed areas. Harvests will be 15 acres or less in size and minimum of five years between adjacent harvest units. See below for Legacy Area management guidelines.

#### *FOREST MANAGEMENT WITHIN BELTRAMI COUNTY PARKS AND RECREATION AREAS (BELTRAMI COUNTY RECREATIONAL FACILITIES PLAN; APPROVED BY THE BELTRAMI COUNTY BOARD OF COMMISSIONERS MAY 3, 2011).*

With the adoption of this document, recreation will become the main priority to be addressed in managing these recreational land units, at times using timber harvesting as a tool. Harvesting stands of over-mature trees and replanting a more diverse array of trees is a very pressing need on these land units. Without forest management, serious disturbances such as blow down events, requiring major volunteer effort to clear trails are imminent. With harvesting, forest management can be a planned event and revenue will be generated to continue improving the recreational opportunities in these areas. Inevitably cutover areas will be seen as unsightly to some but this is a stage of regenerating a forest to achieve more desirable longer term aesthetics. Significant efforts will be made to maintain the scenic

nature along trails as the transition from over-mature single species to younger, more diverse forests are achieved over several years.

**THE SITUATION:** Timber harvesting activities in Three Island County Park and Beltrami County recreation areas have been contentious with the perception held by many that park and recreation units have been treated similarly to most other county forest lands in terms of forest management practices and respect for trails which are heavily used by recreationists. In addition to significant expenditure by the county to describe the ecological communities and to plan for their management, there are many hours invested in these areas by volunteers who maintain the trails by brushing and grooming.

A plan for forest management in Three Island County Park and other County recreational units was adopted by the County Board on January 8, 2008 as a part of the Beltrami County Recreational Facilities Plan. In it are clearly stated priorities that are quite similar to those proposed in this document and these have been in practice for the past several years. However, the public's perception has often been unfavorable. The vision and mission are a source of tension as some individuals think that the resource management practices employed in



Timber harvest in Movil Maze Recreation Area

the park and recreation units are inappropriate to achieve the goals put forth in the forest management plan. On the other hand, county NRM staff is acting in accord with the vision and practices as they understand them. They differ from the interpretations of some people and groups outside NRM as to how to achieve them. For the past few years, operators harvesting in the parks have, in fact, been following instructions that are intended to intentionally achieve ecological community outcomes and will continue to do so.

Specifically, there are significant issues that involve the following areas: road and trail buffers, management priorities, diversity of tree species and age structure, stand treatment methods, funding forest diversity, public involvement and cooperative efforts, and public education efforts.

These issues are addressed individually below. The overarching solution will involve a change of paradigm by which the county parks and recreation units are managed. These changes involve re-thinking the fundamental approach to management in these areas. This shift may solve many problems while continuing to generate revenue for parks by employing local timber harvesters. Such harvesting may initially be more intensive than later after more goals have been achieved.

**SOLUTIONS:** These are recreation areas with forests as the dominant vegetation, rather than timber areas in which there are recreational trails. With that prioritization in mind, the following addresses the specific points listed above with solutions that have been discussed with the concerned parties.

1. **Road and Trail Buffers:** To preserve or create visual and vegetative buffers along recreational trails, buffers will be proposed in every forest management prescription. Visual quality may be the most important aspect guiding forest management activities and will be treated as “most sensitive” in the visual sensitivity category. The default proposal is that within a minimum 50’ corridor along either side of the roads and trails, most understory vegetation, wind firm longer lived trees and younger trees will remain. In areas within the corridor where trees are predominantly mature, they

will be thinned back to no less than 30 ft<sup>2</sup>/acre of basal area or approximately 1/3 of the original standing volume. Guidelines set forth in the manual *“Sustaining Minnesota Forest Resources, Voluntary Site-Level Forest Management Guidelines”* will be followed. Trails will be treated similar to riparian features using many of the riparian recommendations as trees are harvested.

2. **Management Priorities:** Similarity of stand prescriptions between park lands and other county lands will be removed by changing from the priority of economic revenue to ecological community management. The fundamental consideration is one in which habitat management or development for recreation is the emphasis and timber harvest is the tool to accomplish that objective.
3. **Diversity of Tree Species and Age Structure:** Management prescriptions will be written specifically for ecological community-based forest management. These prescriptions will result in retaining longer lived species where ecologically appropriate and may also require more of the short lived species (such as Aspen, Balsam fir, and Birch) to be selectively left standing.

**STAND TREATMENT METHODS:** Mechanisms under which forest management contracts are let within the park lands will be modified so that services are requested on the basis of landscape management outcomes. Harvest unit location, size, and shape, along with pre-determined landing locations will be key components in achieving visual quality goals. Operators who wish to do this work will be required to post a performance bond to assure that their work meets expected standards. Maps produced by NRM will show recommended locations of landings, haul roads, buffers, and skid trails where they directly impact a recreational trail. If necessary, these locations will be marked on the ground as well. Timber harvesting will be designed with smaller harvest areas than those that are typical of other county lands and the shapes of the harvest areas will be designed to decrease their visibility. Contracts with loggers will be used to achieve ecological community-based recreation goals.

4. **Funding Forest Diversity:** The County will invest 15% of projected park timber sale revenues in reforestation efforts (site preparation, seedlings, planting, protection, release) toward the end of promoting tree species diversity in the park and recreation areas. Tree seedlings recommended in reforestation project plans will be native species that are compatible with site conditions. Over the life of a reforestation effort, significant dollars will be spent for each mile of trail. It is acknowledged that intensive tree planting and maintenance along trail corridors will be expensive in these recreation areas.
5. **Public Involvement and Cooperative Efforts:** The process by which forest management activities are proposed and contracted will involve interested groups. NRM will make an annual public presentation to the PTAC<sup>1</sup> and interested groups to review projects for the upcoming year. The NRM Department and PTAC will receive comments from those groups which may be used to modify plans. The PTAC may request a tour to see the proposed projects on the ground.

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<sup>1</sup> PTAC was disbanded in 2013. Current procedure is to present forest management proposals to the public through County Board meetings. Interested groups are specifically invited to these presentations.



Educational Video Series #

CLICK ON QUICK READER  
WITH YOUR SMART PHONE TO  
ACCESS VIDEO OR VISIT:



See Website: [www.co.beltrami.mn.us](http://www.co.beltrami.mn.us)

6. **Public Education Efforts:** The County is managing a resource where the decisions made today dictate what the forest will look like 40, 80, or 100+ years from now. What makes a trail a favorite of an individual may be the result of 40 years of forest management activities. The County will place appropriate interpretive signs at trailheads and along trails within the parks to explain forest management activities.

7. The County will also try to coordinate this effort with local schools and their environmental educational programs. The interpretive sites in Movil Maze and Three Island County Park will serve as outdoor classrooms demonstrating how different forest management techniques help preserve, protect, and improve the health of the forest while providing for multiple recreational opportunities.

**CONCLUSION:** We are fortunate, in our county, to have forest resources that can meet numerous needs from timber harvest to hunting, and from recreational trail use to maintaining a very diverse habitat for native species. Within the Movil Maze and Three Island County Park, the latter two uses predominate. As such, these areas need to be managed differently from other county owned forestlands. We will be guided by prescriptions utilizing the latest ecological community survey data and silvicultural interpretations. We will use timber harvesting, among other tools, to expedite progress toward a range of successional stages. Included are those stages characterized by more mature, longer lived trees, ecologically appropriate to the site, than are retained on most other county forest lands. Public involvement in management decisions will be overtly encouraged and the stamp of interest groups will be intentionally sought in operations that are carried out in this progression of ecological change to the extent that natural events allow it.

**MANAGEMENT GUIDELINES FOR FOREST LEGACY AREAS WITHIN THREE ISLAND COUNTY PARK (TIP) AND MOVIL MAZE (MM) RECREATION AREA (BELTRAMI COUNTY RECREATIONAL FACILITIES PLAN; APPROVED BY THE BELTRAMI COUNTY BOARD OF COMMISSIONERS OCTOBER 15, 2013).**

**DOCUMENTATION AND MAPPING OF LEGACY AREAS:** In order to ensure long-term retention of forest legacy areas, it is our expectation that these management criteria and limitations, along with mapped legacy areas will be included in the County's Parks and Recreation management plan. Legacy areas will be permanently designated within the NRM database.

#### Forest Legacy Area Desired Conditions/Purposes

1. Legacy Areas, at the time of initial establishment, generally represent mature to old/old growth forest growth stages for the native plant communities they represent. Centered within the Beltrami County Park and recreation areas, these Legacy stands will provide comparative information and educational opportunities to help the NRM Department make informed decisions regarding the conservation and development of natural resources on other State-in-Trust Conservation lands in the County.
2. Ecological processes prevail with a minimum of human intervention. Land and resource conditions provide for maintenance of relatively undisturbed ecosystems (native plant communities) in the context of areas managed for a variety of recreational or educational activities.

3. Legacies are characterized by vegetation representative of the ecological capability of the area and generally have been less affected by forest management or other human activities than other forest stands within TIP or MM.
4. Despite catastrophic events that may change overstory conditions, legacy areas are maintained in perpetuity. Natural wind events or native insect outbreaks are normal events in the successional history of Minnesota forests.
5. Legacy stands serve as ecological reference areas. Therefore, baseline inventories of plants, animals, or cultural resources should be completed.

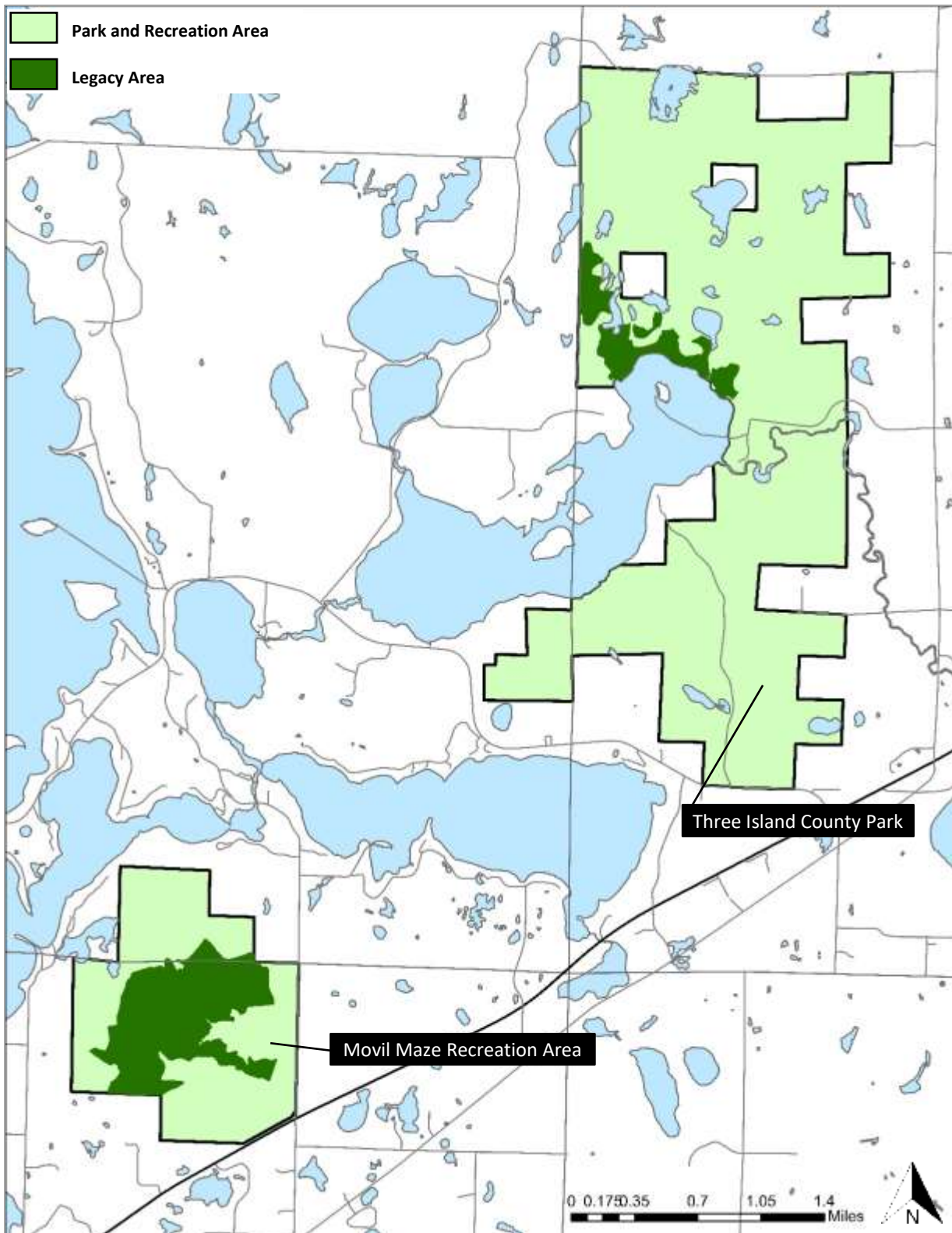


#### Management Limitations within Legacy Areas

- a) No timber harvest or timber stand improvement activities may occur within Legacy Areas. Forest management activities adjacent to designated Legacy areas will be planned to minimize any potential for direct or indirect effects which would be adverse to the conditions and purposes noted above.
- b) The use of herbicides for site preparation or tree release is not allowed.
- c) Habitat improvement projects are not normally undertaken within Legacy Areas, but can be used where specifically needed to restore natural ecosystem conditions. Projects such as under-planting white pine or controlling buckthorn or other non-native plant invasive species would be appropriate. Creating wildlife openings or creating snags by tree girdling would be inappropriate.
- d) Occurrence of natural wind events or native insect outbreaks will not prompt management intervention within legacy areas. Treatment of a non-native insect outbreak should be consistent with regional control efforts on similar land bases such as state parks or federal research natural areas.
- e) Recreational uses that threaten or interfere with the desired conditions/purposes of the Legacy Areas are not allowed.
- f) New roads or trails are not permitted, except through an alternative practice review process where County NRM, a recreation user group and/or other interested members of the public determine that a new trail segment and the rehabilitation of the old trail segment would result in a net benefit to environmental conditions in legacy areas. Nonmotorized recreational trail uses, which do not clear any trees, are not specifically prohibited, provided the purpose and conditions of the Legacy areas are not adversely affected.
- g) Wildfire suppression is under the jurisdiction of the Minnesota DNR – Division of Forestry. Providing for public and firefighter safety, the Incident Commander would select MIST (Minimal Impact Suppression Tactics) as a preferred option. If heavy equipment is utilized, rehabilitation of the suppression lines would be completed.
- h) Maintenance of recreational trails within Legacy Areas will be to a level that maintains the established use without altering the integrity of the forest canopy of the legacy. Cutting deadfall or windblown trees, maintaining the tread of the trail, and maintaining trail signing are appropriate activities.
- i) Buildings, structures and other improvements are generally not permitted.



**MAP 3-2: LEGACY AREAS IN THREE ISLAND COUNTY PARK AND MOVIL MAZE RECREATION AREA**



**3.6 FOREST MANAGEMENT WITHIN THE LEECH LAKE RESERVATION**

Approximately 3,000 acres of tax-forfeited land lies within the boundaries of the Leech Lake Band of Ojibwe Reservation. Leech Lake Band of Ojibwe input is sought and utilized when any forestry related activities are proposed within the reservation boundaries.

# SECTION 4: LAND BASE

## 4.1 TAX-FORFEITED LAND

Tax-forfeited lands are properties that have been turned over to the State of Minnesota due to unpaid taxes. Once forfeited, the counties are charged with managing the properties held in trust for the state. Beltrami County manages these lands for recreation, natural resources, conservation, water and wetland protection, wildlife conservation, while also affording a steady economic return to the taxing districts through forest management.

## 4.2 LAND CLASSIFICATION

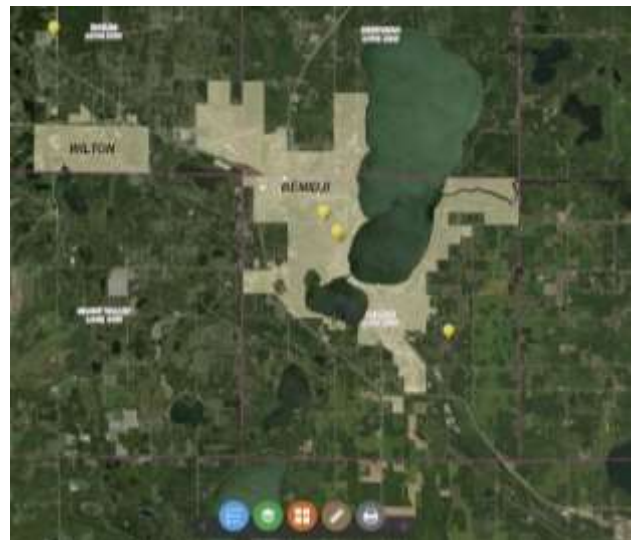
State law requires county boards to classify tax-forfeited land as either “conservation” or “non-conservation” based on present usage of adjacent land, potential soil productivity, forest and vegetation growth, accessibility, desirability, and suitability for multiple uses.

In Beltrami County, any tract of tax-forfeited land that offers a public benefit may be classified as conservation land and would be retained to generate revenue for the county and its taxing districts.

## 4.3 LAND SALES, LAND EXCHANGES, AND EASEMENTS

**LAND SALES AND EXCHANGES:** Not all tax-forfeited land fits into the county’s management strategy. Platted properties, small or oddly shaped parcels, and isolated parcels are generally sold at auction. The county follows state statute to gain permission to sell these parcels and strives to have a least one land sale a year. Since taxes are not being collected on these properties, having them back in taxable status benefits the county and the taxpayers.

Counties also have the authority to exchange tax-forfeited land for private land. Potential exchanges may allow for the consolidation of county lands or access to presently landlocked parcels. Please see the Land Asset Management Policy (May 15, 2012) on the Beltrami County website for more information regarding the sale and exchange of tax-forfeited land.



Land Sale parcels for sale listed on the “Online Mapping” app

**EASEMENTS:** Requests to cross tax-forfeited or county-owned land will be considered per the “*Easement and Access Across County Lands*” policy adopted on March 21, 2017.

## 4.4 GRAVEL PITS

Beltrami County has over 25 gravel pits on tax-forfeited lands, with approximately 5 active and 20 inactive. The NRM Department, in conjunction with the Highway Department, began inspecting gravel pits for safety evaluations and inappropriate uses such as littering, garbage, and resource damage. Possible reclamation of gravel pits will occur, as funds are available.

## 4.5 AGRICULTURAL AND SPECIAL USE LEASES

**AGRICULTURAL LEASES:** County managed lands may be leased for a variety of agricultural reasons. In general, Beltrami County leases are renewed annually, with a small number of leases extending 5 years. In 2017, 293 acres were leased for agricultural purposes.

**SPECIAL USE LEASES:** Special use leases are also considered on county lands. Currently, special use leases include a radio tower, archery/shooting ranges, youth baseball, and a school bus turnaround.

## 4.6 MISSISSIPPI RIVER CORRIDOR

Beltrami County and seven other counties are members of the Mississippi River Headwaters Board (MHB), a cooperative entity designed to oversee the proper management of private and public land along the Mississippi River corridor. Of particular relevance to this management plan is the MHB's desire to have public lands retained within the corridor.

Lands within the Mississippi Headwaters corridor will be managed in accordance with the approved Mississippi Headwaters Comprehensive Management Plan. Activities covered in the MHB plan have potential impacts on the management of county managed lands. These activities include public roads, land uses, shoreland alterations and forestry, extractive uses, and public land ownership.



Mississippi River

## 4.7 TREATIES AND COOPERATIVE EFFORTS

Approximately 3,000 acres of county forest land in the southeastern portion of Beltrami County are within the Leech Lake Band of Ojibwe reservation boundaries. Tribal members have the right to hunt and gather within the lands ceded by the tribe. There have not been any significant issues regarding the use of forest lands including the gathering of wood or plants.

A portion of the Beltrami County forest is immediately adjacent to the Red Lake reservation boundaries. Red Lake Nation input is sought and utilized when any forestry related activities are proposed near the reservation boundaries.

The county works together with the MN DNR regarding management of state forests within the county. In addition, the county cooperates with private forest owners regarding access and management activities. The potential for enhanced cooperation always exists and will be explored by the county.

The county also cooperates with the MN DNR regarding State Wildlife Management Areas (WMA). The two entities have signed agreements by which certain county managed lands adjacent to WMAs are managed by the state for WMA purposes.

# SECTION 5: PARKS AND RECREATION AREAS

## 5.1 PARKS AND RECREATION AREAS

**ROGNLIEN PARK:** This is historically the highest utilized day-use facility because of its proximity to Bemidji and its level of infrastructure. There is a swimming beach, picnic tables, children’s playground, fishing pier, vault toilets, and a boat launch at the park. Due to the high use, seasonal park host staffing is important for safety and overall upkeep of the park.

Future improvement plans include a landscape and shoreline stabilization project and a utility building for the park host.

**THREE ISLAND COUNTY PARK:** Located at the confluence of Three Island Lake and the Turtle River, Three Island County Park is the largest park within the NRM system at 2,915 acres. There is an enclosed shelter (available for rent from April 1-November 30 and open for use during the winter season), picnic area, vault toilets, boat launch, and a network of trails diverging in all directions. This park is utilized for recreational opportunities during all seasons.



Bridge over the Turtle River

The northern portion of Three Island County Park, as well as some tax-forfeited lands north of the park, is managed as the Three Island Grouse Management Area. In this area, a 40-year plan has been designed to modify aspen age classes and locations and to improve wildlife habitat to favor ruffed grouse. Additionally, there is a plan to add to the three miles of hunter walking trails to enhance recreational hunting access. The park is managed primarily for non-motorized recreational activities throughout the year such as cross country skiing, hiking, horseback riding, and hunter walking trails to name a few. A network of snowmobile trails pass through the park and the gated north snowmobile trail is opened during the Minnesota Statewide Deer (A) firearm season for ATV use only, in compliance with hunting regulation of ATV uses.

Future improvement plans include replacing the cracked vault toilet in the shelter area and potentially a well.



Movil Maze Recreation Area

**MOVIL MAZE RECREATION AREA:** Due to the close proximity to Bemidji, this day-use facility receives a lot of recreational activity year round. It has been predominantly known for its cross country skiing, but more recently a heightened interest in mountain biking has emerged. With over 7 miles of single-track trails and a challenge area, this facility is being utilized by mountain bikers throughout the region.

This recreation area is managed primarily for non-motorized recreation activities with the only exceptions being the designated snowmobile trail during the winter season and ATV use during the Minnesota Statewide Deer (A) firearms season.

Future improvement plans include the development of additional single-track mountain bike trails, construction of an enclosed shelter, and potentially a lighted ski trail.

**GRANT CREEK HORSE CAMP:** The camp is located approximately 6 miles west of Bemidji. It offers multiple equestrian campsites with trailer parking, picnic tables, fire rings, tie lines, a manure pit, and vault toilet. Campsites are reserved for horse related users. The camp also has a high capacity well, with hand pump and generator hook-up, and a sheltered picnic area. Enhancements to the area are ongoing with the involvement of various local groups and state organizations.

**MISSISSIPPI HIGH BANKS:** A primitive campsite with spectacular views of the “Wild” Mississippi River is located 8 miles southeast of Solway. A locked gate provides road access to this site provided you have a permit, which is free of charge and available at the NRM office. Due to the sensitive nature of this area, off-highway vehicles are not allowed. Beltrami County also maintains two carry-in river access sites in this area. One located at the primitive campsite and the other at Rice Lake.



Mississippi High Banks primitive campsite

Future improvement plans are to maintain this area in its primitive state for those who enjoy primitive camping.

## 5.2 DEVELOPED COUNTY PARKS AND RECREATION AREA ORDINANCE

On July 11, 2017, the Beltrami County Board of Commissioners adopted the Developed County Parks and Recreation Area Ordinance. This document prescribes the rules and regulations for the recreational use and enjoyment of Developed Recreational Areas in order to help conserve the natural, scenic, recreational, and commercial value of their natural resources.

The ordinance helps in finding pertinent information regarding the parks and recreation areas and enhances the user experience for those who visit and recreate in Beltrami County managed parks. This source document provides uniformity among the NRM staff, County Administration, County Board, and recreational users.

# SECTION 6: RECREATION TRAILS AND FOREST ROADS

## 6.1 RECREATION TRAILS

By providing a structured recreational framework, NRM can minimize damage to the environment, provide access to natural resources for citizens, and provide for tourism opportunities for the local economy.

Trail maintenance is funded primarily through state Grant-in-Aid (GIA) funds from user generated license fees.

**SNOWMOBILE TRAILS:** NRM oversees 618 miles of GIA snowmobile trails in Beltrami County. These trails are maintained by the North Country Snowmobile Club (261 miles), Fourtown Grygla Sportsmans Club (155 miles), Blackduck Stumpjumpers (114 miles), and the Lost River Trails (88 miles). Trail maintenance is the responsibility of each snowmobile club. NRM’s responsibilities and duties regarding the trails include:

- Process GIA paper work for existing and new trails;
- Recommend to the County Board whether to accept new GIA trails;
- Monitor trails used for or near active logging sites. This includes working with the logging contractor and the appropriate snowmobile club regarding signing, temporary closure or rerouting of the trail, and other measures to maintain safe trails; and
- Maintain inventory of current trail locations.

**ATV TRAILS:** The NRM Department will continue to oversee all GIA ATV trails in the county. The Wilton Trails Northwest Trail begins west of Bemidji and travels 33 miles northwest through the towns of Wilton and Pinewood. The old Soo Line railroad grade serves as the GIA trail system backbone with smaller looping trails diverging from it. This trail is maintained by the Northwoods Riders OHV Club. NRM’s responsibilities for ATV trails are similar to that for snowmobile trails.



Soo Line trail, part of the Wilton Trails NW trail system

Focus will be on maintaining the trail system and enhancing the associated infrastructure (parking areas, signage, enforcing restrictions on unauthorized uses).

**NON-MOTORIZED RECREATIONAL TRAILS:** NRM maintains a number of non-motorized trails used for multiple recreational purposes:

- **Cross Country Ski Trails:** Three Island County Park and Movil Maze Recreation Area have a combined 43 kilometers of cross country ski trails. Trail grooming and general maintenance are done by the Bemidji Area Cross Country Ski Club through the GIA program.
- **Horseback Riding:** Grant Creek Horse Camp provides access to 42 miles of horseback riding trails. Horseback riding is allowed on all forest roads and trails except where it is posted to prohibit their use.
- **Hunter Walking Trails:** Currently 3 miles of designated hunter walking trails have been established with several more miles of multi-use trails connecting to these areas. The eventual goal is to have

at least 13 miles designated at various sites around the county.

- **Mountain Bike Trails:** Movil Maze Recreation Area has over 7 miles of single-track mountain bike trails and a bike skills/challenge area that are maintained by local volunteer groups.
- **Snowshoe Trails:** Three Island County Park has a 2-mile snowshoe trail that winds along both sides of the Turtle River. This trail is maintained by local volunteer groups.

## 6.2 FOREST ROADS

Most areas of the county forest are fairly accessible by high-level county and state roads. Internal access to forest stands for treatment and recreation are provided by an extensive system of forest roads and trails that total approximately 700 miles.

**ROAD MANAGEMENT AND CONSTRUCTION OF FOREST ROADS AND TRAILS:** Access roads and trails are evaluated when possible to gauge resource damage. Road rehabilitation may be conducted after severe weather events and may include adding gravel, repairing/installing culverts, and other repairs and improvements.



Forest road

For access roads located in timber harvest areas, the NRM Department may supply culverts and pay for material to maintain and upgrade forest roads in disrepair. The amount of supplies and materials will be stated on timber sale packages prior to offering at auction. In some cases, road repair and maintenance contracts will be used independent of any timber sale.

# SECTION 7: HABITAT

## 7.1 ASSESSMENT

Beltrami County has long considered wildlife habitat in its management. While game species have received the most attention, both game and non-game species habitat requirements are considered, where possible, into forest management activities. The department also works with various conservation organizations to help implement wildlife habitat projects.

In addition, the county incorporates site-specific actions at the stand level to enhance habitat. The following are the habitat elements that may be incorporated into project plans.

- Timing of activity, where timing is beneficial to wildlife;
- Physical spacing of activities, where spacing is beneficial to wildlife;
- Timber reserves within or adjacent to the project area not less than 5% of the area;
- Reserve trees left at the rate of 6-12 trees per acre;
- Food sources reserved;
- Den trees reserved;
- Riparian zones identified with filter strips used;
- Eagle, osprey, heron, goshawk nests buffers;
- Coarse woody debris reserved > 4 leave logs per acre;
- Management on extended rotation;
- Establishment of long-lived conifers near streams to provide shade and in-stream structure;
- Retention of i.e. 60 basal area within riparian zone for trout streams;
- Re-vegetation of roads and landings to provide forest openings;
- Management of vegetative diversity to propagate/encourage threatened or endangered species, where such management is documented in the project plan;
- Projects which enhance known populations of threatened or endangered species;
- Other elements which specifically benefit wildlife; and
- Projects designed specifically to enhance wildlife habitat.



Grouse nest with eggs

**SPECIES OF CONCERN:** Beltrami County is one of the few remaining counties for which a Minnesota County Biological Survey by the MN DNR has not yet been completed. The MN DNR has identified a number of species known to exist in the county with either federal or state status as threatened, endangered or special concern species. See Appendix B for a list of these species.

**NORTHERN LONG-EARED BAT:** The northern long-eared bat was listed as a threatened species on April 2, 2015 and the 4(d) rule was published in the Federal Register on January 14, 2016. Following the guidelines established under the 4(d) rule of the Endangered Species Act, the following prerequisites to vegetative management will be undertaken:

- Query the NHIS database for known maternity roost trees;
- No harvest activities within 150 feet of known maternity roost between June 1 and July 31;
- When possible, retain all trees that have apparent cavities;



- Retain all snags when not a threat to activities; and
- Create reserve/legacy patches around larger wolf trees.

**BIODIVERSITY MANAGEMENT STRATEGY:** In 2009, Beltrami County as part of MCSFC, adopted the procedure (LD-PS5) regarding Stand and Landscape – Biodiversity Management Strategies. The purpose of that procedure is to:

- Define the landscape which includes NRM department managed lands;
- Set general objectives which promote diversity across the forested landscape at stand and landscape level;
- Maintain and improve wildlife habitat as an integral part of a comprehensive land management program on land department managed lands; and
- Foster greater understanding of the biophysical and social influences which affect the various landscape components.

**FOCUSED MANAGEMENT FOR HABITAT:** The county manages portions of its land base for wildlife habitat. Generally this management is done for game species and is undertaken in conjunction with hunter walking trail areas. Currently, the county has three Grouse Management Areas (GMA): Three Island GMA, Darrigan GMA, and Lammers GMA. Beltrami County works closely with the Ruffed Grouse Society to manage acreage for grouse and woodcock.

Other projects include work with the American Bird Conservancy on habitat projects that benefit the golden-winged warbler and other species that utilize early successional habitat.



Grouse drumming tree created during a timber harvest

# SECTION 8: LANDSCAPE PERSPECTIVE

## 8.1 LANDSCAPE ECOSYSTEM OBJECTIVES



Where appropriate, NRM staff attempts to manage for more natural-type forests and less homogeneous plantations. Foresters continue to encourage stand diversity on the forest, while setting overall stand management goals based on the primary forest cover type. The desired future condition of the Beltrami County forest includes managing for a more balanced age class distribution for each cover type.

Foresters will look for opportunities to implement strategies that contribute to landscape ecosystem objectives during the timber sale planning process.

The following objectives highlight the resource-based objectives for each landscape ecosystem. The objectives listed here reflect Beltrami County's contribution to the North Central Landscape's goals and objectives. Information comes from the *"North Central Landscape Plan: A Regional Plan to Guide Sustainable Forest Management (2017)"*.

**DESIRED FUTURE CONDITION: FOREST DIVERSITY AND HEALTH (PAGES 6-1 – 6-6):** North Central region forests have a range of cover types, patch sizes, growth stages, and age classes that closely resemble the composition, structure, and function of native plant communities adapted to the landscape and climate of the North Central region. The diversity of fish, wildlife, and plant species is maintained or restored on the landscape using management activities and best management practices which are appropriate to the native plant community and prevent unintended adverse consequences. The resilience and natural adaptive capacity of ecosystems is maintained or enhanced to address climate change and other stressors while maintaining quality ecosystem services.

- Goal 1: Enhance the ability of the forest ecosystems in the region to adapt and respond to current and future threats by fostering ecosystem resilience, resistance, and adaptability.
- Goal 2: Maintain or increase the area of forestland in the North Central Landscape.
- Goal 3: Retain contiguous blocks of forestland.

### **FIRE DEPENDENT NATIVE PLANT COMMUNITIES (PAGES 7-4 – 7-7):**

- Goal 1: Restore or emulate natural disturbances within the landscape to sustain fire-dependent species composition and longevity.
- Goal 2: Increase species and structural diversity of stands.
- Goal 3: Manage for diverse age class structures and species.
- Goal 4: Increase presence of conifers on landscape, especially in underrepresented age-classes.
- Goal 5: Reduce depredation of all species by deer.

### **MESIC HARDWOOD NATIVE PLANT COMMUNITIES (PAGES 7-8 – 7-11):**

- Goal 1: Increase species and structural diversity of stands.
- Goal 2: Maintain and enhance species and age-class diversity across the landscape.
- Goal 3: Maintain a substantial amount in even-aged aspen.
- Goal 4: Increase the conifer component within stands and across the region.
- Goal 7: Increase the timber and fiber quality of forests.

**ACID AND RICH FORESTED PEATLANDS (PAGES 7-12 – 7-14):**

- Goal 1: Maintain or restore hydrology.
- Goal 2: Encourage the use of silviculture systems to mimic natural disturbance, perpetuate a diverse age class distribution of black spruce/tamarack communities, and address forest health issues and wildlife habitat objectives.

**WET AND FLOODPLAIN FORESTS (PAGES 7-17 – 7-19):**

- Goal 1: Diversify stand structure and composition.
- Goal 2: Manage lowland hardwoods to improve stand health and decrease susceptibility to pests and diseases.
- Goal 3: Maintain forest land cover in order to protect and maintain water table levels.
- Goal 4: Protect critical forest habitats, especially white cedar cover types and riparian forests.

**TABLE 8-1: FIRST AND SECOND GENERATION NORTH CENTRAL LANDSCAPE PLAN CROSSWALK**

| 2003 Plan Ecological Plant Communities | NPC Classification System                                | 2017 Plan                  |
|--|--|----------------------------|
| <b>Upland Forests</b>                  |  |                            |
| Dry Pine                               | FDc23: Central Dry Pine Woodland                         | FD: Fire-Dependent Forest  |
|  | FDc24: Central Rich Dry Pine Woodland                    |                            |
| Dry-Mesic Pine                         | FDn33: Northern Dry-Mesic Mixed Woodland                 |                            |
|  | FDn43: Northern Mesic Mixed Forest                       |                            |
| Dry-Mesic Pine-Oak                     | FDc34: Central Dry-Mesic Pine-Hardwood Forest            |                            |
| Boreal Hardwood-Conifer                | MHn44: Northern Wet-Mesic Boreal Hardwood-Conifer Forest |                            |
|  | MHn46: Northern Wet-Mesic Hardwood Forest                |                            |
| Mesic-Northern Hardwoods               | MHn35: Northern Mesic Hardwood Forest                    |                            |
|  | MHn47: Northern Rich Mesic Hardwood Forest               |                            |
|  | MHc26: Central Dry-Mesic Oak-Aspen Forest                |                            |
|  | MHc36: Central Mesic Hardwood Forest (Eastern)           |                            |
| <b>Lowland Forests</b>                 |  |                            |
| --                                     | AP: Acid Peatland  | AP: Acid Peatland          |
| --                                     | FF: Floodplain Forest                                    | FF: Floodplain Forest      |
| --                                     | FP: Forested Rich Peatland                               | FP: Forested Rich Peatland |
| --                                     | WF: Wet Forest   | WF: Wet Forest             |

## 8.2 RECOMMENDATION TO COUNTY LAND DEPARTMENTS

Within the North Central Landscape Plan, the MFRC summarizes specific recommendations to a variety of landowners. Below are the recommendations to the County Land Departments (page 12-3):

- Manage lands with a semblance of natural disturbance patterns based on native plant communities as recommended in Section 7 of this Landscape Plan.
- Promote collaboration between county/state and private timber sales with partners on the regional committees.
- Discourage sale of county tax-forfeit land suitable for forest management, even though it may be more cost effective to sell.
- Work with the MFRC and the regional committees to develop funding to support more precise forest inventories.
- Promote and support forest management decisions that support the long-term and sustained management of county forest lands.

# SECTION 9: FOREST MANAGEMENT

## 9.1 ASSESSMENT

Beltrami County has a diverse topography, gradually changing from rolling hills and lakes in the south to flat, low areas in the north. A great deal of the county is forested, containing mixed conifers and deciduous trees. Cultivated crop and pasturelands are largely concentrated in an area west and south of Lake Bemidji, across the center third of the county, and on the western edge of the northernmost part of the county.

A continental divide separates the drainage between the bottom third of the county and the upper two thirds. The area below this divide is a prime amenity area, consisting of recreational lakes, mixed conifer and deciduous forests, and most of the developed uses in the county. This area drains to the south and into the Mississippi River. Between the continental divide and Red Lake is generally flatter terrain, providing land for cultivation, agriculture, and deciduous forests.

Most of the county managed land is located in the southern part of the county, south of Lower Red Lake. For planning purposes, NRM staff only deals with the management of tax-forfeited and county-owned forest land in that area.

## 9.2 FOREST DEVELOPMENT ACTIVITIES

Forest development includes all work that is done on forest lands managed by the county as “investments” for the future. Generally, these activities do not generate immediate revenue but increase a forest related value, often for timber or wildlife.

**FOREST INVENTORY/MONITORING:** NRM staff annually updates the forest inventory data and associated GIS mapping. The focus on forest inventory will continue to be stands that have had harvest activity occur and priority stands such as stands that have not been visited in some time. NRM plans to continue and expand other ongoing projects including NPC mapping/verification.

**SITE PREPARATION-MECHANICAL:** Site preparation work is used to prepare the ground for seedling establishment following a timber harvest. Site preparation creates a good seedbed for tree species whose seeds require bare mineral soil to establish and grow or site preparation removes vegetation that compete with seedlings (planted or natural). Site preparation can be accomplished during a harvest operation by dragging felled trees to stir up the soil (scarification) for seeds, or after a harvest using special equipment, such as a disc trencher or roller chopper. Beltrami County has completed site preparation on approximately 150 to 250 acres annually over the last five years. With the plan of using site preparation as needed for tree regeneration, the estimated treatment acres will remain at the same level as it has been in the previous years.



Roller Chopper

**SITE PREPARATION-HERBICIDES:** Herbicides may be used in limited quantities to control brush and remove “weedy” competition impeding the growth of planted tree seedlings. They may also be used for managing invasive species such as common tansy, Canada thistle, and spotted knapweed. Limited

quantities of herbicide spraying may be used, as needed, on a site-by-site basis to control undesirable brush and noxious weeds. Noxious weed management also includes the use of biological control methods.

**TREE PLANTING:** By utilizing NPC classifications, NRM staff can improve species site matching. This minimizes seedling mortality and therefore increase overall production. On average over the last 10 years, the county has planted approximately 250,000 seedlings per year including red pine (50%), white pine (5%), jack pine (40%), and white spruce (5%). Annually, the county plans to plant approximately 200,000-250,000 seedlings. If unexpected weather events occur, such as blowdowns or droughts, these amounts may be adjusted.

**BUD CAPPING:** In order to discourage deer browse damage in pine plantations, bud capping is used to keep the deer from eating the terminal bud of the trees. Small pieces of paper are stapled around the top of the trees to protect the terminal buds and allow upward growth for tall, straight trees.

**PLANTATION RELEASE:** In order for seedlings to grow and mature, plantation release is used to remove the vegetative competition around the trees. Both mechanical and chemical release methods can be used. The photos below show the same site before and after plantation release.



**COST SUMMARY:** Annual budgeted costs of forest development activities will be based on the average cost of projects during the previous five years. (Table 9-1: Costs of Forest Development Activities During Previous Five Years; 2013-2017).

**TABLE 9-1: COSTS OF FOREST DEVELOPMENT ACTIVITIES DURING PREVIOUS FIVE YEARS; 2013-2017**

| Year | Site Preparation | Herbicides | Tree Seedlings | Tree Planting | Bud Capping | Plantation Release | Total        |
|------|------------------|------------|----------------|---------------|-------------|--------------------|--------------|
| 2013 | \$22,774.80      | \$0.00     | \$42,892.60    | \$8,876.90    | \$54,019.97 | \$23,846.40        | \$152,410.67 |
| 2014 | \$33,733.65      | \$4,212.62 | \$66,068.00    | \$19,546.53   | \$65,829.75 | \$0.00             | \$189,390.55 |
| 2015 | \$30,578.59      | \$4,774.00 | \$18,747.96    | \$11,814.29   | \$67,476.33 | \$4,963.68         | \$138,354.85 |
| 2016 | \$59,453.18      | \$372.00   | \$49,040.40    | \$8,270.02    | \$62,762.66 | \$19,200.00        | \$199,098.26 |
| 2017 | \$13,546.78      | \$266.00   | \$18,380.90    | \$18,793.97   | \$65,281.50 | \$28,702.64        | \$144,971.79 |

**FOREST PESTS:** The native eastern larch beetle attacks and causes mortality to tamarack trees. Since tamarack dominated forests represent approximately 4% of managed lands, this beetle and the resulting tree mortality has significant consequences.

The native jack pine budworm causes defoliation and eventual mortality to jack pine. Since jack pine dominated forests represent approximately 4% of managed lands, the periodic outbreaks of this budworm and the resulting tree mortality changed how impacted jack pine stands are managed.

A future concern to this area is the Emerald Ash Borer (EAB), which is a small exotic beetle that feeds on and eventually kills ash trees. Since ash dominated forests represent about 3% of county managed lands, this also has important implications if the beetle enters Beltrami County.

Gypsy moths, also of future concern, are non-native moths that defoliate trees and forests. The county has been assisting with gypsy moth monitoring since 2015 and will continue to aid the MN Department of Agriculture in future trapping surveys.

In response to these threats, NRM staff is learning of forest management techniques to minimize the effects of these pests on the forest. Ash and tamarack management acreage will be accelerated to follow the best available guidelines to improve forest health by diversifying species in stands and age class distributions when ecologically appropriate.

**INVASIVE SPECIES:** Invasive plant species, such as common tansy, Canada thistle, and spotted knapweed, can negatively affect forest regeneration. Prevention is the best approach and continued work with other agencies and organizations to educate the public is important to reduce the overall spread of invasive species.



Canada thistle stem gallflies released on Canada thistle

### 9.3 CLIMATE CHANGE AND CARBON SEQUESTRATION

**CLIMATE CHANGE:** The world's climate is undergoing change and predicting the impact of this change over the course of this Forest Management Plan is difficult if not impossible. NRM tracks issues, legislation, and the scientific literature as a basis for developing recommendations and coordinating activities for mitigating and/or adapting to the effects of climate change on natural resources. However, because this plan is based upon the ecological features that support the forest, the county will be able to evaluate emerging impacts of change relative to the capacity of the land to produce forest cover and act accordingly.

**CARBON SEQUESTRATION:** A sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber from the forest, will also generate the largest sustained carbon mitigation benefit to the public. This is because active sustainable management practices keep forests growing at a higher rate over the longest potential period of time, therefore providing net carbon sequestration benefits in addition to the values of carbon storage found in more ecologically-sensitive unmanaged areas of the forest.

### 9.4 LONG-TERM FOREST MANAGEMENT SCHEDULE

**ACREAGE GOALS DESCRIPTION:** The number of acres to be managed annually per forest cover type. The goals are a guide to how many acres are targeted for management in a given year to achieve forest objectives. The amount of timber sales offered will be based on these goals.

Depending on staff size and forester capacity, the likely annual management acreage will be between 2,200 acres and 2,500 acres. In many cases, the actual acreages end up being slightly higher or lower as forest stands do not always fit into defined sizes. These acreage goals provide public information relative to timber harvest that will likely occur in the next ten years.

Situations may occur that require NRM to harvest stands above the annual acreage goals because of the salvage of damaged or diseased timber. Deviations from the annual harvest plan should not constitute



Blowdown from 2012 wind event

exceeding the total annual acreage goals. NRM proposed harvest seeks to capture a larger portion of the naturally occurring mortality in the forest by regenerating old, decadent stands, and removing diseased or defective trees through intermediate thins. This approach will lead to a healthier and a more productive future forest while still maintaining important forest benefits and habitat characteristics.

The following tables describe the expected number of acres in normal and extended rotation for each species, as well as the number of acres to be harvested over the course of each decade within the planning timeframe. The total treatment indicated for each decade only describes harvest treatments. Intermediate silvicultural treatments may be possible or desirable in certain instances, at the discretion of the district forester, and may affect the county’s total sales. Detailed harvest projections are available at the NRM Department. Our goal for all forest cover types is to evenly distribute the acreage in those ten-year age classes at or younger than the cover type rotation age.

The department will adhere to Minnesota Forest Resources Council’s *“Sustaining Minnesota Forest Resources, Voluntary Site-Level Forest Management Guidelines”* for all site-level decision making.

This long-term forest management schedule is based upon stands where normal timber harvest is allowed. Those stands with restrictions, no timber harvesting is allowed, or limited timber harvesting are not included in this schedule but would be managed as appropriate considering the limitations.

**TABLE 9-2: ASH AND LOWLAND HARDWOOD MANAGEMENT**

|             | 0-10 | 11-20 | 21-30 | 31-40 | 41-50 | TSI<br>51-60 | 61-70 | 71-80 | 81-90 | 91-100 | 101+ | Total | Decade<br>Thin Acres | Decade<br>Final<br>Harvest |
|-------------|------|-------|-------|-------|-------|--------------|-------|-------|-------|--------|------|-------|----------------------|----------------------------|
| <b>2018</b> | 517  | 62    | 132   | 19    | 90    | 446          | 421   | 353   | 616   | 297    | 601  | 3,554 | 19                   | 540                        |
| <b>2028</b> | 690  | 367   | 62    | 132   | 19    | 90           | 446   | 421   | 353   | 616    | 358  | 3,554 | 132                  | 610                        |
| <b>2038</b> | 664  | 636   | 367   | 62    | 132   | 19           | 90    | 446   | 421   | 353    | 364  | 3,554 | 62                   | 360                        |
| <b>2048</b> | 421  | 603   | 636   | 367   | 62    | 132          | 19    | 90    | 446   | 421    | 357  | 3,554 | 367                  | 420                        |
| <b>2058</b> | 456  | 385   | 603   | 636   | 367   | 62           | 132   | 19    | 90    | 446    | 358  | 3,554 | 636                  | 440                        |
| <b>2068</b> | 482  | 414   | 385   | 603   | 636   | 367          | 62    | 132   | 19    | 90     | 364  | 3,554 | 636                  | 90                         |
| <b>2078</b> | 134  | 438   | 414   | 385   | 603   | 636          | 367   | 62    | 132   | 19     | 364  | 3,554 | 603                  | 20                         |
| <b>2088</b> | 29   | 125   | 438   | 414   | 385   | 603          | 636   | 367   | 62    | 132    | 363  | 3,554 | 385                  | 140                        |
| <b>2098</b> | 142  | 27    | 125   | 438   | 414   | 385          | 603   | 636   | 367   | 62     | 355  | 3,554 | 414                  | 60                         |
| <b>2108</b> | 74   | 128   | 27    | 125   | 438   | 414          | 385   | 603   | 636   | 367    | 357  | 3,554 | 438                  | 360                        |
| <b>2118</b> | 366  | 68    | 128   | 27    | 125   | 438          | 414   | 385   | 603   | 636    | 364  | 3,554 | 125                  | 360                        |

ERF: 10%



**TABLE 9-3: ASPEN AND BALM OF GILEAD MANAGEMENT**

|             | 0-5   | 6-10  | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | 46-50 | 51-55 | 56-60 | 61-65 | Total  | Annual Harvest |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|----------------|
| <b>2018</b> | 5,094 | 5,985 | 3,910 | 7,176 | 6,020 | 7,458 | 5,578 | 3,541 | 2,063 | 1,193 | 1,080 | 1,054 | 928   | 51,080 | 825            |
| <b>2023</b> | 4,950 | 4,269 | 5,985 | 3,910 | 7,176 | 6,020 | 7,458 | 5,578 | 3,180 | 1,250 | 850   | 454   |       | 51,080 | 825            |
| <b>2028</b> | 4,950 | 4,125 | 4,269 | 5,985 | 3,910 | 7,176 | 6,020 | 7,458 | 4,633 | 1,250 | 850   | 454   |       | 51,080 | 825            |
| <b>2033</b> | 4,950 | 4,125 | 4,125 | 4,269 | 5,985 | 3,910 | 7,176 | 6,020 | 7,458 | 1,758 | 850   | 454   |       | 51,080 | 825            |
| <b>2038</b> | 6,100 | 4,125 | 4,125 | 4,125 | 4,269 | 5,985 | 3,910 | 7,176 | 6,020 | 3,941 | 850   | 454   |       | 51,080 | 1,055          |
| <b>2043</b> | 6,330 | 5,045 | 4,125 | 4,125 | 4,125 | 4,269 | 5,985 | 3,910 | 7,176 | 4,686 | 850   | 454   |       | 51,080 | 1,055          |
| <b>2048</b> | 6,330 | 5,275 | 5,045 | 4,125 | 4,125 | 4,125 | 4,269 | 5,985 | 3,910 | 6,587 | 850   | 454   |       | 51,080 | 1,055          |
| <b>2053</b> | 6,330 | 5,275 | 5,275 | 5,045 | 4,125 | 4,125 | 4,125 | 4,269 | 5,985 | 3,324 | 2,748 | 454   |       | 51,080 | 1,055          |
| <b>2058</b> | 6,330 | 5,275 | 5,275 | 5,275 | 5,045 | 4,125 | 4,125 | 4,125 | 4,269 | 5,087 | 1,695 | 454   |       | 51,080 | 1,055          |
| <b>2063</b> | 6,330 | 5,275 | 5,275 | 5,275 | 5,275 | 5,045 | 4,125 | 4,125 | 4,125 | 3,629 | 2,147 | 454   |       | 51,080 | 1,055          |
| <b>2068</b> | 6,330 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,045 | 4,125 | 4,125 | 3,506 | 1,120 | 454   |       | 51,080 | 1,055          |
| <b>2073</b> | 6,330 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,045 | 4,125 | 2,626 | 850   | 454   |       | 51,080 | 1,055          |
| <b>2078</b> | 6,330 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,045 | 1,476 | 850   | 454   |       | 51,080 | 1,055          |
| <b>2083</b> | 6,330 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 5,275 | 1,246 | 850   | 454   |       | 51,080 | 1,055          |

ERF: 5%

**TABLE 9-4: BIRCH MANAGEMENT**

|             | 0-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 | 101+ | Total | Decade Thin Acres | Decade Final Harvest |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|-------|-------------------|----------------------|
| <b>2018</b> | 163  | 40    | 18    | 11    | 46    | 110   | 124   | 144   | 98    |        |      | 754   |                   | 360                  |
| <b>2028</b> | 410  | 113   | 40    | 18    | 11    | 46    | 110   | 6     |       |        |      | 754   |                   | 80                   |
| <b>2038</b> | 116  | 374   | 113   | 40    | 18    | 11    | 46    | 36    |       |        |      | 754   |                   | 30                   |
| <b>2048</b> | 38   | 108   | 374   | 113   | 40    | 18    | 11    | 46    | 6     |        |      | 754   |                   | 40                   |
| <b>2058</b> | 43   | 35    | 108   | 374   | 113   | 40    | 18    | 11    | 12    |        |      | 754   |                   | 130                  |
| <b>2068</b> | 134  | 39    | 35    | 108   | 374   | 50    | 14    |       |       |        |      | 754   |                   | 130                  |
| <b>2078</b> | 143  | 121   | 39    | 35    | 108   | 278   | 30    |       |       |        |      | 754   |                   | 130                  |
| <b>2088</b> | 143  | 130   | 121   | 39    | 35    | 108   | 178   |       |       |        |      | 754   |                   | 130                  |
| <b>2098</b> | 143  | 130   | 130   | 121   | 39    | 35    | 156   |       |       |        |      | 754   |                   | 130                  |
| <b>2108</b> | 143  | 130   | 130   | 130   | 121   | 39    | 35    | 26    |       |        |      | 754   |                   | 130                  |
| <b>2118</b> | 143  | 130   | 130   | 130   | 130   | 66    | 25    |       |       |        |      | 754   |                   | 130                  |

ERF: 10%

**TABLE 9-5: NORTHERN HARDWOODS AND OAK MANAGEMENT**

|             | 0-10  | 11-20 | 21-30 | 31-40 | 41-50 | TSI 51-60 | 61-70 | Thin 71 71-80 | 81-90 | Thin to 71 91-100 | 101+ | Total | Decade Thin Acres | Decade Final Harvest |
|-------------|-------|-------|-------|-------|-------|-----------|-------|---------------|-------|-------------------|------|-------|-------------------|----------------------|
| <b>2018</b> | 1,170 | 79    | 104   | 160   | 109   | 451       | 438   | 1,216         | 1,759 | 1,656             | 728  | 7,870 | 109               | 1,590                |
| <b>2028</b> | 1,750 | 1,010 | 79    | 104   | 160   | 109       | 451   | 438           | 1,216 | 1,759             | 794  | 7,870 | 160               | 1,590                |
| <b>2038</b> | 1,749 | 1,591 | 1,010 | 79    | 104   | 160       | 109   | 451           | 438   | 1,216             | 963  | 7,870 | 104               | 1,390                |

|      |       |       |       |       |       |       |       |       |       |       |     |       |       |       |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|
| 2048 | 1,549 | 1,590 | 1,591 | 1,010 | 79    | 104   | 160   | 109   | 451   | 438   | 789 | 7,870 | 79    | 440   |
| 2058 | 579   | 1,410 | 1,590 | 1,591 | 1,010 | 79    | 104   | 160   | 109   | 451   | 787 | 7,870 | 1,010 | 450   |
| 2068 | 494   | 535   | 1,410 | 1,590 | 1,591 | 1,010 | 79    | 104   | 160   | 109   | 788 | 7,870 | 1,591 | 110   |
| 2078 | 155   | 449   | 535   | 1,410 | 1,590 | 1,591 | 1,010 | 79    | 104   | 160   | 787 | 7,870 | 1,590 | 160   |
| 2088 | 171   | 144   | 449   | 535   | 1,410 | 1,590 | 1,591 | 1,010 | 79    | 104   | 787 | 7,870 | 1,410 | 100   |
| 2098 | 116   | 155   | 144   | 449   | 535   | 1,410 | 1,590 | 1,591 | 1,010 | 79    | 791 | 7,870 | 535   | 80    |
| 2108 | 90    | 106   | 155   | 144   | 449   | 535   | 1,410 | 1,590 | 1,591 | 1,010 | 790 | 7,870 | 449   | 1,010 |
| 2118 | 1,018 | 82    | 106   | 155   | 144   | 449   | 535   | 1,410 | 1,590 | 1,591 | 790 | 7,870 | 449   | 1,010 |

ERF: 10%

**TABLE 9-6: RED PINE MANAGEMENT**

|      | 0-10  | 11-20 | 21-30 | Thin 31-40 | Thin 41-50 | Thin 51-60 | Thin 61-70 | Thin 71-80 | Thin 81-90 | 91-100 | 101+  | Total  | Decade Thin Acres | Decade Final Harvest |
|------|-------|-------|-------|------------|------------|------------|------------|------------|------------|--------|-------|--------|-------------------|----------------------|
| 2018 | 1,476 | 2,585 | 3,250 | 2,212      | 71         | 802        | 263        | 223        | 576        | 820    | 1,286 | 13,564 | 6,821             | 650                  |
| 2028 | 798   | 1,328 | 2,585 | 3,250      | 2,212      | 71         | 802        | 263        | 223        | 576    | 1,456 | 13,564 | 9,183             | 650                  |
| 2038 | 715   | 733   | 1,328 | 2,585      | 3,250      | 2,212      | 71         | 802        | 263        | 223    | 1,382 | 13,564 | 10,248            | 460                  |
| 2048 | 525   | 650   | 733   | 1,328      | 2,585      | 3,250      | 2,212      | 71         | 802        | 263    | 1,145 | 13,564 | 10,179            | 650                  |
| 2058 | 696   | 479   | 650   | 733        | 1,328      | 2,585      | 3,250      | 2,212      | 71         | 802    | 758   | 13,564 | 10,758            | 650                  |
| 2068 | 715   | 631   | 479   | 650        | 733        | 1,328      | 2,585      | 3,250      | 2,212      | 71     | 910   | 13,564 | 9,025             | 650                  |
| 2078 | 715   | 650   | 631   | 479        | 650        | 733        | 1,328      | 2,585      | 3,250      | 1,943  | 600   | 13,564 | 6,406             | 1,200                |
| 2088 | 1,265 | 650   | 650   | 631        | 479        | 650        | 733        | 1,328      | 2,585      | 3,000  | 1,593 | 13,564 | 4,471             | 1,200                |
| 2098 | 1,320 | 1,145 | 650   | 650        | 631        | 479        | 650        | 733        | 1,328      | 2,200  | 3,778 | 13,564 | 3,793             | 1,200                |
| 2108 | 1,320 | 1,200 | 1,145 | 650        | 650        | 631        | 479        | 650        | 733        | 1,328  | 4,778 | 13,564 | 4,205             | 1,200                |
| 2118 | 1,320 | 1,200 | 1,200 | 1,145      | 650        | 650        | 631        | 479        | 650        | 733    | 4,906 | 13,564 | 4,205             | 1,200                |

ERF: 10%

**TABLE 9-7: JACK PINE MANAGEMENT**

|      | 0-10  | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 | 101+ | Total | Decade Thin Acres | Decade Final Harvest |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|-------|-------------------|----------------------|
| 2018 | 1,856 | 1,020 | 478   | 574   | 638   | 334   | 231   | 21    |       |        |      | 5,152 |                   | 960                  |
| 2028 | 1,060 | 1,756 | 1,020 | 478   | 574   | 182   | 82    |       |       |        |      | 5,152 |                   | 580                  |
| 2038 | 676   | 964   | 1,756 | 1,020 | 478   | 182   | 76    |       |       |        |      | 5,152 |                   | 470                  |
| 2048 | 528   | 618   | 964   | 1,756 | 1,020 | 182   | 84    |       |       |        |      | 5,152 |                   | 950                  |
| 2058 | 997   | 481   | 618   | 964   | 1,756 | 251   | 85    |       |       |        |      | 5,152 |                   | 950                  |
| 2068 | 1,045 | 902   | 481   | 618   | 964   | 1,017 | 125   |       |       |        |      | 5,152 |                   | 950                  |
| 2078 | 1,045 | 950   | 902   | 481   | 618   | 856   | 300   |       |       |        |      | 5,152 |                   | 950                  |
| 2088 | 1,045 | 950   | 950   | 902   | 481   | 524   | 300   |       |       |        |      | 5,152 |                   | 950                  |
| 2098 | 1,045 | 950   | 950   | 950   | 902   | 255   | 100   |       |       |        |      | 5,152 |                   | 950                  |
| 2108 | 1,045 | 950   | 950   | 950   | 950   | 207   | 100   |       |       |        |      | 5,152 |                   | 950                  |
| 2118 | 1,045 | 950   | 950   | 950   | 950   | 207   | 100   |       |       |        |      | 5,152 |                   | 950                  |

ERF: 5%

**TABLE 9-8: WHITE SPRUCE MANAGEMENT**

|             | 0-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 | 101+ | Total | Decade Thin Acres | Decade Final Harvest |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|-------|-------------------|----------------------|
| <b>2018</b> | 100  | 378   | 277   | 130   | 32    | 45    | 3     | 13    | 5     |        |      | 983   |                   | 20                   |
| <b>2028</b> | 20   | 100   | 378   | 277   | 130   | 30    | 40    | 3     | 5     |        |      | 983   |                   | 90                   |
| <b>2038</b> | 92   | 18    | 100   | 378   | 277   | 91    | 17    | 10    |       |        |      | 983   |                   | 160                  |
| <b>2048</b> | 169  | 83    | 18    | 100   | 378   | 208   | 17    | 10    |       |        |      | 983   |                   | 160                  |
| <b>2058</b> | 176  | 153   | 83    | 18    | 100   | 313   | 130   | 10    |       |        |      | 983   |                   | 160                  |
| <b>2068</b> | 176  | 160   | 153   | 83    | 18    | 90    | 243   | 60    |       |        |      | 983   |                   | 160                  |
| <b>2078</b> | 176  | 160   | 160   | 153   | 83    | 15    | 70    | 166   |       |        |      | 983   |                   | 160                  |
| <b>2088</b> | 176  | 160   | 160   | 160   | 153   | 70    | 13    | 50    | 41    |        |      | 983   |                   | 160                  |
| <b>2098</b> | 176  | 160   | 160   | 160   | 160   | 112   | 45    | 10    |       |        |      | 983   |                   | 160                  |
| <b>2108</b> | 176  | 160   | 160   | 160   | 160   | 122   | 30    | 15    |       |        |      | 983   |                   | 160                  |
| <b>2118</b> | 176  | 160   | 160   | 160   | 160   | 122   | 30    | 15    |       |        |      | 983   |                   | 160                  |

ERF: 5%

**TABLE 9-9: BALSAM FIR MANAGEMENT**

|             | 0-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 | 101+ | Total | Decade Thin Acres | Decade Final Harvest |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|-------|-------------------|----------------------|
| <b>2018</b> | 244  | 54    | 59    | 80    | 115   | 418   | 224   | 217   |       |        |      | 1,411 |                   | 470                  |
| <b>2028</b> | 595  | 119   | 54    | 59    | 80    | 115   | 389   |       |       |        |      | 1,411 |                   | 230                  |
| <b>2038</b> | 277  | 548   | 119   | 54    | 59    | 80    | 115   | 159   |       |        |      | 1,411 |                   | 230                  |
| <b>2048</b> | 253  | 254   | 548   | 119   | 54    | 59    | 80    | 44    |       |        |      | 1,411 |                   | 230                  |
| <b>2058</b> | 253  | 230   | 254   | 548   | 86    | 25    | 15    |       |       |        |      | 1,411 |                   | 290                  |
| <b>2068</b> | 313  | 230   | 230   | 254   | 344   | 25    | 15    |       |       |        |      | 1,411 |                   | 290                  |
| <b>2078</b> | 319  | 284   | 230   | 230   | 254   | 79    | 15    |       |       |        |      | 1,411 |                   | 290                  |
| <b>2088</b> | 319  | 290   | 284   | 230   | 230   | 43    | 15    |       |       |        |      | 1,411 |                   | 290                  |
| <b>2098</b> | 319  | 290   | 290   | 284   | 188   | 25    | 15    |       |       |        |      | 1,411 |                   | 290                  |
| <b>2108</b> | 319  | 290   | 290   | 290   | 182   | 25    | 15    |       |       |        |      | 1,411 |                   | 290                  |
| <b>2118</b> | 319  | 290   | 290   | 290   | 182   | 25    | 15    |       |       |        |      | 1,411 |                   | 290                  |

ERF: 5%

**TABLE 9-10: BLACK SPRUCE MANAGEMENT**

|             | 0-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 | 101+  | Total | Decade Thin Acres | Decade Final Harvest |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------------------|----------------------|
| <b>2018</b> | 316  | 131   | 128   | 93    | 216   | 171   | 230   | 306   | 327   | 385    | 921   | 3,224 |                   | 300                  |
| <b>2028</b> | 360  | 256   | 131   | 128   | 93    | 216   | 171   | 230   | 306   | 327    | 1,006 | 3,224 |                   | 300                  |
| <b>2038</b> | 330  | 330   | 256   | 131   | 128   | 93    | 216   | 171   | 230   | 306    | 1,033 | 3,224 |                   | 300                  |
| <b>2048</b> | 330  | 300   | 330   | 256   | 131   | 128   | 93    | 216   | 171   | 230    | 1,039 | 3,224 |                   | 300                  |
| <b>2058</b> | 330  | 300   | 300   | 330   | 256   | 131   | 128   | 93    | 216   | 171    | 969   | 3,224 |                   | 300                  |
| <b>2068</b> | 330  | 300   | 300   | 300   | 330   | 256   | 131   | 128   | 93    | 216    | 840   | 3,224 |                   | 300                  |

|      |     |     |     |     |     |     |     |     |     |     |     |       |  |     |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|--|-----|
| 2078 | 330 | 300 | 300 | 300 | 300 | 330 | 256 | 131 | 128 | 93  | 756 | 3,224 |  | 300 |
| 2088 | 330 | 300 | 300 | 300 | 300 | 300 | 330 | 256 | 131 | 128 | 549 | 3,224 |  | 300 |
| 2098 | 330 | 300 | 300 | 300 | 300 | 300 | 300 | 330 | 256 | 131 | 377 | 3,224 |  | 300 |
| 2108 | 330 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 330 | 188 | 276 | 3,224 |  | 300 |
| 2118 | 330 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 218 | 276 | 3,224 |  | 300 |

ERF: 10%

**TABLE 9-11: TAMARACK MANAGEMENT**

|      | 0-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 | 101+ | Total | Decade Thin Acres | Decade Final Harvest |
|------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|-------|-------------------|----------------------|
| 2018 | 811  | 308   | 204   | 248   | 477   | 480   | 267   | 308   | 650   | 396    | 710  | 4,859 |                   | 710                  |
| 2028 | 910  | 611   | 308   | 204   | 248   | 477   | 480   | 267   | 308   | 650    | 396  | 4,859 |                   | 710                  |
| 2038 | 781  | 839   | 611   | 308   | 204   | 248   | 477   | 480   | 267   | 308    | 336  | 4,859 |                   | 710                  |
| 2048 | 781  | 710   | 839   | 611   | 308   | 204   | 248   | 477   | 480   | 144    | 57   | 4,859 |                   | 710                  |
| 2058 | 781  | 710   | 710   | 839   | 611   | 308   | 204   | 248   | 284   | 107    | 57   | 4,859 |                   | 710                  |
| 2068 | 781  | 710   | 710   | 710   | 839   | 611   | 120   | 107   | 107   | 107    | 57   | 4,859 |                   | 710                  |
| 2078 | 781  | 710   | 710   | 710   | 710   | 753   | 107   | 107   | 107   | 107    | 57   | 4,859 |                   | 710                  |
| 2088 | 781  | 710   | 710   | 710   | 710   | 710   | 150   | 107   | 107   | 107    | 57   | 4,859 |                   | 710                  |
| 2098 | 781  | 710   | 710   | 710   | 710   | 710   | 150   | 107   | 107   | 107    | 57   | 4,859 |                   | 710                  |
| 2108 | 781  | 710   | 710   | 710   | 710   | 710   | 150   | 107   | 107   | 107    | 57   | 4,859 |                   | 710                  |
| 2118 | 781  | 710   | 710   | 710   | 710   | 710   | 150   | 107   | 107   | 107    | 57   | 4,859 |                   | 710                  |

ERF: 10%

**SUMMARY OF MANAGEMENT OUTCOMES:** The outcomes of forest management and the timber harvest on Beltrami County managed lands is a dynamic process. NRM will continue to strive for a sustainably managed forest through careful inventory review, evaluation, and planning.

Assuming stable timber markets and forest product industries, the planned harvest should maintain revenues generated from timber sales.

## 9.5 TIMBER SALE PROCESS AND PROCEDURES

**INVENTORY ANALYSIS/STAND SELECTION:** Foresters analyze and select specific stands from the forest inventory database. This inventory contains important stand feature information from field inventories. Important features include forest cover type, age, tree species composition, size of trees, volumes, and other factors regarding site potential and limitations that may influence stand and forest management decisions. Information is also collected from a variety of environmental databases for soils information, natural heritage features, cultural sites, insect and disease surveys, etc.

**SELECTED STAND FIELD INSPECTION:** A field reconnaissance of the selected stand is performed to verify features identified from the inventory data and to analyze the stand to determine stand/forest management objectives and opportunities.

**TIMBER SALE PREP:** On those stands ready for treatment, the forester will perform the following activities:

- Locate any nearby corner monuments and estimate property line locations;
- Determine forest management and silvicultural objectives;
- Mark harvest boundaries: the entire stand, a portion of the stand, or a combination with portions of adjacent stands;
- Mark special features of the site such as riparian zones, trees to be reserved, and reserve patches;
- Perform a timber cruise to determine species timber volumes and other relevant criterion; and
- Note specific features such as historical and cultural sites, species of concern, etc.



Blue marking paint in a timber sale

**PROJECT PLAN/FOREST MANAGEMENT PRESCRIPTION:** After fieldwork is complete, a written management prescription for the stand/harvest area is prepared and entered into the Project Plan database system. The stand management prescription reflects the forester’s analysis of the stand:

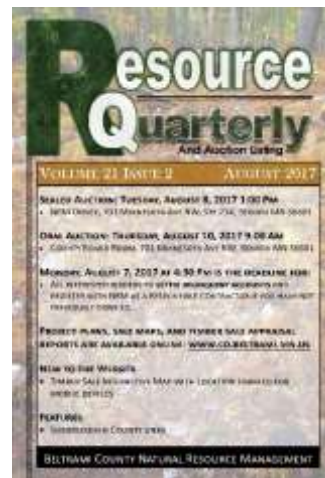
- Describes management objectives, forest measurements, and silvicultural actions;
- Lists features of the stand and identifies actions related to best management practices (BMP), water quality BMP, riparian zones, and other natural features; and
- Indicates forest regeneration plans for the site.

**PROJECT PLAN APPROVAL/PRESCRIPTION APPROVAL:** The project plan/prescription is reviewed and approved by the Land Commissioner and includes:

- Landscape and stand level management objectives
- Harvest regulations
- Species value appraisal information
- Tree species and silvics
- BMP characteristics
- Forest Management Plan criteria
- Specific stand management objectives
- Site ecology and classification
- Aerial photographs

**TIMBER SALE WRITE-UP:** Once the project plan/prescription is approved, a stand/harvest area is offered for sale via public timber sale auction. Auction tract information includes detailed harvesting regulations, harvest dates, sale volumes and prices, map and legal description, the management prescription and stand inventory data.

**AUCTION:** Three timber auctions are held each year with approximately 15 to 20 tracts available per auction. Tracts are offered as either sealed or oral bid. Sealed bid tracts are submitted in sealed envelopes and awarded to the highest bidder. Oral bid tracts allow direct bidding with other contractors. Bidders must be on the Beltrami County Responsible Contractor’s list in order to purchase auction tracts.



Auction booklet

**TIMBER SALE PRE-HARVEST MEETING:** Logging contractors must inform NRM staff when they intend to begin harvest activities. Loggers meet with the forester prior to harvesting for a “Pre-Work”. This meeting discusses silviculture prescription/harvest plan, property boundaries, and contract provisions that may include, but not limited to, items such as:

- Consumer Scale Agreement
- Snag and den tree treatments

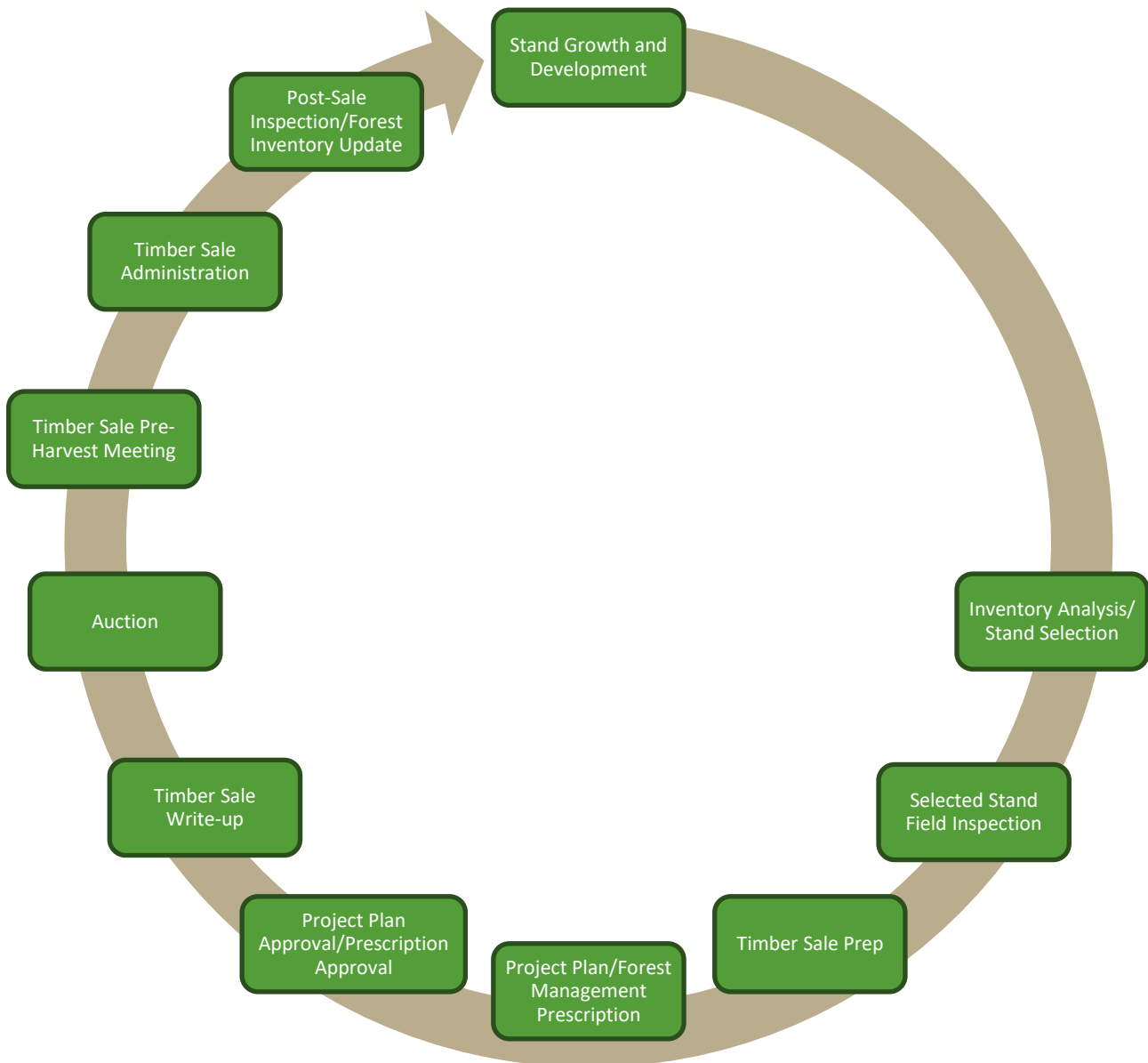
- Riparian Management Zones (RMZ) treatments
- Roads, skid trails, and landing locations
- Slash disposal
- Utilization standards
- Wetlands and reserved areas

A “Pre-Work Inspection Checklist” form is reviewed, signed, and filed. Proof of insurance and payment are required before any logging activities begin.

**TIMBER SALE ADMINISTRATION:** Foresters inspect the site during harvest operations on a regular basis to determine if the prescription and contract provisions are being followed and completes written timber sale inspection reports. Foresters have full authority to halt operations if the provisions of the timber sale contract are not adhered to (e.g., damage to residual trees, rutting, trespass, etc.).

**POST-SALE INSPECTION/FORREST INVENTORY UPDATE:** Once harvesting is complete, the forester completes a final inspection to determine if all terms of the timber sale were satisfied and prepares a final inspection report prior to closing the sale. Following timber sale closure, the forester updates the forest inventory database and completes a survey to ensure adequate species regeneration.

**FIGURE 9-1: TIMBERS SALE PROCESS**



## APPENDIX A: DEFINITIONS

The following definitions come from the Society of American Foresters' *"The Dictionary of Forestry"*.

**BASAL AREA:** the cross-sectional area of all stems of a species or all stems in a stand measured at breast height (4.5 ft above the ground) and expressed per unit of land area.

**EVEN-AGED MANAGEMENT:** regenerating and maintaining a stand to be a single age class.

- **CLEARCUT:** a regeneration or harvest method that removed essentially all trees in a stand.



- **SHELTERWOOD:** the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment. The sequence of treatments can include three types of cuttings: an optional preparatory cut to enhance conditions for seed production, an establishment cut to prepare the seed bed and to create a new age class, and a removal cut to release established regeneration from competition with the overwood.



- **SEED TREE:** the cutting of all trees except a small number of widely dispersed trees retained for seed production and to produce a new age class. Seed trees are usually removed after regeneration is established.



**SILVICULTURE:** the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.

**SILVICULTURE SYSTEM:** a planned series of treatments for tending, harvesting, and re-establishing a stand.

**THINNING:** a cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality.

**TIMBER STAND IMPROVEMENT (TSI):** an intermediate treatment made to improve the composition, structure, condition, health, and growth of even- or uneven-aged stands.

**UNEVEN-AGED MANAGEMENT:** regenerating and maintaining a multiaged structure by removing some trees in all size classes either singly, in small groups, or in strips.

- **SINGLE TREE SELECTION:** individual trees of all size classes are removed more or less uniformly throughout the stand, to promote growth of remaining trees and to provide space for regeneration.



- **GROUP SELECTION:** trees are removed and new age classes are established in small groups. The width of groups is commonly approximately twice the height of the mature trees with smaller openings providing microenvironments suitable for tolerant regeneration and larger openings providing conditions suitable for more intolerant regeneration.





## APPENDIX B: SPECIES OF CONCERN IN BELTRAMI COUNTY

| Common Name                   | Scientific Name                                     | Group          | State Status    |
|-------------------------------|---|----------------|-----------------|
| A Caddisfly                   | <i>Limnephilus secludens</i>                        | Insect         | Endangered      |
| A Caddisfly                   | <i>Oxyethira itascae</i>                            | Insect         | Special concern |
| American White Pelican        | <i>Pelecanus erythrorhynchos</i>                    | Bird           | Special concern |
| Barren Strawberry             | <i>Waldsteinia fragarioides var. fragarioides</i>   | Vascular plant | Special concern |
| Big Brown Bat                 | <i>Eptesicus fuscus</i>                             | Mammal         | Special concern |
| Black Sandshell               | <i>Ligumia recta</i>                                | Mussel         | Special concern |
| Blanding's Turtle             | <i>Emydoidea blandingii</i>                         | Reptile        | Threatened      |
| Bog Adder's Mouth             | <i>Malaxis paludosa</i>                             | Vascular plant | Endangered      |
| Bog Rush                      | <i>Juncus stygius var. americanus</i>               | Vascular plant | Special concern |
| Clinton's Bulrush             | <i>Trichophorum clintonii</i>                       | Vascular plant | Threatened      |
| Coastal Sedge                 | <i>Carex exilis</i>                                 | Vascular plant | Special concern |
| Common Moonwort               | <i>Botrychium lunaria</i>                           | Vascular plant | Threatened      |
| Common Tern                   | <i>Sterna hirundo</i>                               | Bird           | Threatened      |
| Creek Heelsplitter            | <i>Lasmigona compressa</i>                          | Mussel         | Special concern |
| Cuckoo Flower                 | <i>Cardamine pratensis</i>                          | Vascular plant | Threatened      |
| English Sundew                | <i>Drosera anglica</i>                              | Vascular plant | Special concern |
| Few-flowered Spikerush        | <i>Eleocharis quinqueflora</i>                      | Vascular plant | Special concern |
| Forster's Tern                | <i>Sterna forsteri</i>                              | Bird           | Special concern |
| Goblin Fern                   | <i>Botrychium mormo</i>                             | Vascular plant | Threatened      |
| Goldie's Fern                 | <i>Dryopteris goldiana</i>                          | Vascular plant | Special concern |
| Horned Grebe                  | <i>Podiceps auritus</i>                             | Bird           | Endangered      |
| Jointed Rush                  | <i>Juncus articulatus</i>                           | Vascular plant | Endangered      |
| Lake Sturgeon                 | <i>Acipenser fulvescens</i>                         | Fish           | Special concern |
| Lapland Buttercup             | <i>Ranunculus lapponicus</i>                        | Vascular plant | Special concern |
| Least Moonwort                | <i>Botrychium simplex</i>                           | Vascular plant | Special concern |
| Linear-leaved Sundew          | <i>Drosera linearis</i>                             | Vascular plant | Special concern |
| Little Brown Myotis           | <i>Myotis lucifugus</i>                             | Mammal         | Special concern |
| Marbled Godwit                | <i>Limosa fedoa</i>                                 | Bird           | Special concern |
| McCalla's Willow              | <i>Salix maccalliana</i>                            | Vascular plant | Special concern |
| Mingan Moonwort               | <i>Botrychium minganense</i>                        | Vascular plant | Special concern |
| Montane Yellow-eyed Grass     | <i>Xyris montana</i>                                | Vascular plant | Special concern |
| Narrow Triangle Moonwort      | <i>Botrychium lanceolatum ssp. angustisegmentum</i> | Vascular plant | Threatened      |
| Nelson's Sparrow              | <i>Ammodramus nelsoni</i>                           | Bird           | Special concern |
| Northern Barrens Tiger Beetle | <i>Cicindela patruela patruela</i>                  | Insect         | Special concern |
| Northern Bog Lemming          | <i>Synaptomys borealis</i>                          | Mammal         | Special concern |
| Northern Goshawk              | <i>Accipiter gentilis</i>                           | Bird           | Special concern |
| Northern Long-eared Bat*      | <i>Myotis septentrionalis</i>                       | Mammal         | Special concern |
| Northern Oak Fern             | <i>Gymnocarpium robertianum</i>                     | Vascular plant | Special concern |
| Northern Sunfish              | <i>Lepomis peltastes</i>                            | Fish           | Special concern |
| Olive-colored Southern Naiad  | <i>Najas guadalupensis ssp. olivacea</i>            | Vascular plant | Special concern |
| Pale Moonwort                 | <i>Botrychium pallidum</i>                          | Vascular plant | Special concern |
| Prairie Moonwort              | <i>Botrychium campestre</i>                         | Vascular plant | Special concern |
| Pugnose Shiner                | <i>Notropis anogenus</i>                            | Fish           | Threatened      |
| Purple Martin                 | <i>Progne subis</i>                                 | Bird           | Special concern |
| Ram's Head Orchid             | <i>Cypripedium arietinum</i>                        | Vascular plant | Threatened      |
| Red-shouldered Hawk           | <i>Buteo lineatus</i>                               | Bird           | Special concern |
| Sheathed Pondweed             | <i>Stuckenia vaginata</i>                           | Vascular plant | Endangered      |
| Short-eared Owl               | <i>Asio flammeus</i>                                | Bird           | Special concern |
| Small White Waterlily         | <i>Nymphaea leibergii</i>                           | Vascular plant | Threatened      |
| Spiral Ditchgrass             | <i>Ruppia cirrhosa</i>                              | Vascular plant | Special concern |
| St. Lawrence Grapefern        | <i>Botrychium rugulosum</i>                         | Vascular plant | Special concern |
| Subarctic Darner              | <i>Aeshna subarctica</i>                            | Insect         | Special concern |
| Torrey's Mannagrass           | <i>Torreyochloa pallida</i>                         | Vascular plant | Special concern |
| Trumpeter Swan                | <i>Cygnus buccinator</i>                            | Bird           | Special concern |
| Twig Rush                     | <i>Cladium mariscoides</i>                          | Vascular plant | Special concern |
| White Adder's Mouth           | <i>Malaxis monophyllos var. brachypoda</i>          | Vascular plant | Special concern |
| Wilson's Phalarope            | <i>Phalaropus tricolor</i>                          | Bird           | Threatened      |
| Yellow Rail                   | <i>Coturnicops noveboracensis</i>                   | Bird           | Special concern |
| Zigzag Darner                 | <i>Aeshna sitchensis</i>                            | Insect         | Special concern |

Source: MN DNR 2018

\*Northern Long-eared Bat has a Federal status of threatened.

**BELTRAMI COUNTY FOREST MANAGEMENT PLAN COMMENT REVIEW PROCESS:**

The draft plan was sent to the following stakeholders requesting input and comments: Bemidji Area Cross Country Ski Club, North Country Snowmobile Club, Northwoods Riders OHV Club, Go & Whoa Harness Club, Red Lake Nation, Leech Lake Band of Ojibwe, US Forest Service, MN DNR, Cass Forest Products, Norbord, Packaging Corporation of America – Boise, PotlatchDeltic, UPM Blandin, MN Logger Education Program, MN Forest Industries, Sustainable Forestry Initiative, and the Mississippi Headwaters Audubon Society. The draft plan was also placed on the home page of the Beltrami County website and advertised in the Bemidji Pioneer requesting input and comments during the June 6, 2018 to July 9, 2018 period.

The following comments were received during the 30-day review process of the Beltrami County Forest Management Plan 2018:

| Stakeholder Comment   | County Response |
|---|-----------------|
| <ul style="list-style-type: none"> <li>No comments were received during or after the 30-day comments period from June 6, 2018 to July 9, 2018.</li> </ul> |                 |