

# PRELIMINARY DECISION MEMO

## Birch Lake Plantation Thinning

USDA Forest Service, Eastern Region, Superior National Forest  
Kawishiwi Ranger District  
St. Louis County, Minnesota  
(T 61 N, R 12 W, Section 31)

### I. PURPOSE OF THE ACTION

#### **A. Background**

The Kawishiwi Ranger District, Superior National Forest, is proposing to thin about 68 acres of red and white pine in the Birch Lake Plantation (Figure 1).



Figure 1. Birch Lake Plantation before installation of thinning experiment in 1957.

The Birch Lake Plantation has a rich history in the Superior National Forest (SNF). The 120 acre red pine (*Pinus. resinosa*) plantation is located just east of Babbitt, south of Birch Lake and north of county road 623 (Figure 2). It is the oldest plantation on the SNF. Plantation establishment followed a stand replacing fire in 1914. The seed source for the plantation was collected from Chippewa Native Americans in 1911 as requested by J.A. Fitzwater, SNF Supervisor 1910-12. Seeds were then planted at the Baird Ranger Station, the first ranger station in the SNF and named after John S. Baird, the first supervisor of SNF at its establishment in 1909. Seedlings were pulled and transported by lumber company steamboat across Birch Lake for 8x8 foot planting of the west half of the site in 1915. Planting halted in June 1915 due to a “severe snowstorm”, and the remaining portion (east half) of the site was planted in 1917.

Since the establishment of the plantation, several studies have been conducted prior to the plantations’ first commercial thinning in 1957. In 1931 researchers studied how red pine

competes with encroaching aspen (*Populus spp.*). In 1934 to 1938 pruning of red pine was completed on a portion of the plantation to evaluate the response of red pine form and condition. Then in 1941 a pathology study was completed evaluating the condition of red and white pine in the plantation. The current thinning study is the only continuing experiment conducted in the plantation and originated in 1957. The study was established in partnership with the Superior National Forest and the Northern Research Station (then the Lake States Forest Experiment Station) and evaluates differing levels of growing stock levels in combination with different cutting methods.

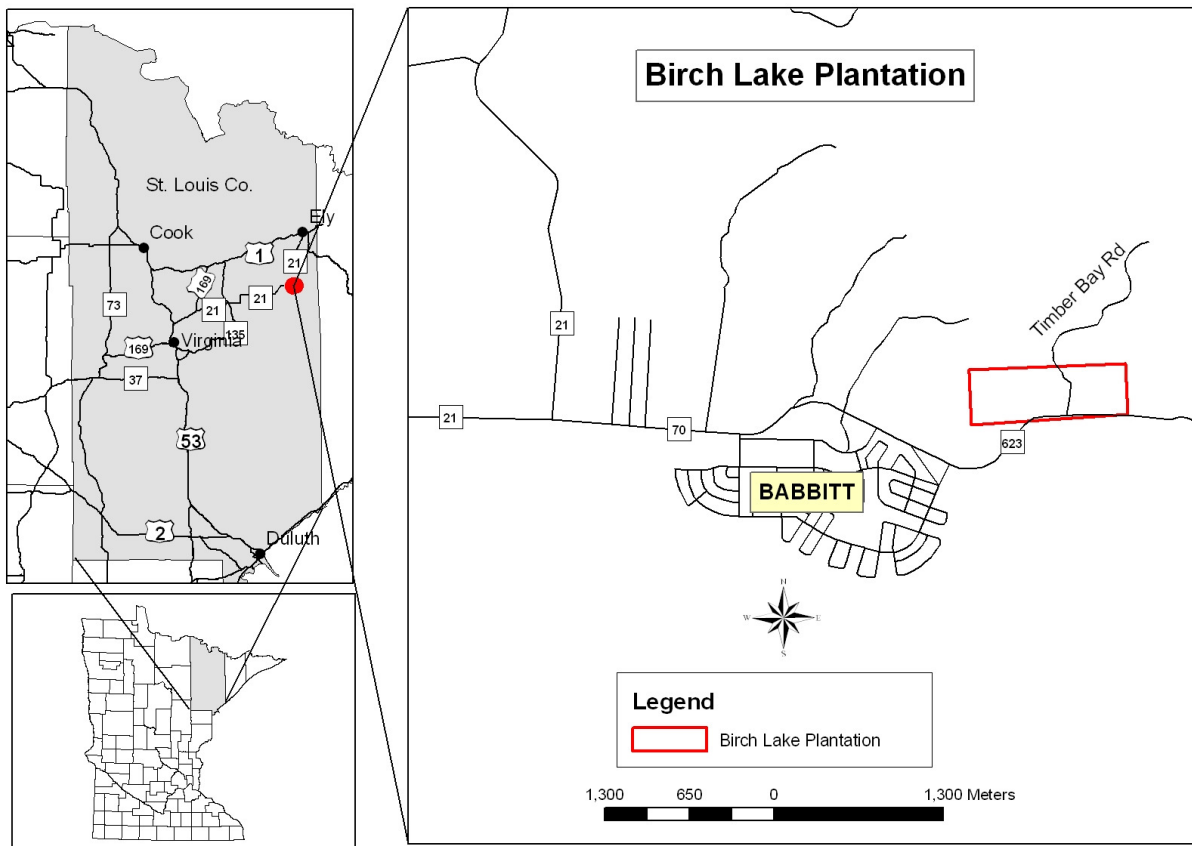


Figure 2. Location map of Birch Lake Plantation

## B. Purpose of the Project

This project would allow approximately 68 acres of commercial thinning of overstocked red pine (including the 37 acres of study stands as described below) in two units on federal land at the Birch Lake Plantation. Unit 1 (eastern unit) is approximately 32 acres and Unit 2 (western unit) is approximately 36 acres (Figure 4). The primary purpose of the project is to contribute to research on the silvicultural properties of the red pine. Additional benefits gained by the project would be to provide trees for sawlogs and specialty products, a reduction in hazardous fuels to protect people and resources from potential wildfire, an improvement in visual quality, a reduced risk of insect and disease infestation and an increase in the potential health and vigor of the overstocked treatment units.

Reapplying the treatments to this study is essential if a quality research study is to be sustained. Maintenance of treatments also emphasizes the historical importance of the

plantation. The Birch Lake Plantation Study is unique in that it focuses on managing red pine at differing growing stock levels, as well as evaluating differences in cutting methods. The study is also rare in that it has been monitored for the past 50 years. The study is invaluable to the discipline of silviculture and to forest managers.

The objective of the research study is to determine the effects of different growing stock levels in combination with different cutting methods on red pine growth and yield. The combined basal area levels and methods of thinning were established with residual basal area levels (growing stock levels) of 30, 60, 90, 120, and 150 square feet per acre. Cutting methods were imposed on each of the five growing stock levels. Cut From Above, where the largest trees are removed at each thinning; Cut From Below, where the smaller trees are removed at each thinning; and Cut From Above and Below, where half the basal area is removed by each of the thinning methods. The treatments are replicated three times. Additionally, three replicates of an unharvested control are included. Growth and yield measurements are made on 1/5<sup>th</sup> acre permanent plots centered in a total of 56 approximately one acre treatment stands.

The 30 and 60 square foot basal area growing stock treatments were thinned in 1957 and 1962 and have not been thinned since, due to low residual densities and recommendations of the 1977 Managers Handbook for Red Pine. The 90, 120, and 150 square foot growing stock treatments were thinned to prescribed levels in 1957, 1962, 1974, 1984, and 1993. The study was sampled last in 2003 and basal areas are at least 20 ft<sup>2</sup>/ac higher than treatment level goals for all stocking levels (Table 1).

Table 1. Mean basal area (ft<sup>2</sup>/ac) and standard error by growing stock treatment in 2003.

<b>Residual Basal Area (RBA) Treatment Goal (ft<sup>2</sup>/ac)</b>	<b>2003 Basal Area (ft<sup>2</sup>/ac)</b>	<b>Standard Error</b>
30	123.9	3.4
60	177.2	5.3
90	108.8	2.0
120	139.8	1.2
150	173.0	1.3
Control	279.5	9.4

Reapplying the treatments would involve thinning all growing stock treatments (excluding control reserve areas) (Figure 3) to the desired residual basal areas (Figure 4) using designated cutting methods. No new roads or landings would be needed, as this study has been thinned five times and those areas have access points already established. However, just like in the past treatments, some sections of the ski trail system will be utilized to facilitate access into several treatment areas. Even though 102 acres were treated back in the 1993 treatment, timber removal volume on this proposed treatment of 68 acres can potentially be higher than the 1993 harvest (1993 volumes were 50 mbf and 60 cords pulp). This assumption is based on the premise that the 1993 removals represented 10 years of growth and this thinning will remove 16 years of growth on the 90, 120, and 150 RBA treatments and 47 years growth on the 30 and 60 RBA treatments.

## **II. PROPOSED ACTION**

The Birch Lake Plantation study is 46 (36.5 acres of thinning treatments) acres including controls (Figure 3). The sale units would include adjacent areas of the plantation that are also considered overstocked and would be thinned (like in the past treatments) at the same time as the study treatment blocks to make the sale economically viable (Figure 4). These adjacent areas will be thinned with a target basal area of 90 and treatment will utilize the cut from above and below method of thinning throughout this added area. There will be a total of 68 acres thinned. Approximately 65 acres of red pine would be thinned and 3 acres of white pine. Tree species allowed to be harvested include red pine, white pine, aspen, balsam fir, paper birch, spruce, maple and oak. Pre and post-harvest basal areas are listed in Table 1 above. Normal thinning operations on previously established roads and landings would be utilized in the harvest plan and no new roads would be created. Main access into the plantation would be from Timber Bay Road (this road leads to the Timberbay Resort north of the Plantation) and County Road 623. Since the treatment is an intermediate thinning, the harvest areas would remain the same forest type and age. However, the main indirect effects of the thinning treatments would likely promote establishment of shade tolerant conifers (especially where target residual basal area is on the lower end) including white pine, balsam fir, white spruce, in addition to hardwood species such as red maple, bur oak, and paper birch (Figure 5).

In order to minimize impacts to recreational use in the area, restrictions would be placed on the timing of harvest. The sale would be separated into two harvest units with one unit requiring completion before harvesting started on the other. The first harvest unit to be harvested is Unit 1. Harvest operations would begin September 1, 2009 (or the earliest possible date after September 1). This harvest would not be allowed to occur during the Minnesota Deer hunting rifle season (November 16 through November 25th). Harvest would resume November 26th through December 17 (providing there is significant snow on the ground for the ski trails, otherwise harvest would continue until December 31, 2009). Harvest during the month of December would be allowed between Mondays through Thursdays and would not occur during the weekend.

The harvest of Unit 2 would be started in late winter when the drainage separating both units is frozen enough to minimize negative soil impacts. This harvest would commence in mid March and continue until complete.

All operating slash resulting from harvest operations would be lopped to within 3 feet of the ground and scattered concurrent with operations. Within a strip 100 feet in width, measured from the cleared right of way of County Road 623 and Forest Road 131, all operating slash would be removed (slash-free zone) and deposited within the rest of the harvest units and would be lopped to within 3 feet of the ground and scattered concurrent with operations. Within a strip 25 feet in width, measured from either edge of the ski trail portions within the harvest units, all operating slash would be removed (slash-free zone) and deposited within the rest of the harvest units and would be lopped to within 3 feet of the ground and scattered concurrent with operations.

All operations would adhere to Forest Plan standards and guidelines. Additionally, management activities will be conducted in accordance with best management practices as outlined in Sustaining Minnesota Forest Resources: Voluntary Site-level Forest Management Guidelines (2005). The harvest operation is of a size and type that it would not to significantly alter the quality of the human environment. See the Relationship to Extraordinary Circumstances section below for more discussion on this point.

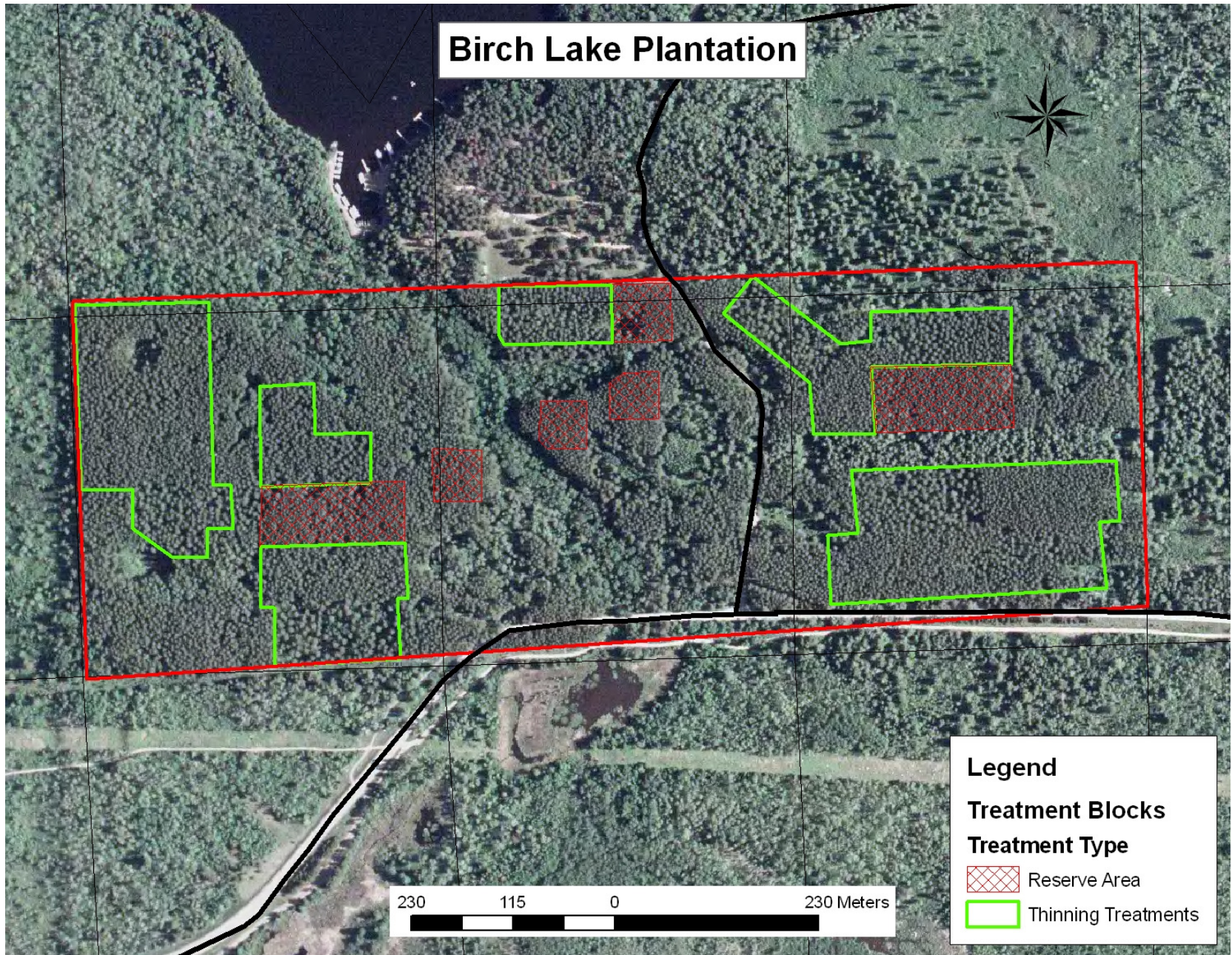


Figure 3. Location of research treatments and reserve blocks in the Birch Lake Plantation.

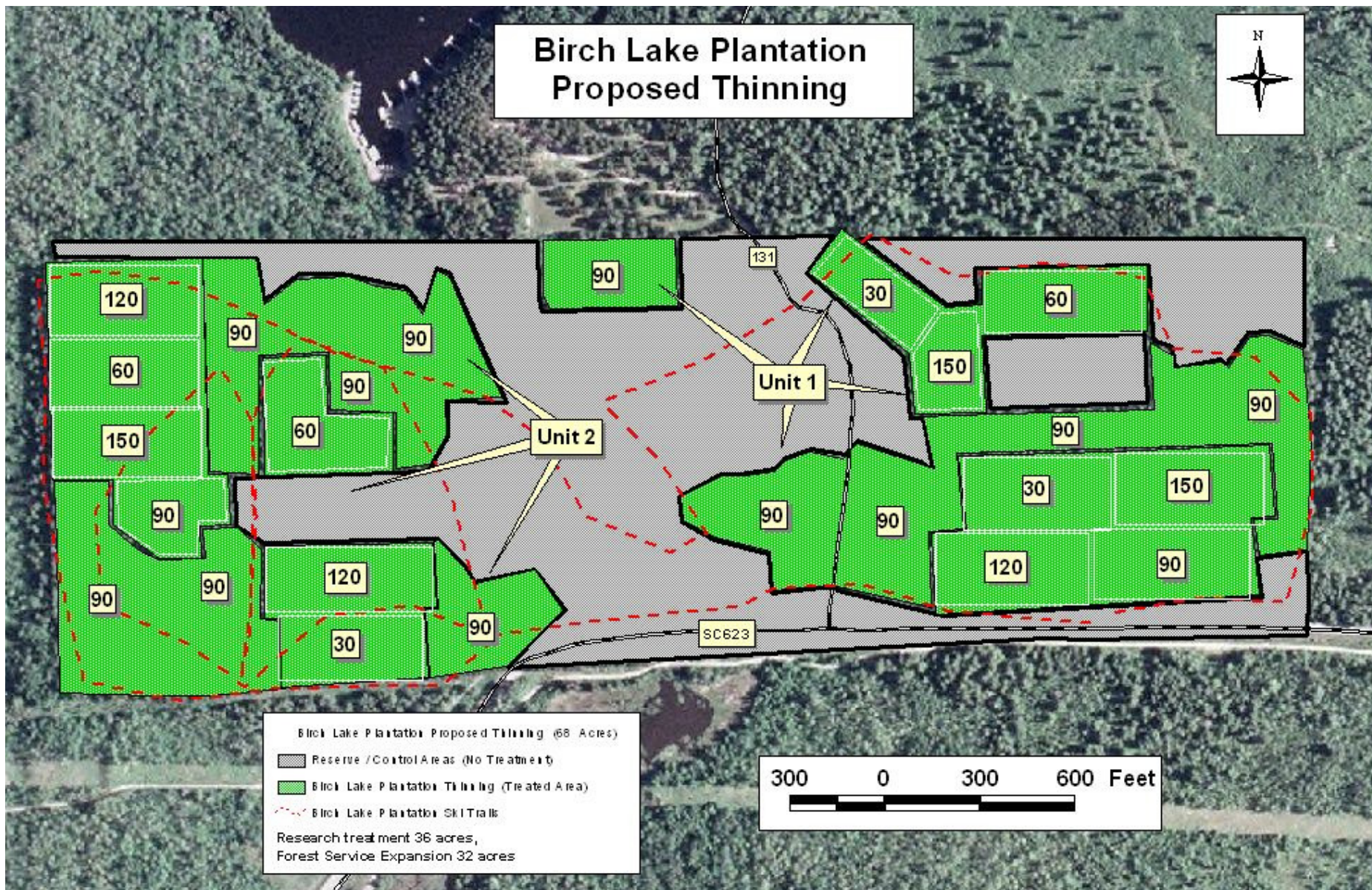


Figure 4. Location of research treatments, surrounding areas, target residual basal areas and reserve blocks in the Birch Lake Plantation.



Figure 5. Birch Lake Plantation in 2008.

### **III. PUBLIC INVOLVEMENT**

A public tour and information session was conducted in April 2009 at the Birch Lake Plantation. 133 letters inviting comment with this preliminary decision memo were mailed to interested individuals and groups; county and state officials; and adjacent landowners. In addition, a legal notice was published in the Ely Echo. The project is also listed in the Superior Quarterly, a newsletter published by the Superior National Forest.

This project was also scoped internally on February 2, 2009. Staff consulted on this project included: District Ranger Mark Van Every, Forest Environmental Coordinator Peter Taylor, Resource Specialist Denise Dexter, Natural Resource Officer Mary Shedd, District Silviculturalist David Hernandez, NRS Research Ecologist Brian Palik, NRS Ecologist Doug Kastendick, and Soil Scientist Casey McQuiston.

### **IV. REASONS FOR CATEGORICALLY EXCLUDING THE DECISION**

Decisions may be categorically excluded from documentation in an environmental impact statement or environmental assessment when they are within one of the categories identified by the U.S. Department of Agriculture in 7 CFR part 1b.3 or one of the categories identified by the Chief of the Forest Service in Forest Service Handbook (FSH) 1909.15

sections 31.1b or 31.2, and there are no extraordinary circumstances related to the decision that may result in a significant individual or cumulative environmental effect.

### **A. Category of Exclusion**

The project is within the category of exclusion 31.2(12) for “Harvest of live trees not to exceed 70 acres, requiring no more than ½ mile of temporary road construction.” This study directly applies to the following examples included in this category:

- (i) Removal of individual trees for sawlogs, specialty products, or fuelwood and
- (ii) commercial thinning of overstocked stands to achieve the desired stocking level to increase health and vigor.

### **B. Relationship to Extraordinary Circumstances**

1. Threatened and Endangered Species or Their Critical Habitat: The Endangered Species Act (ESA) requires that federal activities do not jeopardize the continued existence of any species federally listed or proposed as threatened or endangered, or result in adverse modification to such species’ designated critical habitat. The only threatened species on the Superior National Forest at this time is the Canada lynx since the western Great Lakes population of gray wolf was recently delisted. Preliminary analysis indicates that this project *may affect but is not likely to adversely affect* lynx. This is based on the following reasons:

- a) No known occurrences of Canada lynx denning or foraging occur in the project area.
- b) Unsuitable or marginal habitats for denning exist within the project area.
- c) Prey species for foraging individuals would not change as a result of this project.
- d) Human access would not change as a result of this project.
- e) No new roads would be created with this project.
- f) Project operations would be short in duration and small in scale.

This project is with in an area historically maintained for a silvicultural study and also contains several recreational skiing/hiking trails throughout. Marginal denning habitat would limit opportunities for lynx and make it unlikely lynx would use this area. This defined project area is somewhat isolated from the major portion of LAU 9. Lack of corridors due to human development and Birch Lake would also make it unlikely that lynx may use this area.

The USFWS will be consulted and the biological assessment will be completed prior to the signing of the final decision memo. These will be summarized in the final decision memo.

### 2. Floodplains, wetlands and municipal watersheds:

Floodplains: Much of unit 2 is bordered along the east by a stream channel that flows into Birch Lake to the north. This stream runs through lowland brush and floodplain black ash mixed with aspen and birch. Where stream channels exist or are discovered during implementation, the Operational Standards and Guidelines described in the 2004 Superior National Forest Land and Resource Management Plan and 2005 Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines would be



incorporated to minimize impacts to water and soil resources. This project would not result in significant floodplain related impacts.

Wetlands: The southern east edge of unit 2 is bordered by a stream channel that flows into Birch Lake to the north. This stream runs through lowland brush and floodplain black ash mixed with aspen and birch. No treatment activities would occur without adhering to the Operational Standards and Guidelines described in the 2004 Superior National Forest Land and Resource Management Plan and 2005 Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines to minimize impacts to wetland resources. Examples of these practices include conducting mechanical activities during frozen ground conditions or removing the area from treatment and prohibiting fueling of equipment within wetlands. This project would not result in significant wetland impacts.

Municipal Watersheds: There are two municipal watersheds located on the Superior National Forest: Burntside Lake that serves the community of Ely and Colby Lake which serves the community of Hoyt Lakes. The project area is located 13 miles from Burntside Lake and 17 miles from Colby Lake. The distance to these municipal watersheds, small scale of activities and mitigation measures preclude overland effects of this project on these watersheds. This project would not result in significant municipal watershed related impacts.

### 3. Congressionally Designated Wilderness, Wilderness Study Area, National Recreation Area:

The project is located 14 miles away from the Boundary Waters Canoe Area Wilderness. The distance from the wilderness and the limited nature of activities proposed precludes the possibility of effects to solitude in the wilderness from noise or visual quality changes. Effects to water quality, wildlife, vegetation, the spread of non-native invasive species, or air quality in the wilderness would be either negligible or nonexistent due to the distance from the wilderness and the limited scope of activities involved. Forest Plan standards and guidelines would be followed to further reduce any potential effects.

There are no national recreation areas or wilderness study areas on the Superior National Forest and this project would not affect these areas.

### Inventoried Roadless Areas:

The treatment units are not inside and are not adjacent to any Forest Plan Inventoried Roadless Areas or Roadless Area Review and Evaluation II areas. The closest roadless area is 12 miles from the treatment units. Due to the distance and limited scope of activities proposed, there would be negligible or nonexistent effects to roadless areas.

### 4. American Indian and Alaska native religious or cultural sites and archaeological sites, or historic properties or areas:

In compliance with Section 106 of the National Historic Preservation Act of 1966, as amended and the Superior National Forest Land Management Plan (2004), a heritage resource inventory would be conducted for the project area where none currently exist. The goal of this inventory would be to identify historic properties in order to protect them from project activities. Results of this inventory would be documented in the Birch Lake Plantation Categorical Exclusion Cultural Resource Reconnaissance Report and reported to the Minnesota State Historic Preservation Officer in the 2009 Superior National Forest Heritage Annual Report. Historic properties would be excluded from project activities, pursuant to S-HR-9 of the Forest Plan, which places a buffer around heritage resources to ensure their protection and avoidance from project activities.

## **V. FINDINGS REQUIRED BY AND/OR RELATED TO OTHER LAWS AND REGULATIONS**

My decision will comply with all applicable laws and regulations.

- ⌚ Forest Plan Consistency (National Forest Management Act) - This Act requires the development of long-range land and resource management plans (Forest Plans). The Superior National Forest Plan was approved in 2004, as required by this Act. The Forest Plan has been reviewed in consideration of this project. This decision is responsive to guiding direction contained in the Plan. The project helps to achieve objectives and desired conditions in the 2004 Forest Plan such as O-ID-1 (p. 2-19) and O-TM-1 (p. 2-20) and D-VG-1 (p. 2-22).

### *Landscape Ecosystem (LE) Objectives and patch retention:*

The project area is in Jack Pine-Black Spruce LE. This project would not result in a change in forest type or age since only thinning treatments are proposed. Therefore this project would not result in a change in the achievement of objectives for this LE. For the same reason, Forest Plan direction for patch retention and other spatial direction would not be affected by this project.

### *Management Area (MA) Objectives:*

The project area is in Recreation Use in a Scenic Landscape MA. This MA allows for timber harvest and silvicultural treatments such as thinning and therefore this project would be consistent with Forest Plan direction for this MA.

### *Forest Plan Standards and Guidelines:*

All relevant Forest Plan Standards and Guidelines would be incorporated into the project as Operational Standards and Guidelines. Any additional needed mitigation measures and design features would be incorporated on Unit Cards for each treatment area. This project would be consistent with the standards and guidelines contained in the Forest Plan.

### *Suitability for Timber Production*

All the land proposed for treatment is classified in a Land Suitability Class that is suitable for timber production. This conclusion was re-affirmed when the treatment units were reviewed on the ground. None of these lands have been withdrawn from timber production by an Act of Congress, the Secretary of Agriculture or the Chief of the Forest Service.

### *Optimality and Appropriateness of Harvest Methods*

The National Forest Management Act states, "When timber is to be harvested using an even-aged management system, a determination that the system is appropriate to meet the objectives and requirements of the Forest Plan must be made and where clearcutting is to be used, it must be determined to be the optimum method." This project involves thinning treatments and thus even-aged management and clearcutting would not occur. However, the district silviculturalist and researchers have reviewed the

thinning treatments and these are the optimum method to meet the purpose and need of the project.

- ⌚ Sensitive Species (Forest Service Manual 2670) - Regional Foresters Sensitive Species are species for which population viability is a concern due to one or a combination of several factors: habitat and species rarity or poor distribution; a declining trend in population; risk to habitat integrity; and population vulnerability. The current Regional Forester Sensitive Species (RFSS) List for the Superior National Forest was developed for the 2004 Forest Plan and was updated in October of 2006 (<http://www.fs.fed.us/r9/wildlife/tes/>).

A Biological Evaluation is used to determine the effects of a proposal on sensitive species. Based on a preliminary analysis, we do not expect these management actions to result in a trend toward federal listing or a loss of viability. For some species we expect *no effect* as a result of this proposal. These determinations are made based on the following reasons:

- a) The project area is relatively small and the defined harvest/ treatment operation is small in scale and short in duration.
- b) The project area is located in area historically maintained for silvicultural studies and residual site-level conditions reflect the past site treatments.
- c) One RFSS species, bald eagle, is known to nest within ¼ mile of the northern border of the project area. This nest is located on a small island in Birch Lake and would be minimally disturbed from silvicultural operations in the project area. Disturbance would result from site-level noise produced from treatment operations approximately a ¼ mile away. This noise would be short in duration.
- d) No other known sensitive species occur within ¼ mile radius of project area.
- e) Habitat would be minimally impacted from the small size and defined area of the project.
- f) No new roads would be created in the project area.

The biological evaluation will be completed prior to the signing of the final decision memo and will be summarized therein.

- ⌚ Clean Air Act- This project would comply with the Clean Air Act and direction for the BWCAW as a Class I Airshed. There would be negligible emissions from the project that would affect the Class I Airshed. The project file contains further discussion on this point.
- ⌚ Clean Water Act- This project comply with the Clean Water Act and State Water Quality Standards and Forest Plan direction on protecting water quality would be met.
- ⌚ Shipstead-Newton-Nolan Act- This project would not include any activities within 400 feet of a shoreline applicable to this act. Documentation of this is included in the project file.
- ⌚ Regional Soils Management Direction- This project would comply with Region 9 soil management direction found in FSH 2509.18. Compliance with Forest Plan direction ensures that FSH 2509.18 would be met.

- ⌚ Executive Order 13112- This project would comply with the Executive Order on Invasive Species and appropriate measures to limit any spread of invasive species would be taken. The Superior National Forest has an ongoing program to limit the spread of invasive species and educate the public on this issue.
- ⌚ Environmental Justice (Executive Order 12898) - This Order requires consideration of whether projects would disproportionately impact minority or low-income populations. This decision complies with this Act. This decision is not expected to adversely impact minority or low-income populations.
- ⌚ National Environmental Policy Act - This Act requires public involvement and consideration of potential environmental effects. The entirety of documentation for this decision supports compliance with this Act.

## **VI. ADMINISTRATIVE REVIEW OR APPEAL**

When a decision is made after the close of the 30 day comment period, this decision is subject to appeal per 36 CFR 215. Those who provide comments during the 30-day comment are eligible to appeal the decision. The period for filing an appeal begins the first day after the publication of the legal notice for a decision in the Ely Echo. An appeal must be filed, and postmarked or received by the Appeal Deciding Officer by the close of business on the 45th day following publication of the legal notice of the decision on the Birch Lake Plantation Project. Contact information for the Appeal Deciding Officer will be provided with the publication of the Decision Notice for the Birch Lake Plantation Project after the close of the 30-day comment period.

## **VII. IMPLEMENTATION DATE**

A decision is expected in the summer of 2009. Implementation is anticipated to begin in the fall of 2009.

## **VIII. PROJECT RECORD**

The project record is available upon request from Peter Taylor at (218) 626-4368 or [prtaylor@fs.fed.us](mailto:prtaylor@fs.fed.us)

## **IX. CONTACT PERSON**

Further information about this proposal can be obtained from David Hernandez, Kawishiwi Ranger District, Superior National Forest at (218) 365-7624 or [dhernandez@fs.fed.us](mailto:dhernandez@fs.fed.us) or from Doug Kastendick at the Northern Research Station (Address: 1831 Hwy 169 E, Grand Rapids, MN 55744 Voice: (218) 326-7131; Fax: (218) 326-7131, e-mail: [dkastendick@fs.fed.us](mailto:dkastendick@fs.fed.us)